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Regular Article

Longitudinal pathways between emotional difficulties and school absenteeism in middle childhood: Evidence from developmental cascades

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Abstract

Emotional difficulties are associated with both authorized and unauthorized school absence, but there has been little longitudinal research and the temporal nature of these associations remains unclear. This study presents three-wave random-intercepts panel models of longitudinal reciprocal relationships between teacher-reported emotional difficulties and authorized and unauthorized school absence in 2,542 English children aged 6 to 9 years old at baseline, who were followed-up annually. Minor differences in the stability effects were observed between genders but only for the authorized absence model. Across all time points, children with greater emotional difficulties had more absences, and vice versa (authorized: $\rho = .23–.29$, $p < .01$; unauthorized: $\rho = .28$, $p < .01$). At the within-person level, concurrent associations showed that emotional difficulties were associated with greater authorized ($\beta = .15–.17$, $p < .01$) absence at Time 3 only, but with *less* unauthorized ($\beta = -.08–.13$, $p < .05$) absence at Times 1 and 2. In cross-lagged pathways, neither authorized nor unauthorized absence predicted later emotional difficulties, and emotional difficulties did not predict later authorized absence at any time point. However, greater emotional difficulties were associated with fewer unauthorized absences across time ($\beta = -13–.22$, $p < .001$). The implications of these findings are discussed.

Keywords: authorized absence; developmental cascades; emotional difficulties; school absenteeism; unauthorized absence

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Emotional difficulties affect 12–30% of children and young people worldwide and are associated with adverse outcomes in health, education, and social functioning (Goodman, 2001; Stone et al., 2010). Previous research has demonstrated that children with diagnoses of anxiety or depressive disorders, as well as those with high levels of emotional symptoms, have higher rates of school absence compared to their peers who are mentally healthy (Finning et al., 2020; Wood et al., 2012). Emotional difficulties have also been linked to various types of school attendance problems including both authorized and unauthorized absence, persistent or problematic absenteeism, truancy, and school refusal (i.e. anxiety-based non-attendance) (Egger et al., 2003; Finning et al., 2020; Gubbels et al., 2019; Jones et al., 2009; Lereya et al., 2019; Vaughn et al., 2013). School is a central context for children's social, emotional and cognitive development, and attendance problems can negatively affect academic achievement while also increasing the risk of school dropout, drug and alcohol abuse, and adult unemployment (Attwood & Croll, 2014; Christle et al., 2007; Hancock et al., 2013; Henry & Huizinga, 2007; Simon et al., 2020).

Despite clear evidence for an association between emotional difficulties and school absenteeism, there has been little longitudinal research and the temporal nature of these associations remains unclear. Emotional difficulties may undermine attendance at school through symptoms such as fatigue, difficulty concentrating, and lack of motivation, or through attempts to avoid anxiety-provoking stimuli in the school setting such as social interaction, performance situations, or academic assessments. Conversely, absence may be detrimental to children's emotional health since school provides key opportunities for learning and social development, both of which are recognized as important contributors to young people's mental health (Panayiotou et al., 2019; World Health Organization, 2013). Feedback loops may also exist whereby, for example, emotional difficulties result in reduced school attendance, which contributes to a further decline in emotional health over time.

Three recent systematic reviews have highlighted a lack of longitudinal research on this topic (Finning et al., 2019a, 2019b; Gubbels et al., 2019). For example, Finning et al. (2019a, 2019b) systematically reviewed the evidence for associations between school non-attendance with both anxiety and depression. Only two of the included studies explored longitudinal relationships between depressive symptoms and subsequent absenteeism; both of these used adolescent samples and reported a statistically significant association. Conversely, these same two studies reported only weak, non-statistically significant associations for the reverse relationship. With regards to anxiety, again only two studies investigated longitudinal relationships with school non-attendance (one involving a sample of 6 to 7 year old students in South Korea and the other a sample of 14–19 year olds in the USA).

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Both studies reported small, non-statistically significant associations between anxiety and subsequent school absence, as well as absence and subsequent anxiety. Gubbels et al. (2019) conducted a systematic review of risk factors for school absenteeism, and thus only included longitudinal studies in which emotional difficulties were measured prior to the absence. Eleven studies, which included samples of students of different ages, found that depressive symptoms predicted later absenteeism (mean Fisher's Z score 0.242, $p < .001$), while four studies found that anxiety symptoms predicted later absenteeism (mean Fisher's Z score 0.116, $p < .05$).

The longitudinal research identified through the above systematic reviews, however, has largely relied on either the calculation of crude estimates of association, for example through examining correlations between variables; or traditional regression modeling. While the latter allows for adjustment for potential confounding factors, it fails to account for the effects of within-time covariance (e.g. the relationship between emotional difficulties at Time 1 and absence at Time 1) and temporal stability (e.g. absence at Time 1 and absence at Time 2), making it difficult to isolate the impact of particular longitudinal pathways. In contrast, cross-lagged panel models are able to isolate the impact of cross-lagged pathways (e.g. emotional difficulties at Time 1 and absence at Time 2). Such models are often referred to as "developmental cascades" because they enable identification of snowball or cascade effects whereby difficulties in one domain of functioning influence other domains over time, thus altering the course of development (Masten & Cicchetti, 2010).

Using this method, Wood et al. (2012) investigated longitudinal reciprocal associations between mental health and school absenteeism in three data sets from the USA. They reported varied results, ranging from strong bidirectional relationships between depressive symptoms and youth-reported absence in a representative sample of 12–14 year olds, to no relationship between emotional symptoms and data from school attendance records in a sample of high-risk adolescents. Therefore, the nature of these relationships remains unclear.

In addition, the traditional cross-lagged panel model, such as the one used in Wood et al. (2012) assumes, rather problematically, that every individual in the study experiences the same change across time, ignoring the likelihood that trait-like individual differences exist between individuals, especially in psychological constructs (Hamaker et al., 2015). Recently proposed random-intercept cross-lagged panel models (Hamaker et al., 2015; Mulder & Hamaker, 2020) address this issue by partialling out between-person and within-person variance, similar to multilevel frameworks. This modeling technique is based on the assumption that between-person relationships are aggregated representations of within-person developmental processes (Berry & Willoughby, 2017). The between-person variance reflects differences observed between individuals while the within-person variance reflects changes that vary within individuals over time. Within-person associations are particularly helpful in terms of identifying suitable targets for intervention, while between-person associations help to identify *who* needs intervention (Masselink et al., 2018). Researchers have recently argued that traditional cross-lagged panel models do not adequately account for within-person relationships, particularly if the constructs included in the model are highly stable over time (Hamaker et al., 2015; Masselink et al., 2018). This can result in erroneous conclusions about the presence, predominance, and sign of within-person causal influences (Hamaker et al., 2015), such that different conclusions emerge depending on whether or not between-person effects are accounted for in cross-lagged panel models (see Burns et al., 2020).

The current study therefore presents random-intercept panel models that explore longitudinal reciprocal relationships between emotional difficulties and authorized and unauthorized school absence across three annual waves of data collection in a large sample of 6 to 9 year olds in England at baseline. We focus on middle childhood because there is a scarcity of research to explore these relationships in primary school aged children, and no research that we are aware of using panel model designs in this age group. This is despite middle childhood representing a key time for early identification and intervention, both for emotional difficulties and school attendance problems (Department for Education, 2020b; Department of Health & Department for Education, 2017). Given that emotional difficulties are more prevalent in boys up to the age of 12 years and girls thereafter (Vizard et al., 2018; Wesselhoeft et al., 2015), it is possible that the longitudinal pathways between emotional difficulties and school absenteeism vary across gender, so this is also explored. Figure 1 presents our conceptual model, which explores the cross-lagged effects between school absence and emotional difficulties, while accounting for key covariates, autoregressive effects (across-time stability), concurrent associations (within-time), and between-person effects (see Methods for more information).

Method

Ethical approval for the original study was granted by the University of Manchester ethics committee (Ref: 11,470).

Sample

Data were drawn from a cluster randomized controlled trial (with school as the randomization unit) that evaluated the impact of the Promoting Alternative Thinking Strategies (PATHS) curriculum on children's social-emotional competence and mental health that was funded by the National Institute for Health Research (Project Ref. 10/3006/01). The trial recruited 5,218 children in School Years 2, 3 and 4 (when children are aged 6 to 9) from 45 mainstream primary schools in northwest England. Baseline data collection took place between April and July 2012, and children were followed-up annually for 2 years. Full details of the sample and trial recruitment methods are provided by Humphrey et al. (2016).

For the current study, only data from children in schools allocated to the control arm of the trial and who did not receive the PATHS intervention were used. The final sample therefore involved 2,542 children from 22 schools. Table 1 provides a summary of child characteristics. Generally, children were representative compared to national averages in terms of attendance, attainment, ethnicity composition (albeit with a smaller percentage of White ethnic background), and proportion of children identified as having special educational needs and disability (SEND). However, there was a greater proportion of children speaking English as an additional language (EAL) and eligible for free school meals (FSM) compared to national norms. FSM eligibility is a statutory benefit for school-aged children from families who receive other qualifying benefits and are classified as having low income. It is widely used as a proxy for socioeconomic status, and specifically childhood disadvantage related to poverty (Kounali et al., 2008).

Measures

Emotional difficulties

The five-item emotional problems subscale of the teacher-reported Strengths and Difficulties Questionnaire (SDQ) was utilized.

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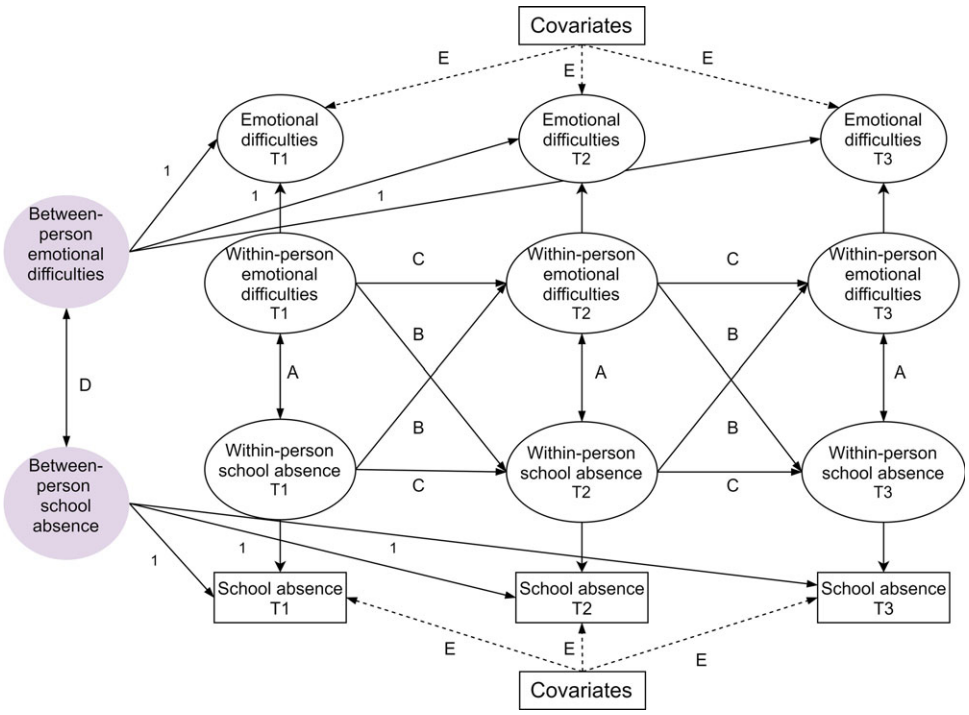

Figure 1. Conceptual model. *Note*. A = concurrent within-time correlations; B = within-person cross-lagged effects; C = within-person autoregressive effects (stability); D = between-person correlation; E = covariates effects. In gray is the between-person latent variables, which represent the key difference between a traditional and random-intercept cross-lagged panel model.

The SDQ is a validated questionnaire that screens for common childhood psychopathology (Goodman, 2001). The emotional problems subscale includes items such as "many worries, often seems worried" and "often unhappy, down-hearted or tearful", which teachers rate on a three-point scale (*not true*, *somewhat true*, or *certainly true*), providing a total score ranging from 0 to 10. The subscale has good internal consistency (average $\alpha = 0.73$) and test–retest reliability (average $r = 0.72$), and satisfactory ability to discriminate between clinical and non-clinical samples (Stone et al., 2010). Good internal consistency was demonstrated within the current sample (T1: $\alpha = 0.79$, T2: $\alpha = 0.73$, T3: $\alpha = 0.82$), and acceptable model fit was also found for each time point, with strong factor loadings (see Table S1 in supplementary material).

School absence

All schools in England record data on attendance, which is held nationally via the Department for Education's National Pupil Database (NPD). Attendance data is recorded as the proportion of half-days (or "sessions") missed due to absence, and these can be coded as authorized or unauthorized. Authorized absence refers to "absence with permission from a teacher or other authorized representative of the schools. This includes instances of absence for which a satisfactory explanation has been provided, e.g. illness" (Department for Education, 2019). Unauthorized absence refers to "absence without permission from the school. This includes all unexplained or unjustified absences and arrivals after registration has closed" (Department for Education, 2019). The total percentage of authorized and unauthorized absence at the end of the school year for each child was derived from the NPD, calculated by dividing the number of sessions absent by the total number of sessions delivered. For each academic year, this reflected the absence for the full year across all six half terms.

Covariates

Previous evidence suggests that a number of factors, including attainment, familial poverty, victimization and peer problems, and school connection, as well as other mental and physical health difficulties are related to problematic absenteeism (Kearney, 2008; May et al., 2021). Such factors have similarly been found to play an important role in internalizing symptoms (Shore et al., 2018; Wehmeier et al., 2010; Wickersham et al., 2021). Both models therefore adjusted for a number of baseline, time-invariant and time-varying covariates, as described below.

Academic attainment (T1)

The average 2010 Key Stage 1 (KS1) national curriculum test score in mathematics, reading, and writing was used as the baseline academic attainment score. KS1 assessment occurs at the end of Grade 1 (Year 2 in England) and is used to classify a student's performance in terms of national curriculum levels. The average attainment score for the current sample was 15.12 ($SD = 3.68$; see Table 1), in line with the national average of 15.3 (Department for Education, 2010).

Hyperactivity and peer problems (T1–T3)

The teacher-reported SDQ (Goodman, 2001) was used to assess symptoms of hyperactivity (e.g. "easily distracted, concentration wander") and peer problems (e.g. "picked on or bullied by other children") across all waves. As with the emotional symptoms subscale, teaches respond to these items using a three-point scale (*not true*, *somewhat true*, or *certainly true*) with higher scores indicating greater problems. A review by Stone et al. (2010) found the teacher-reported subscales to perform better than the parent-report with high average internal consistency for hyperactivity ($\alpha = .83$), though lower for peer problems ($\alpha = .63$). Test–retest reliability was shown to be good for both subscales (hyperactivity $r = .85$, peer $r = .77$), but the concurrent validity was higher for the hyperactivity ($r = .79$) than the peer problems scale ($r = .57$). Acceptable levels of internal consistency were found in the current sample for both hyperactivity (T1: $\alpha = .90$, T2: $\alpha = .87$, T3: $\alpha = .86$) and peer problems (T1: $\alpha = 68$, T2: $\alpha = 72$, T3: $\alpha = 71$).

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Table 1. Sample characteristics ($N = 2,542$)

Characteristic	Sample	National averages[a]
Gender: *n* (%)		
Male	1346 (53.0)	50
Female	1196 (47.0)	
Year group: *n* (%)		
Year 2	908 (35.7)	
Year 3	850 (33.4)	
Year 4	784 (30.8)	
Ethnicity: *n* (%)		
White	1682 (66.2)	76.9
Black	125 (4.9)	5.4
Asian	351 (13.8)	10.3
Chinese	14 (0.6)	0.4
Mixed	174 (6.8)	4.8
Any other ethnicity	60 (2.4)	1.6
Unclassified	136 (5.8)	0.7
SEND provision: *n* (%)		
No	1931 (76.0)	
Yes	509 (20.0)	19.8
Unclassified	102 (4.0)	
First language: *n* (%)		
English	1872 (73.6)	
Other	568 (22.3)	17.5
Unclassified	102 (4.0)	
FSM eligibility: *n* (%)		
Yes	696 (27.4)	19.3
No	1744 (68.6)	
Unclassified	102 (4.0)	
Academic attainment: *mean* (*SD*)		
KS1 Reading/Writing	14.81 (3.98)	15.1
KS1 Maths	15.43 (3.73)	15.7
School absence (%): authorized *mean* (*SD*); unauthorized *mean* (*SD*)		
Baseline (T1)	3.43 (3.59); 1.05 (3.39)	3.7; 0.7
T2	3.37 (3.33); 0.86 (2.14)	3.9; 0.7
T3	2.87 (3.41); 0.70 (2.19)	3.1; 0.7
SDQ emotional difficulties (teacher-report): *mean* (*SD*)		
Baseline (T1)	1.62 (2.08)	
T2	1.45 (2.03)	
T3	1.33 (2.02)	

Note. FSM = free school meals; KS1 = Key stage 1, which covers school years 1 and 2 when children are aged 5 to 7 years; SDQ = strengths and difficulties questionnaire; SEND = special educational needs and disability. Characteristics were measured at baseline unless otherwise specified.
[a]Department for Education, 2010, 2012a, 2012b, 2013, 2014, 2015.

School connectedness (T1–T3)

The four-item self-report School Environment subscale of the Kidscreen-27 (Ravens-Sieberer et al., 2007) was used to assess school connectedness (e.g., "have you got along well with your teacher?"). Considering the past month, students were asked to respond to the items using a five-point scale (1 = *not at all*; 5 = *extremely*) with higher scores indicating a more positive school environment and greater connectedness. This subscale was shown to have strong construct (Robitail et al., 2007), convergent, criterion, and known groups (between different socioeconomic, gender, and year groups) validity (Ravens-Sieberer et al., 2007), and acceptable test–retest reliability (ICC = .74; Ravens-Sieberer et al., 2007) and internal consistency ($\alpha > .76$; Robitail et al., 2007). The measure achieved good internal consistency in the current sample (T1: $\alpha = 71$, T2: $\alpha = 72$, T3: $\alpha = 75$).

Demographic background

Age, gender, ethnicity, FSM eligibility and SEND provision were obtained from the NPD at baseline.

Analysis

Models were tested in Mplus 8.5 using random-intercept cross-lagged panel models (Hamaker et al., 2015). The syntax used for the current analyses can be found in the supplementary material. Missing data on absence varied between .1% (Time 1) and 16.7% (Time 3). Missingness on NPD data is usually due to match failure (e.g. the student was not in the NPD file at the time, out of the country, not in the education system etc.), an issue inherent to research involving data linkage (Gilbert et al., 2018). An increase in missing data was observed across time for the teacher-reported emotional items (Time 1: 18.5–18.7%; Time 2: 34.4–34.5%, Time 3: 47.2–47.4%), though only 12.8% ($n = 326$) of the students had missing data across all three time points. A binary logistic regression was performed to explore whether systematic differences existed between those that were lost by the end of the study (i.e., had missing data on all variables at T3; 47.4%) and those that continued to take part. Findings showed that FSM, ethnicity, and EAL were significant predictors of missingness. Specifically, students were more likely to be lost over time if they were of a UK ethnic minority background (odds ratio [*OR*] = 1.71), had EAL (*OR* = 1.33), and received FSM (*OR* = 1.45). Data were therefore assumed to be missing at random, and multiple imputation was used to treat missingness.

Models were explored using 100 imputed data sets with weighted least squares means and variance adjusted estimation. Model fit was assessed using multiple measures, with Tucker–Lewis index (TLI) and comparative fit index (CFI) values above .95, root mean square error of approximation (RMSEA) values below .06, and standardized root mean squared residual (SRMR) values below .08, indicating good model fit (Hu & Bentler, 1999). The goodness-fit-statistics and the standard errors of the parameters were adjusted (using type = complex) to account for the clustered data (intracluster correlation coefficients = .02–.14, $M = .07$).

Cohen's *r* thresholds were used to judge the between-person effect size, with .10, .30, and .50 indicating small, medium, and large effects (Cohen, 1992). Previous work has relied on η^2 thresholds (.02, .13, .26) for path analysis. However, using such universal thresholds might be impractical for within-person cross-lagged effects, as their practical meaningfulness can vary greatly according to the subject area, the number and gaps of lags, the complexity of the model, and the number of predictors. Though based on the traditional panel model, some suggest that the interpretation of cross-lagged effects also depends on the size of their bivariate correlations and the outcome stability (Adachi & Willoughby, 2014), both of

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which were used in the current study to provide a more dynamic interpretation (Adachi & Willoughby, 2014).

Random-intercept cross-lagged panel model

The developmental cascades models were constructed in line with the theoretical framework of Figure 1, accounting for several modeling considerations as recommended for random-intercept cross-lagged panel models (Little, 2013; Mulder & Hamaker, 2020; Newsom, 2015). First, emotional difficulties were modeled as latent variables, which account for measurement error, and allow for the estimation of autocorrelations among residual variances and the constraining of factor loadings and thresholds to equality, following evidence of full longitudinal measurement invariance. These analytical techniques provide more accurate estimates of the cross-lagged pathways (Newsom, 2015). Beyond that, we accounted for the concurrent (within-time) correlations (Paths A in Figure 1), and autoregressive (stability) pathways (Paths C), thereby increasing the precision of cross-lagged effects (Paths B) (Newsom, 2015). Paths A to C are consistent with the traditional cross-lagged panel model. The main difference between this model and the random-intercept cross-lagged panel model is the estimation of random intercepts (shaded circles in Figure 1) and their correlation (Path D), which represents the between-person effects. Random intercepts are estimated through latent variables that hold the factor loadings of the three observed or latent variables of each time point at 1, essentially removing the effect of time, and treating the latent variables as stable trait-like characteristics.

The random-intercept cross-lagged panel model of Figure 1 is interpreted as follows (Berry & Willoughby, 2017; Hamaker et al., 2015): Paths A represent the association (in correlation coefficient terms) between constructs assessed concurrently. Paths B represent the cross-lagged effects across time (average within-person change), that is, the extent to which the change in one variable is predicted from the individual's prior deviation on the other variable (these represent regression slopes). In the current study, a positive cross-lag path would indicate the extent to which an increase from one's own typical emotional difficulties trajectory is predictive of a subsequent increase in their own school absence rate, after accounting for one's own preceding absence rate and all possible covariates.

Paths C reflect the amount of within-person carry-over effect. For example, in the current study, positive autoregressive parameters would indicate that when a person scores above (or below) their emotional difficulties mean at one time point, their following score at the next time point will likely again be above (or below) their mean emotional difficulties score. Path D indicates the relationship between the means of the two variables over time. In the current study, a positive between-person relationship would indicate that children who report more emotional difficulties, on average, tend to report higher school absence rates, than children with fewer difficulties.

The final pathways indicated in Figure 1 (Paths E) account for the influence of important covariates identified from previous literature. Three types of covariates were included in the model: First, attainment and age were included as baseline predictors of Time 1. Second, stable, time-invariant covariates included were ethnicity, FSM, and SEND, the effects of which were constrained to be equal across the three time points. Third, time-varying covariates, whose effects were assumed to vary with each measurement occasion, included scores of hyperactivity, peer problems, and school connectedness. For instance, school connectedness measured at Time 3 was added as a predictor of Time 3 absence and emotional symptoms.

Gender differences

Prior to testing for gender differences in the cross-lagged pathways, the longitudinal and gender measurement invariance of emotional difficulties was tested following a three-step method (baseline models, configural invariance, scalar invariance) as recommended for ordinal data (Muthén & Muthén, 2017). Following support for full measurement invariance across gender and time (see Table S1 of the supplementary material), the cascades model was compared between boys and girls through multigroup structural equation models (SEM). Following acceptable baseline model fit for each group the between-person and within-person pathways were statistically compared across groups using the Wald test chi-square. The chi-square difference testing, which is typically used in multigroup SEM comparisons is not available for models using multiple imputation. Given that longitudinal measurement invariance was established, the factor loadings and thresholds of emotional difficulties were constrained to be equal across time in all models, thereby increasing the precision of the estimates (Newsom, 2015).

Results

The correlations between the observed absence variables and latent emotional difficulties variables are summarized in Table 2. All correlations were shown to be statistically significant, and indicate the strength of the cross-lagged paths and stability in terms of bivariate correlation coefficients. For example, all variables were shown to have moderate to strong stability outside the random-intercept cross-lagged panel model. Small correlations are noted between emotional difficulties and authorized absence ($r = .14.–.24$), but these are even smaller for difficulties and unauthorized absence ($r = .01–.14$).

Gender differences

For authorized absence, an acceptable baseline model fit was found for both *boys* χ^2 (359) = 575.943 (*SD* = 18.299); RMSEA = .022 (*SD* = .001); SRMR = .086 (*SD* = .000); CFI = .931 (*SD* =.007), TLI = .922 (*SD* = .007), and girls χ^2 (359) = 580.305 (*SD* = 18.057); RMSEA= RMSEA = .023 (*SD* = .001); SRMR = .092 (*SD* = .000); CFI = .932 (*SD* =.007), TLI = .923 (*SD* = .008). Multigroup SEM indicated a statistically significant difference in the pathways between genders, Wald χ^2 (12) = 29.307, $p < .01$.

Similarly, an acceptable fit was found for the unauthorized absence model, in both boys χ^2 (359) = 546.082 (*SD* = 17.788); RMSEA = .020 (*SD* = .001); SRMR = .096 (*SD* = .000); CFI = .940 (*SD* =.007), TLI = .932 (*SD* = .007), and girls χ^2 (359) = 552.304 (*SD* = 17.764); RMSEA = .022 (*SD* = .001); SRMR = .083 (*SD* = .000); CFI = .943 (SD =.005), TLI = .935 (*SD* = .006). A non-significant Wald test indicated the model to be invariant between boys and girls, Wald χ^2 (12) = 10.858, $p = .54$. Following these findings, the final analyses for authorized absence were performed separately for each gender, whereas the model for unauthorized absence was based on the full sample.

Authorized absence

A detailed summary of the covariate effects can be found in Tables S2–S3 of the supplementary material. Generally, lower attainment ($\beta = -.12/-13$) and receiving FSM ($\beta = .14/.23$) were found to predict more authorized absence in girls/boys. Low T3 school connectedness in boys ($\beta = -.11$) and being from a White ethnic

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Table 2. Average bivariate correlations between absence and emotional difficulties

	1	2	3	4	5	6	7	8
1. Emo 1	–							
2. Emo 2	.45***	–						
3. Emo 3	.38***	.54***	–					
4. Authorized 1	.15***	.15***	.16***	–				
5. Authorized 2	.14***	.19***	.19***	.47***	–			
6. Authorized 3	.14***	.17***	.24***	.43***	.50***	–		
7. Unauthorized 1	.08**	.08*	.14***	.10***	.17***	.08***	–	
8. Unauthorized 2	.08*	.06*	.10**	.16***	.17***	.13***	.38***	–
9. Unauthorized 3	.09**	.01	.13***	.17***	.24***	.17***	.39***	.53***

Note.
*$p < .05$.
**$p < .01$.
***$p < .001$.

background in girls ($\beta = -.24$) predicted more absence. When it comes to emotional symptoms, higher hyperactivity and peer problems, and being from a White ethnic background predicted more emotional problems in both genders.

Figure 2 provides a detailed comparison between girls (Figure 2a) and boys (Figure 2b) for the authorized absence model. After accounting for the aforementioned covariates, a medium and statistically significant between-person association between emotional difficulties and authorized absence was found in both genders. Within-person, concurrent associations showed a small and statistically significant positive association between emotional difficulties and authorized absence at Time 3 only. Different autoregressive associations were found for each gender, as seen in Figure 2, but more importantly emotional difficulties did not predict later authorized absence at any time point, nor did authorized absence predict later emotional difficulties.

Unauthorized absence

Only two covariates were shown to statistically significantly predict unauthorized absence; lower attainment and receiving FSM. Similar to the previous model, higher hyperactivity and peer problems, and being from a White ethnic background predicted more emotional difficulties. Beyond that, less school connectedness at T1 and having SEND were also statistically significant predictors of difficulties.

The between-person association between emotional difficulties and unauthorized absence was moderate and statistically significant ($\rho = .28$, $p < .01$) (see Figure 3). The within-person, concurrent associations showed a significant negative association between emotional difficulties and unauthorized absence at Time 1 and Time 2, but not Time 3. Autoregressions demonstrated that greater emotional difficulties at Time 2 predicted greater emotional difficulties at Time 3 ($\beta = .25$, $p < .05$). However, small and non-statistically significant autoregressions were shown for unauthorized absence. After accounting for covariates, between-person effects and the within-time concurrent and autoregressive pathways, greater emotional difficulties at each time point were associated with lower rates of unauthorized absence at later time points ($\beta = -.13 - .22$, $p < .01$), while unauthorized absence did not predict later emotional difficulties at any time point (see Figure 3). We consider these effects meaningful, given that outside the random-intercept cross-lagged panel model (Table 2) these variables have strong stability, while the bivariate correlations of the same cross-lagged paths (difficulties x unauthorized absence) appear to be much smaller. This may, thus, indicate that the stability and between-person effects did not significantly attenuated the longitudinal cross-lagged effects; on the contrary, they appear to have accentuated them.

Discussion

Gender differences

This study presented cross-lagged panel models of longitudinal reciprocal relationships between teacher-reported emotional difficulties and authorized and unauthorized school absence in middle childhood. In line with a previous study with 5 to 16 year olds in the UK (Finning et al., 2020), we found no evidence that these relationships were different for girls compared to boys for the unauthorized absence model. However, this was not the case for the authorized absence model, in which minor differences in the autoregressions (stability) were observed. Specifically, the stability of emotional symptoms across time was statistically significant (and stronger) in girls only. This was also the case for the absence stability between Time 1 and Time 2. This is the first study, to our knowledge, to explore cross-lagged effects by gender and as such these represent novel findings. One possible explanation is that these findings capture the differential experience and report of emotional difficulties between genders. Emotional difficulties tend to be more prominent in younger boys but more common in older girls (NHS Digital, 2018), while also boys with mental health difficulties are more likely to receive professional help (Ford et al., 2008). These differential experiences might have an influence in boys' cascades of symptoms and authorized absence. Beyond that, one must also consider that authorized absences could reflect different types of absences not differentiated here (e.g. illness, medical appointments, religious observance etc.), which might also influence the level of help seeking and support. Future studies should therefore focus on exploring the bidirectional relationship

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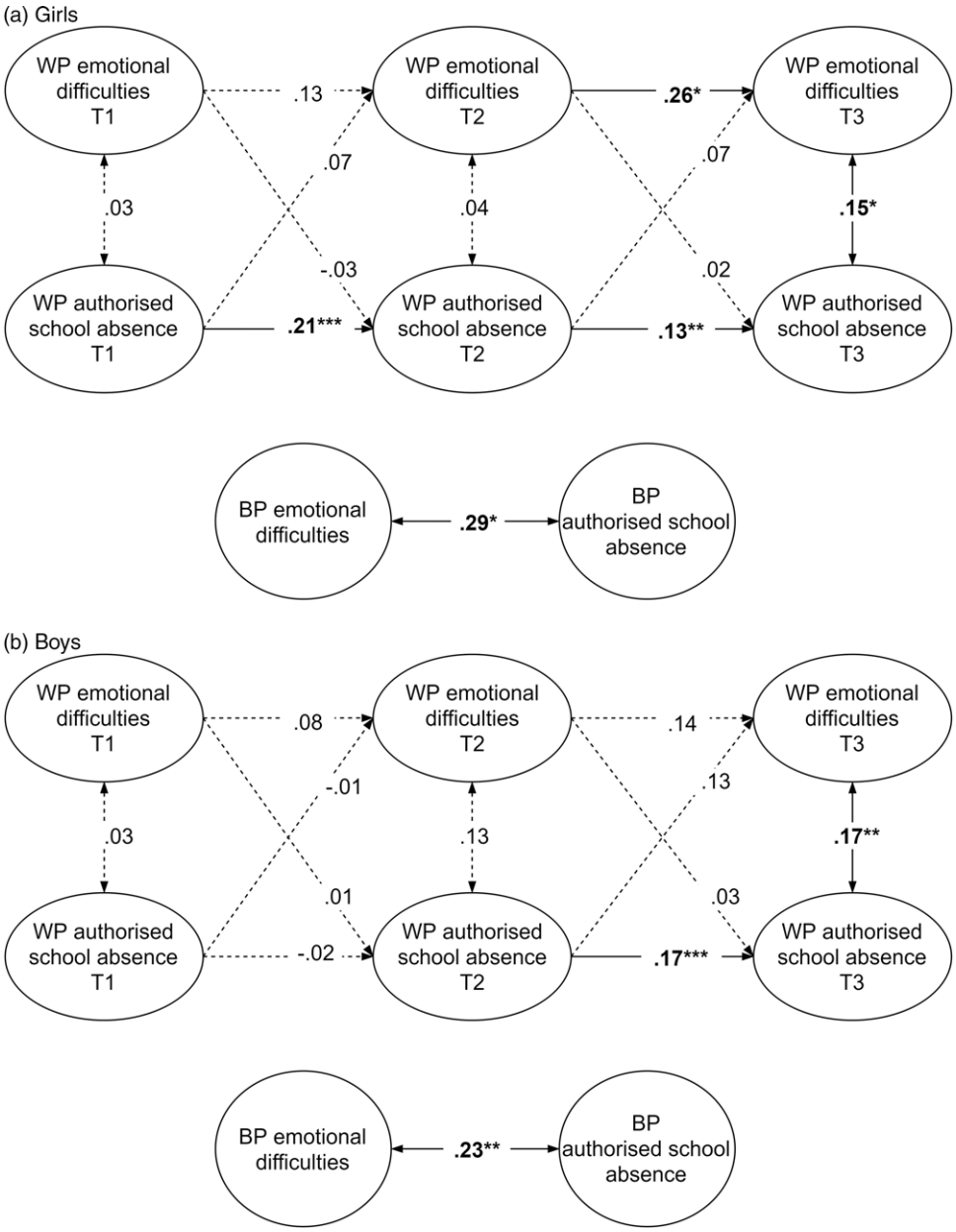

Figure 2. Developmental cascades model showing longitudinal reciprocal relationships between emotional difficulties and authorized absence in (a) girls (n =1,131) and (b) boys (n = 1,253). *Note*. WP = within-person; BP = between-person. Estimates are in standardized form. Dashed lines represent non-significant pathways. $^{*}p$ <.05, $^{**}p$ <.01, $^{***}p$ <.001.

between mental health and absence across more waves and how these might be influenced by type of absence.

Between-person associations

The between-person associations showed that, across all time points, children with greater emotional difficulties compared to other children had more authorized and unauthorized absences (and vice-versa), which is also in line with previous research (Finning et al., 2020; Lereya et al., 2019; Wood et al., 2012). Since between-person associations are particularly helpful for identifying which individuals may benefit from intervention (Masselink et al., 2018), this finding suggests that problematic absenteeism, whether authorized or unauthorized, particularly if it represents a deterioration, should prompt investigation by the school that considers mental health. Emotional difficulties are not the only possible explanation for problematic absenteeism but attendance data may serve as a helpful component of school-based mental health screening, although the effectiveness of such an approach has yet to be formally examined (Anderson et al., 2019).

Within-person concurrent associations

The within-person, concurrent associations showed that emotional difficulties were positively associated with authorized absence at Time 3 only, a finding which may be related to age. The school attendance of younger children is likely to be largely determined by parental decision-making and thus children's emotional health may be less impactful on school attendance at this age. At Time 3 children in the current sample were aged 8–11 years, at which point they are likely to begin having a greater degree of autonomy over their own attendance at school, and emotional difficulties may therefore have more of an impact on attendance. Previous research with cross-sectional data has also found the relationship between emotional difficulties and school absence to be

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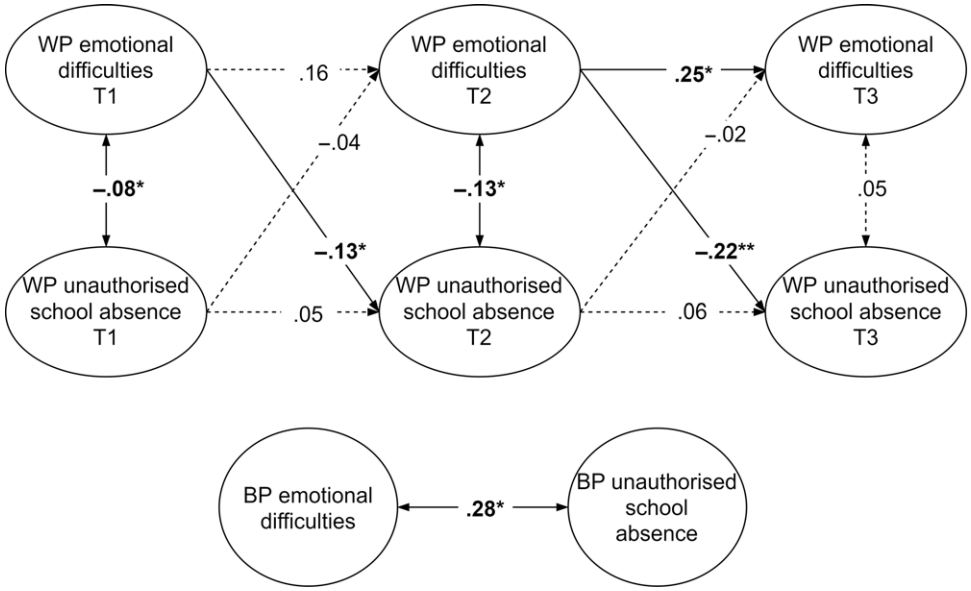

Figure 3. Developmental cascades model showing longitudinal reciprocal relationships between emotional difficulties and unauthorized absence in the whole sample. *Note*. WP = within-person; BP = between-person. Estimates are in standardized form. Dashed lines represent non-significant pathways. $^{*}p < .05$, $^{**}p < .01$.

stronger in older compared to younger students (Finning et al., 2020; Lawrence et al., 2019). Future research should examine these longitudinal relationships in older children and adolescents, for example utilizing a sample of students from secondary schools, to establish whether such associations continue to strengthen with increasing age.

Within-person temporal stability

The domain-specific pathways showed that greater emotional difficulties predicted greater emotional difficulties 1 year later, although this was only statistically significant between Times 2 and 3, and only for girls in the authorized absence model. Previous research has shown that emotional difficulties are persistent over time, with one fifth to one quarter of children diagnosed with an emotional disorder still meeting diagnostic criteria 3 years later and many more experiencing persistent subthreshold symptoms (Canals et al., 2019; Ford et al., 2017). However, these studies do not distinguish between between-person and within-person effects, a methodological issue that might be explaining the inconsistent findings of the current study.

Authorized absence was positively associated with later authorized absence, however, null associations were observed for unauthorized absence. Gee (2019) examined the impact of a variety of child-, family- and school-level factors on absenteeism, and found that prior absence was the single biggest risk factor for future absence. Furthermore, a recent latent class growth analysis identified four distinct classes of absenteeism trajectories over time: low, high, decreasing, and increasing absenteeism. The first three of these (accounting for 78% of students) were highly stable from 1st Grade onwards (equivalent to Year 2 in England), and the fourth was stable from 3rd Grade onwards (Year 4 in England) (Simon et al., 2020). However, we are aware of no research that has explored the stability of authorized and unauthorized absence separately, and the findings presented here suggest that stability over time may be different for different types of absence. Illness is the main driver of absenteeism, accounting for over 50% of school absences in England (Department for Education, 2020a). While many of these absences will be due to transient illness such as mild infections, a proportion of them will be the result of more persistent health problems and it is therefore unsurprising that greater authorized absence in one academic year predicts greater authorized absence the following year. The lack of longitudinal literature comparing authorized and unauthorized absences, however, precludes us from drawing firm explanations about the small and non-significant stability observed for unauthorized absence. It is important to note that the way in which these constructs are conceptualized and operationalized in practice may vary depending on the teacher, school, or circumstance, which could explain these findings. For example, it is possible that high rates of unauthorized absence witnessed by teachers may be interpreted as a sign of emotional ill-health, which may result in a greater likelihood of future absences being recorded as authorized (and thus reducing the number of future absences recorded as unauthorized). Further research is needed to replicate these findings in a larger sample, during a longer period of time and by accounting for the effects of important covariates missing from the current models, such as physical health (Kearney, 2008).

Within-person cross-lagged associations

Interestingly, after accounting for between-person effects, concurrent associations and temporal stability, emotional difficulties were not associated with later authorized absence at any time point. Limited previous research has suggested that anxiety and depression are associated with higher rates of subsequent authorized absence (Finning et al., 2019a, 2019b), however as previously discussed, the methods used in previous studies do not lend themselves to identifying and isolating the impact of particular longitudinal pathways as do the methods presented here.

As we note above, the between-person effects for the unauthorized model indicate children with high and stable emotional difficulties also report more unauthorized absence, compared to children with low difficulties. Surprisingly, however, when looking at differences within individuals across time, greater emotional difficulties predicted *less* unauthorized absence at later time points. Negative concurrent associations between difficulties and unauthorized absence were also observed at Time 1 and Time 2. While these findings are unexpected, we consider them to be meaningful. Still, it is important to consider them alongside the

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novel and robust analysis employed in the current study. The increased adoption of random-intercept cross-lagged panel models will inevitably challenge our current knowledge of developmental cascades: until recently, the apparent, but potentially spurious, within-person cross-lagged effects that had accumulated in the literature were based on the traditional panel model, which as we describe above, fails to distinguish between between-person and within-person effects. This will inevitably lead to discrepancies in the literature, depending on the method used (see for instance Burns et al., 2020). Therefore, the current study is the first to present a more accurate reflection of the actual reciprocal mechanisms (average within-person change), thus requiring further replication.

There are a few different considerations that could help explain the above findings. It is possible, for instance, that emotional difficulties trigger the provision of a greater level of support within and/or outside of the school environment, which may result in less unauthorized absence in the following year. This may be especially true in the current sample of control schools who initially signed up to receive the social–emotional learning (SEL) intervention but were allocated to the control group. Our previous work (Humphrey et al., 2016) finds that these control schools increased their SEL provision, which might have impacted the level of support received and, in turn, the levels of recorded unauthorized absence.

Another possibility is that teachers who are aware of the difficulties covered by the SDQ emotional subscale (somatic symptoms, sadness, fears, worry) might be more likely to code a subsequent absence as authorized. Previous research, however, has shown that, while teachers are very accurate in their reporting of externalizing symptoms, they struggle to accurately identify students who are experiencing emotional distress, and might be most concerned about mental health problems that cause disruption to the classroom environment (Cunningham & Suldo, 2014; Loades & Mastroyannopoulou, 2010; Parker et al., 2019). Given that the current study used teacher reports of emotional symptoms (and thus will only have detected children whose teachers were aware of the emotional distress), it is likely that the children in this study who were rated as having high levels of emotional symptoms were those whose difficulties had an impact on their academic performance or on the school more broadly. Children with emotional difficulties that do not impact the school are less likely to be detected by teachers and may therefore be less likely to receive school-based interventions, and may not see a subsequent reduction in absence. However, it is also possible that the use of teacher-reported emotional difficulties in this study resulted in an overall under-identification of emotional difficulties, and, as such, an underestimation of the association between emotional difficulties and absenteeism. This limitation is also true for the variable peer problems (Loades & Mastroyannopoulou, 2010; Parker et al., 2019; Stone et al., 2010). Therefore, its influence as a covariate in the current model should be interpreted with caution. Future research should aim to triangulate these findings, and investigate the relationships analyzed here using both child and parent reported measures.

It is reassuring that neither authorized nor unauthorized school absence were associated with subsequent emotional difficulties in our sample, suggesting that any impact of missing school on emotional health in middle childhood is likely to be transient. Once again, these findings must be interpreted in the context of the limitations of teacher-reported emotional difficulties as discussed above. In addition, though between-person associations do not provide information about the likelihood of symptoms occurring in the future, they still offer crucial information about children with stable trait-like characteristics. Therefore, the medium between-person associations reported here, suggest that identifying children with emerging or stable attendance problems and providing appropriate support and intervention must continue to be a key priority for clinical and educational professionals, especially for authorized absence.

Strengths and limitations

This is the first study to explore longitudinal reciprocal relationships between emotional difficulties and authorized and unauthorized school absence in middle childhood, with children in England, and to investigate these associations by gender. The study benefits from a large sample and rigorous methodology, including the consideration of measurement invariance and use of a latent random-intercept cross-lagged panel model that disentangles within- and between-person effects (Hamaker et al., 2015). Additionally, the use of absence data from the NPD is a particular strength, as much of the previous research on this topic has used child-, teacher-, or parent-reported absences, which are likely to be subject to a high degree of bias and error.

Still, the following limitations must be considered when interpreting the current findings. First, the current sample included a higher proportion of children eligible for FSM and speaking EAL compared to national averages. Participating children were recruited from mainstream primary schools and, as such, we do not know the extent to which our findings would apply to the secondary school population or those attending alternative provision. Second, the current study found that students were more likely to have missing data on absence, possibly due to NPD data linkage failure, if they were of a UK ethnic minority background, had EAL, and received FSM. These findings are consistent with previous work that found non-matching to disproportionately affect disadvantaged groups (Downs et al., 2019; Gilbert et al., 2018). While key sociodemographic factors were considered in the current study when treating missing data (through multiple imputation), biases due to linkage error may still influence the validity of the findings. Therefore, future work working with linked data should consider exploring probability weighting and adjustment methods as a way of reducing linkage bias (as in Downs et al., 2019).

Third, while important covariates, including baseline attainment, were included in the model, future research should consider exploring a 3 x 3 model in which the bidirectional effects of attainment are considered. It is possible for example, that greater emotional difficulties might interfere with attention, memory and motivation, leading to poorer attainment (Moilanen et al., 2010), which may subsequently influence absence. Similarly, the confounding effects of physical health on absence must also be examined, given its central role (Kearney, 2008). Beyond student-level factors, the consideration of school-level covariates was not possible in the current study due to the small school-level sample size. Future work should therefore consider extending the current model to a two-level random-intercepts cross-panel model, where the influence of school-level characteristics, such as school climate, are included, given recent evidence (Ford et al., 2021; Patalay et al., 2020).

Finally, while the teacher-reported SDQ emotional problems and hyperactivity subscales used in the current study have been shown to be psychometrically robust, the emotional subscale had poorer sensitivity, and the evidence was generally less

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promising for the peer problems subscale (Stone et al., 2010). Confirmatory factor analyses have provided mixed evidence of the five-factor SDQ teacher-reported structure and instead some evidence suggests the use of a two-factor structure, representing internalizing (peer problems and emotional symptoms) and externalizing (hyperactivity and conduct problems) (Goodman et al., 2010). The authors suggest that this two-factor structure might be more appropriate with low-risk samples, unlike the five-factor structure that is particularly suited for more severe clinically impairing levels that would prompt action from practitioners.

Relatedly, and as previously discussed, teachers often struggle to accurately identify internalizing difficulties compared to other mental health problems (Loades & Mastroyannopoulou, 2010; Mathews et al., 2021; Parker et al., 2019). For some children in the current study the SDQ will also have been completed by different teachers at different time points, some of whom may have had better awareness of the child's emotional difficulties than others. Furthermore, the emotional problems subscale consists of just five items, and only one of these pertains to low mood/depression. Like all secondary analyses, we were constrained by the data available, and while depression is rare in middle childhood, future research should aim to utilize full scales aimed specifically at measuring emotional difficulties (e.g. the Short Moods and Feelings Questionnaire or the Revised Children's Anxiety and Depression Scale), as well as multi-informant reports, including self-report by the young person where possible.

Conclusions

The current study found that, across a period of 3 years, primary school aged children with greater emotional difficulties compared to other children had higher rates of both authorized and unauthorized absence, which suggests that persistent low attendance should prompt investigation that includes mental health. At the within-child level, greater emotional difficulties were associated with higher rates of authorized but importantly, *lower* rates of unauthorized absence. Thus, further research is needed to investigate whether these findings can be replicated and, if so, to explore potential mechanisms underlying such effects. As expected, greater emotional difficulties at one time point predicted greater emotional difficulties at the next time point, and the same was true for authorized absence. Null autoregressive effects were found for unauthorized absence, which highlight that authorized and unauthorized school absence must continue to be explored separately. The current findings build on existing work on the relationship between emotional difficulties and school absenteeism, and further highlight the importance of schools and clinicians remaining focused on supporting children who are experiencing difficulties in either of these domains.

Supplementary material. The supplementary material for this article can be found at https://doi.org/10.1017/S095457942100122X

Author contributions. All authors contributed to the development of the study concept and design. Data analysis was conducted by MP. KF, MP and AH drafted the manuscript with input from TF and NH. NH and AH were responsible for the data collection of the original study upon which this manuscript is based. The final manuscript was approved by all authors.

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Conflicts of interest. None.

Ethical standards. All participants provided informed consent. Ethical approval for the original study was granted by the University of Manchester ethics committee (Ref: 11,470).

References

Adachi, P., & Willoughby, T. (2014). Interpreting effect sizes when controlling for stability effects in longitudinal autoregressive models: Implications for psychological science. *European Journal of Developmental Psychology*, *12*, 116–128. https://doi.org/10.1080/17405629.2014.963549

Anderson, J. K., Ford, T., Soneson, E., Coon, J. T., Humphrey, A., Rogers, M., Moore, D., Jones, P. B., Clarke, E., & Howarth, E. (2019). A systematic review of effectiveness and cost-effectiveness of school-based identification of children and young people at risk of, or currently experiencing mental health difficulties. *Psychological Medicine*, *49*, 9–19. https://doi.org/10.1017/s0033291718002490

Attwood, G., & Croll, P. (2014). Truancy and well-being among secondary school pupils in England. *Educational Studies*, *41*, 14–28. https://doi.org/10.1080/03055698.2014.955725

Berry, D., & Willoughby, M. T. (2017). On the practical interpretability of cross-lagged panel models: Rethinking a developmental workhorse. *Child Development*, *88*, 1186–1206. https://doi.org/10.1111/cdev.12660

Burns, R. A., Crisp, D. A., & Burns, R. B. (2020). Re-examining the reciprocal effects model of self-concept, self-efficacy, and academic achievement in a comparison of the cross-lagged panel and random-intercept cross-lagged panel frameworks. *British Journal of Educational Psychology*, *90*, 77–91. https://doi.org/10.1111/bjep.12265

Canals, J., Voltas, N., Hernandez-Martinez, C., Cosi, S., & Arija, V. (2019). Prevalence of DSM-5 anxiety disorders, comorbidity, and persistence of symptoms in Spanish early adolescents. *European Child & Adolescent Psychiatry*, *28*, 131–143. https://doi.org/10.1007/s00787-018-1207-z

Christle, C. A., Jolivette, K., & Nelson, M. (2007). School characteristics related to high school dropout rates. *Remedial and Special Education*, *28*, 325–339. https://doi.org/10.1177/07419325070280060201

Cohen, J. (1992). A power primer. *Psychological Bulletin*, *112*, 155–159. https://doi.org/10.1037/0033-2909.112.1.155

Cunningham, J. M., & Suldo, S. M. (2014). Accuracy of teachers in identifying elementary school students who report at-risk levels of anxiety and depression. *School Mental Health*, *6*, 237–250. https://doi.org/10.1007/s12310-014-9125-9

Department for Education. (2010). *National curriculum assessments at key stage 1 in England, 2010.* (SFR 26/2010). Retrieved December 1, 2020 from https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/218884/sfr26-2010.pdf

Department for Education. (2012a). *Schools, pupils, and their characteristics, January 2012* (SFR10/2012). Retrieved July 6, 2021 from https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/219260/sfr10-2012.pdf

Department for Education. (2012b). Special *educational needs* in England, January 2012. Retrieved July 13, 2021 from https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/219234/sfr14-2012v2.pdf

Department for Education. (2013). Pupil absence in schools in England, including pupil characteristics: 2011–12. Retrieved July 13, 2021 from https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/221799/sfr10-2013.pdf

Department for Education. (2014). Pupil absence in schools in England: 2012 to 2013. Retrieved July 13, 2021 from https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/295132/SFR09_2014_Text.pdf

Department for Education. (2015). Pupil absence in schools in England: 2013 to 2014. Retrieved July 13, 2021 from https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/416343/SFR10_2015_text.pdf

Department for Education. (2019). *A guide to absence statistics*. (DFE-00148-2015). Retrieved July 6, 2021 from https://www.gov.uk/government/publications/absence-statistics-guide

Department for Education. (2020a). Pupil absence in schools in England: 2018 to 2019. Retrieved July 6, 2021 from https://www.gov.uk/government/statistics/pupil-absence-in-schools-in-england-2018-to-2019

Department for Education. (2020b). School attendance: Guidance for maintained schools, academies, independent schools and local authorities. Retrieved July 6, 2021 from https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/907535/School_attendance_guidance_for_2020_to_2021_academic_year.pdf

Department of Health & Department for Education. (2017). *Transforming children and young people's mental health provision: A green paper*. Retrieved December 1, 2020 from https://www.gov.uk/government/consultations/transforming-children-and-young-peoples-mental-health-provision-a-green-paper

Downs, J. M., Ford, T., Stewart, R., Epstein, S., Shetty, H., Little, R., Jewell, A., Broadbent, M., Deighton, J., Mostafa, T., Gilbert, R., Hotopf, M., & Hayes, R. (2019). An approach to linking education, social care and electronic health records for children and young people in South London: A linkage study of child and adolescent mental health service data. *BMJ Open*, *9*, e024355. https://doi.org/10.1136/bmjopen-2018-024355

Egger, H. L., Costello, J. E., & Angold, A. (2003). School refusal and psychiatric disorders: A community study. *Journal of the American Academy of Child & Adolescent Psychiatry*, *42*, 797–807. https://doi.org/10.1097/01.CHI.0000046865.56865.79

Finning, K., Ford, T., Moore, D. A., & Ukoumunne, O. (2020). Emotional disorder and absence from school: Findings from the 2004 British child and adolescent mental health survey. *European Child and Adolescent Psychiatry*, *29*, 187–198. https://doi.org/10.1007/s00787-019-01342-4

Finning, K., Ukoumunne, O. C., Ford, T., Danielson-Waters, E., Shaw, L., Romero De Jager, I., Stentiford, L., & Moore, D. A. (2019a). The association between child and adolescent depression and poor attendance at school: A systematic review and meta-analysis. *Journal of Affective Disorders*, *245*, 928–938. https://doi.org/10.1016/j.jad.2018.11.055

Finning, K., Ukoumunne, O. C., Ford, T., Danielson-Waters, E., Shaw, L., Romero De Jager, I., Stentiford, L., & Moore, D. A. (2019b). Review: The association between anxiety and poor attendance at school – a systematic review. *Child and Adolescent Mental Health*, *24*, 205–216. https://doi.org/doi:10.1111/camh.12322

Ford, T., Degli Esposti, M., Crane, C., Taylor, L., Montero-Marin, J., Blakemore, S. J., Bowes, L., Byford, S., Dalgleish, T., Greenberg, M. T., Nuthall, E., Phillips, A., Raja, A., Ukoumunne, O. C., Viner, R. M., Williams, J. M. G., Allwood, M., Aukland, L., Casey, T., de Wilde, K., Farley, E-R., Kappelmann, N., Lord, L., Medlicott, E., Palmer, L., Petit, A., Pryor-Nitsch, I., Radley, L., Warriner, L., Sonley, A., the MYRIAD team, & Kuyken, W. (2021). The role of schools in early adolescents' mental health: Findings from the MYRIAD study. *Journal of the American Academy of Child & Adolescent Psychiatry*. Advance online publication. https://doi.org/10.1016/j.jaac.2021.02.016

Ford, T., Hamilton, H., Meltzer, H., & Goodman, R. (2008). Predictors of service use for mental health problems among British school children. *Child and Adolescent Mental Health*, *13*, 32–40. https://doi.org/10.1111/j.1475-3588.2007.00449.x

Ford, T., Macdiarmid, F., Russell, A. E., Racey, D., & Goodman, R. (2017). The predictors of persistent DSM-IV disorders in 3-year follow-ups of the British child and adolescent mental health surveys 1999 and 2004. *Psychological Medicine*, *47*, 1126–1137. https://doi.org/10.1017/s0033291716003214

Gee, K. A. (2019). Variation in chronic absenteeism: The role of children, classrooms, and schools. In M. Gottfried & E. L. Hutt (Eds.), *Absent from school: Understanding and addressing student absenteeism* (pp. 35–51). Harvard Education Press.

Gilbert, R., Lafferty, R., Hagger-Johnson, G., Harron, K., Zhang, L. C., Smith, P., Dibben, C., & Goldstein, H. (2018). GUILD: Guidance for information about linking data sets. *Journal of Public Health*, *40*, 191–198. https://doi.org/10.1093/pubmed/fdx037

Goodman, A., Lamping, D. L., & Ploubidis, G. B. (2010). When to use broader internalising and externalising subscales instead of the hypothesised five subscales on the strengths and difficulties questionnaire (SDQ): Data from British parents, teachers and children. *Journal of Abnormal Child Psychology*, *38*, 1179–1191. https://doi.org/10.1007/s10802-010-9434-x

Goodman, R. (2001). Psychometric properties of the Strengths and Difficulties Questionnaire. *Journal of the American Academy of Child & Adolescent Psychiatry*, *40*, 1337–1345. https://doi.org/10.1097/00004583-200111000-00015

Gubbels, J., van der Put, C. E., & Assink, M. (2019). Risk factors for school absenteeism and dropout: A meta-analytic review. *Journal of Youth and Adolescence*, *48*, 1637–1667. https://doi.org/10.1007/s10964-019-01072-5

Hamaker, E. L., Kuiper, R. M., & Grasman, R. P. P. P. (2015). A critique of the cross-lagged panel model. *Psychological Methods*, *20*, 102–116. https://doi.org/10.1037/a0038889

Hancock, K. J., Shepherd, C. C., Lawrence, D., & Zubrick, S. R. (2013). Student *attendance and educational outc*omes: Every *day counts*. A report prepared for the *department of education, employment and workplace relations*. Retrieved July 6, 2021 from https://www.telethonkids.org.au/globalassets/media/documents/research-topics/student-attendance-and-educational-outcomes-2015.pdf

Henry, K. L., & Huizinga, D. H. (2007). Truancy's effect on the onset of drug use among urban adolescents placed at risk. *Journal of Adolescent Health*, *40*, 358.e9–358.e17. https://doi.org/10.1016/j.jadohealth.2006.11.138

Hu, L. t., & Bentler, P. M. (1999). Cutoff criteria for fit indexes in covariance structure analysis: Conventional criteria versus new alternatives. *Structural Equation Modeling: A Multidisciplinary Journal*, *6*, 1–55. https://doi.org/10.1080/10705519909540118

Humphrey, N., Barlow, A., Wigelsworth, M., Lendrum, A., Pert, K., Joyce, C., Stephens, E., Wo, L., Squires, G., Woods, K., Calam, R., & Turner, A. (2016). A cluster randomized controlled trial of the promoting alternative thinking strategies (PATHS) curriculum. *Journal of School Psychology*, *58*, 73–89. https://doi.org/10.1016/j.jsp.2016.07.002

Jones, R., Hoare, P., Elton, R., Dunhill, Z., & Sharpe, M. (2009). Frequent medical absences in secondary school students: Survey and case-control study. *Archives of Disease in Childhood*, *94*, 763–767. https://doi.org/10.1136/adc.2008.140962

Kearney, C. A. (2008). School absenteeism and school refusal behavior in youth: A contemporary review. *Clinical Psychology Review*, *28*, 451–471. https://doi.org/10.1016/j.cpr.2007.07.012

Kounali, D., Robinson, T., Goldstein, H., & Lauder, H. (2008). *The probity of free school meals as a proxy measure for disadvantage*. Retrieved September 21, 2021 from http://www.bristol.ac.uk/media-library/sites/cmm/migrated/documents/fsm.pdf

Lawrence, D., Dawson, V., Houghton, S., Goodsell, B., & Sawyer, M. G. (2019). Impact of mental disorders on attendance at school. *Australian Journal of Education*, *63*, 5–21. https://doi.org/10.1177/0004944118823576

Lereya, S. T., Patel, M., dos Santos, J. P. G. A., & Deighton, J. (2019). Mental health difficulties, attainment and attendance: A cross-sectional study. *European Child & Adolescent Psychiatry*, *28*, 1147–1152. https://doi.org/10.1007/s00787-018-01273-6

Little, T. D. (2013). *Longitudinal structural equation modeling*. The Guilford Press.

Loades, M. E., & Mastroyannopoulou, K. (2010). Teachers' recognition of children's mental health problems. *Child and Adolescent Mental Health*, *15*, 150–156. https://doi.org/10.1111/j.1475-3588.2009.00551.x

Masselink, M., Van Roekel, E., Hankin, B. L., Keijsers, L., Lodder, G. M. A., Vanhalst, J., Verhagen, M., Young, J. F., & Oldehinkel, A. J. (2018). The longitudinal association between self-esteem and depressive symptoms in adolescents: Separating between-person effects from within-person effects. *European Journal of Personality*, *32*, 653–671. https://doi.org/10.1002/per.2179

Masten, A. S., & Cicchetti, D. (2010). Developmental cascades. *Development and Psychopathology*, *22*, 491–495. https://doi.org/10.1017/S0954579410000222

Mathews, F., Newlove-Delgado, T., Finning, K., Boyle, C., Hayes, R., Johnston, P., & Ford, T. (2021). Teachers concerns about pupil's mental health in a cross-sectional survey of a population sample of British school

https://doi.org/10.1017/S095457942100122X Published online by Cambridge University Press

children. *Child and Adolescent Mental Health*, *26*, 99–105. https://doi.org/10.1111/camh.12390

May, F., Ford, T., Janssens, A., Newlove-Delgado, T., Emma Russell, A., Salim, J., Ukoumunne, O. C., & Hayes, R. (2021). Attainment, attendance, and school difficulties in UK primary schoolchildren with probable ADHD. *British Journal of Educational Psychology*, *91*, 442–462. https://doi.org/10.1111/bjep.12375

Moilanen, K. L., Shaw, D. S., & Maxwell, K. L. (2010). Developmental cascades: Externalizing, internalizing, and academic competence from middle childhood to early adolescence. *Development and Psychopathology*, *22*, 635–653. https://doi.org/10.1017/S0954579410000337

Mulder, J. D., & Hamaker, E. L. (2020). Three extensions of the random intercept cross-lagged panel model. *Structural Equation Modeling: A Multidisciplinary Journal*, *28*, 638–648. https://doi.org/10.1080/10705511.2020.1784738

Muthén, L., & Muthén, B. (2017). *MPlus user's guide* (8th ed.). Muthen & Muthen.

Newsom, J. T. (2015). *Longitudinal structural equation modeling: A comprehensive introduction*. Routledge.

NHS Digital. (2018). Mental *health of children and young people in* England, 2017. Retrieved December 1, 2020 from https://digital.nhs.uk/data-and-information/publications/statistical/mental-health-of-children-and-young-people-in-england/2017/2017

Panayiotou, M., Humphrey, N., & Wigelsworth, M. (2019). An empirical basis for linking social and emotional learning to academic performance. *Contemporary Educational Psychology*, *56*, 193–204. https://doi.org/https://doi.org/10.1016/j.cedpsych.2019.01.009

Parker, C., Tejerina-Arreal, M., Henley, W., Goodman, R., Logan, S., & Ford, T. (2019). Are children with unrecognised psychiatric disorders being excluded from school? A secondary analysis of the British child and adolescent mental health surveys 2004 and 2007. *Psychological Medicine*, *49*, 2561–2572. https://doi.org/10.1017/s0033291718003513

Patalay, P., O'Neill, E., Deighton, J., & Fink, E. (2020). School characteristics and children's mental health: A linked survey-administrative data study. *Preventive Medicine*, *141*, 106292. https://doi.org/10.1016/j.ypmed.2020.106292

Ravens-Sieberer, U., Auquier, P., Erhart, M., Gosch, A., Rajmil, L., Bruil, J., Power, M., Duer, W., Cloetta, B., Czemy, L., Mazur, J., Czimbalmos, A., Tountas, Y., Hagquist, C., Kilroe, J., & **The European KIDSCREEN Group**. (2007). The KIDSCREEN-27 quality of life measure for children and adolescents: Psychometric results from a cross-cultural survey in 13 European countries. *Quality of Life Research*, *16*, 1347–1356. https://doi.org/10.1007/s11136-007-9240-2

Robitail, S., Ravens-Sieberer, U., Simeoni, M. C., Rajmil, L., Bruil, J., Power, M., Duer, W., Cloetta, B., Czemy, L., Mazur, J., Czimbalmos, A., Tountas, Y., Hagquist, C., Kilroe, J., Auquier, P., & **The KIDSCREEN Group**. (2007). Testing the structural and cross-cultural validity of the KIDSCREEN-27 quality of life questionnaire. *Quality of Life Research*, *16*, 1335–1345. https://doi.org/10.1007/s11136-007-9241-1

Shore, L., Toumbourou, J. W., Lewis, A. J., & Kremer, P. (2018). Review: Longitudinal trajectories of child and adolescent depressive symptoms and their predictors – a systematic review and meta-analysis. *Child and Adolescent Mental Health*, *23*, 107–120. https://doi.org/10.1111/camh.12220

Simon, O., Nylund-Gibson, K., Gottfried, M., & Mireles-Rios, R. (2020). Elementary absenteeism over time: A latent class growth analysis predicting fifth and eighth grade outcomes. *Learning and Individual Differences*, *78*, 101822. https://doi.org/https://doi.org/10.1016/j.lindif.2020.101822

Stone, L. L., Otten, R., Engels, R. C. M. E., Vermulst, A. A., & Janssens, J. M. A. M. (2010). Psychometric properties of the parent and teacher versions of the strengths and difficulties questionnaire for 4- to 12-year-olds: A review. *Clinical Child and Family Psychology Review*, *13*, 254–274. https://doi.org/10.1007/s10567-010-0071-2

Vaughn, M. G., Maynard, B. R., Salas-Wright, C. P., Perron, B. E., & Abdon, A. (2013). Prevalence and correlates of truancy in the US: Results from a national sample. *Journal of Adolescence*, *36*, 767–776. https://doi.org/10.1016/j.adolescence.2013.03.015

Vizard, T., Pearce, N., Davis, J., Sadler, K., Ford, T., Goodman, A., Goodman, R., & McManus, S. (2018). Mental *health of children and young people* in England, 2017: Emotional disorders. Retrieved July 6, 2021 from https://files.digital.nhs.uk/14/0E2282/MHCYP%202017%20Emotional%20Disorders.pdf

Wehmeier, P. M., Schacht, A., & Barkley, R. A. (2010). Social and emotional impairment in children and adolescents with ADHD and the impact on quality of life. *The Journal of Adolescent Health*, *46*, 209–217. https://doi.org/10.1016/j.jadohealth.2009.09.009

Wesselhoeft, R., Pedersen, C. B., Mortensen, P. B., Mors, O., & Bilenberg, N. (2015). Gender-age interaction in incidence rates of childhood emotional disorders. *Psychological Medicine*, *45*, 829–839. https://doi.org/10.1017/s0033291714001901

Wickersham, A., Sugg, H. V. R., Epstein, S., Stewart, R., Ford, T., & Downs, J. (2021). Systematic review and meta-analysis: The association between child and adolescent depression and later educational attainment. *Journal of the American Academy of Child & Adolescent Psychiatry*, *60*, 105–118. https://doi.org/10.1016/j.jaac.2020.10.008

Wood, J. J., Lynne-Landsman, S. D., Langer, D. A., Wood, P. A., Clark, S. L., Mark Eddy, J., & Ialongo, N. (2012). School attendance problems and youth psychopathology: Structural cross-lagged regression models in three longitudinal data sets. *Child Development*, *83*, 351–366. https://doi.org/10.1111/j.1467-8624.2011.01677.x

World Health Organization. (2013). Mental health action plan 2013–2020. Retrieved July 6, 2021 from https://apps.who.int/iris/bitstream/handle/10665/89966/9789241506021_eng.pdf;jsessionid=3BD40CE3415298634A2825326E3B47DC?sequence=1

https://doi.org/10.1017/S095457942100122X Published online by Cambridge University Press