Attendance Interventions:

Rapid Evidence Assessment

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The EEF aims to raise the attainment of children facing disadvantage by:

- identifying promising educational innovations that address the needs of disadvantaged pupils in primary and secondary schools in England;

- evaluating these innovations to extend and secure the evidence on what works and can be made to work at scale; and

- encouraging schools, government, charities, and others to apply evidence and adopt innovations found to be effective.

The EEF was established in 2011 by the Sutton Trust as lead charity in partnership with Impetus (formerly Impetus Trust) and received a founding £125m grant from the Department for Education. Together, the EEF and Sutton Trust are the government-designated What Works Centre for improving education outcomes for school-aged children.

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Executive summary

Introduction

This rapid evidence assessment examined the existing research on interventions that aim to improve pupils' school attendance and the characteristics of these interventions, based on a systematic search of existing literature. We searched for impact evaluations published since 2000 that evaluated an intervention with a primary goal of increasing school attendance and that reported on a measure of pupil attendance or absenteeism. This review aims to map the evidence and to inform grant making decisions for a forthcoming funding round on programmes and interventions in this area, in collaboration with the Youth Endowment Fund (YEF).

This report summarises the findings from 72 studies. While there is crossover between a number of approaches that have been researched, this evidence summary breaks down the studies into 8 topics (see below). These categories were established by the authors based upon the descriptions of the interventions in the studies. The primary reason for grouping interventions were to aid the process of meta-analysing the studies to inform the thinking behind funding new types of programmes and interventions in these areas. The 8 topics covered in this report are:

- Mentoring
- Parental engagement
- Responsive and targeted approaches
- Teaching of social and emotional skills
- Behaviour interventions
- Meal provision
- Incentives and disincentives
- Extracurricular activities

A number of additional strategies that do not fit into these categories are described in the **Other Approaches** section.

Key findings and implications

1. **There is large variation in the strategies that have been researched with the aim of improving pupil attendance.**
   The review identified 8 different categories of intervention and several additional strategies that were not categorised for thematic analysis. Some of the approaches targeted different barriers to attendance (e.g., non-attendance due to bullying vs non-attendance due to motivation). Some approaches were responsive to the particular barrier to attendance, while others attempt to change behaviour through offering additional benefits from attendance or punishments for truancy.

2. **The overall quality of evidence is weak, and more research is required.**
   The overall methodological quality of many of the studies was low due to concerns rising from the sample allocation and small samples and consequently were rated as high risk of bias. An adapted version of the Cochrane Risk of Bias 2 tool (Higgins et al. 2016) was used to assess the quality of studies. Few studies were rated as low risk of bias. Risk of bias aside, the systematic search found little or no research on many commonly used attendance strategies in English schools (e.g., the use of attendance officers). Future research should aim to fill these gaps. It should also be noted that almost all studies took place in the USA and very little research took place in English schools.

3. **The is some evidence of promise for several strategies including parental engagement approaches and responsive interventions that target the individual causes of low attendance**
   Positive impacts were found for both parental communication approaches and targeted parental engagement interventions. The average impact was larger for targeted parental approaches. Responsive interventions in which a member of staff or team use multiple interventions and target approaches specifically to the needs of individual pupils was also found to be effective. There may be crossover with these approaches and the

approaches used in English schools by attendance officers. While these results are promising, the quality of studies means that they should be treated with caution.

4. **Many of the interventions did not have sufficient evidence to reach a conclusion on effectiveness.**
There was not enough evidence to reach a conclusion for the efficacy of mentoring or behaviour approaches. Whole class teaching of social and emotional skills did have a positive impact overall, but the quality of the evidence is poor and there was significant variation in results, with the statistical uncertainty being consistent with negative impacts or larger positive impacts.

Limitations

It is important to note the limitations of applying existing evidence to the current context. The evidence in this review has taken place consistently outside of the context of the covid-19 pandemic. The review is designed to inform long-term research on successful strategies to improve attendance, so will not address attendance issues directly related to the pandemic.

The majority of studies (all but three from a total of 72) took place in schools in the USA. While these have the potential to be applicable to English context, there are some concerns around external validity given the sheer number. Furthermore, there was a lack of evidence on approaches commonly used within the English system (e.g., attendance officers). Additionally, the overall evidence base for attendance interventions that assess attendance or absenteeism is of limited quality. Using an adapted version of the Cochrane Risk of Bias 2 tool (Higgins et al. 2016), over two-thirds of the 72 studies included in the review were considered to have some concerns or a high risk of bias.

The overall scope of the review was limited due to time constraints and a narrowed inclusion criteria was selected for pragmatic reasons. We used broad search terms, rather than undertaking specific searches for each of the intervention areas we identified. We also used the priority screening function in the EPPI reviewer software to automatically exclude a large number of studies at title and abstract that had a lower probability of inclusion. It is therefore possible we may have missed some studies during our search and screening process. In addition, accompanying process evaluations that may have been published alongside our included studies have not been included in the review. Therefore, limited findings have been presented to address the research question on the facilitators and barriers of implementation and broader perspectives on how different aspects of interventions work together.

Introduction

## Background and rationale for the review

Poor school attendance is a significant problem in the UK and many other countries across the world. In 2019/20, it was reported as 4.9% overall, with special schools showing a higher rate equal to 10.5% and persistent absence at 13.1% in England (gov.uk 2020). Research has found that poor attendance at school is linked to poor academic attainment across all stages (Balfanz & Byrnes, 2012; London et al., 2016) as well as anti-social characteristics, delinquent activity and negative behavioural outcomes (Gottfried, 2014; Baker, Sigmon, & Nugent, 2001). However, evidence suggests that small improvements in attendance can lead to meaningful impacts for these outcomes.

Several previous systematic reviews have synthesised evidence on interventions for students who are chronically absent or truant and whole-school approaches. Maynard et al. (2012) examined empirical studies focused on improving attendance for chronically truant students and found overall, truancy intervention programs are effective, increasing attendance on average by 4.7 days per student. Studies did not measure longer-term outcomes, so we do not know if these effects continued after the intervention ended. Additionally, the authors found no significant differences in impact between where interventions were delivered (school, court or community-based) and the duration of the intervention (e.g., one day versus a school year). Sutphen et al. (2010) summarised the findings of 16 studies of truancy interventions but did not quantitatively calculate effect sizes. They identified some individual elements of promising truancy interventions, including parental communication and collaborative interventions. Freeman et al. (2019) summarised empirical research related to improving attendance or reducing tardiness in high schools and found the three most common elements of interventions with positive impact were skills training, family support and incentive-based strategies.

While these reviews focused on specific areas of attendance and absence, this review sought to provide an updated review that encapsulates interventions that focused broadly on attendance, including overall absences as well as unauthorised absences.

Figure 1 presents a simple theory of change that was designed to inform the inclusion criteria and the focus of the review. While improvements in attendance can have long-term impacts on attainment and social and behavioural outcomes, we focused primarily on activities, outputs and short-term outcomes, with scope to examine longer-term outcomes if these are explicitly included in our studies of interest.

Figure 1: Theory of Change
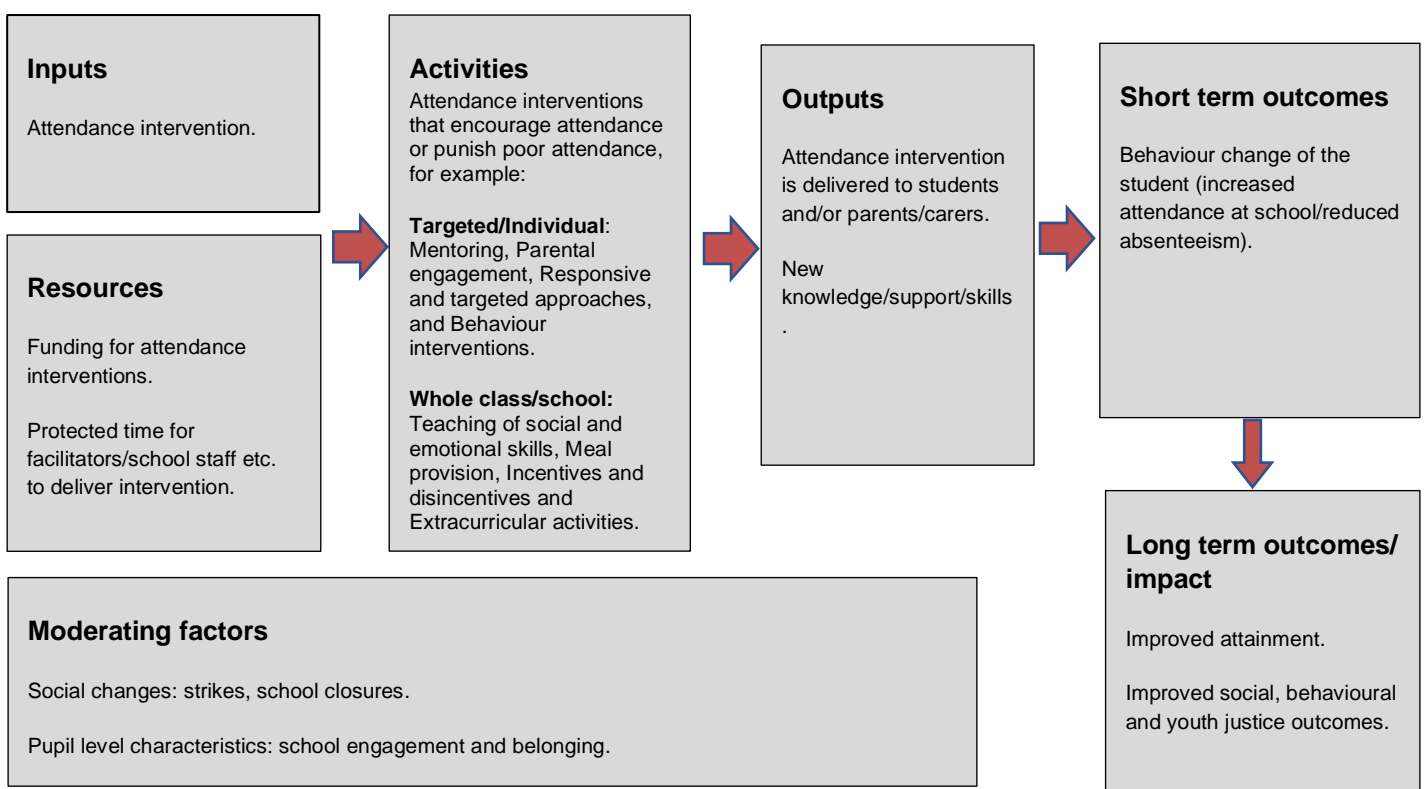
The aim of this review was to summarise the effects of interventions on school attendance behaviours, particularly the characteristics of these interventions and where evidence is available, examine which attendance intervention approaches are most likely to improve attendance among school-aged children, and the characteristics of effective implementation. The findings presented in this report will help inform wider thinking about attendance, exclusions and youth justice, particularly funding new programmes and interventions in this area in collaboration with the Youth Endowment Fund (YEF).

Research questions

The review aimed to answer the following research questions:

1) Do interventions that aim to increase pupil school attendance affect attendance behaviours of school-aged pupils?

2) What are the common elements of interventions that improve primary and secondary student attendance?

3) Are certain types of interventions (e.g., school-based, community-based) more effective at improving primary and secondary student attendance?

4) What are the barriers and facilitators to effective implementation of attendance interventions?

5) Do studies examine the extent to which improvements in attendance act as a mediating variable for attainment and behavioural outcomes? If so, what are these outcomes? (e.g., substance misuse, bullying perpetration and victimisation, mental health and wellbeing)

Methods

We undertook a rapid evidence assessment of existing evidence focusing on studies that were either randomised controlled trials (RCTs) or quasi experimental designs (QEDs). We were guided by the Cochrane Collaboration Rapid Reviews Methods Group guidance on producing rapid reviews (Garrity et al. 2021), as well as the Civil Service Rapid Evidence Assessment methodological guidance (Government Social Research Service, 2009). We drew on the Cochrane Handbook for systematic reviews of interventions where feasible (Higgins et al. 2021). A protocol for this rapid evidence assessment, including more detail about the methodological approach taken, was published on the EEF website and is available **here** (Kay et al. 2021). The full methodology is described in Appendix A.

Inclusion criteria overview

The scope of the review was informed by the research questions, resources and the timeframe. The rapid evidence assessment was confined by the following search criteria:

- **Study design:** studies that utilised a randomised controlled trial (RCT) or quasi experimental designs (QED) with a comparison group that received no treatment, treatment as usual or another treatment, e.g., comparison of two attendance interventions.
- **Population:** interventions with primary or secondary aged pupils, including those interventions that took place in alternative provision and special schools.
- **Intervention:** interventions that include school-aged pupils and aimed to increase attendance. These interventions could be both school-based such as mentoring or meal provision or take place outside of the school setting such as social-work meetings.
- **Outcome:** studies that reported a measure on pupil attendance or decreasing absenteeism were included.
- **Other criteria:** Adopting the approach of Maynard et el. (2012) and due to differences in educational systems, this review only included those studies conducted in the United States, Canada, the United Kingdom, and Australia. They had to be written in English, published in the year 2000 or after and published in journal articles or in grey literature.

How the review was conducted

Although the rapid evidence assessment followed an explicit and transparent search process, it is not described as a systematic review since some elements of the process were amended to suit time constraints, for example, an extensive search and full risk of bias assessment. We undertook the following steps to produce the rapid evidence assessment, as described in the protocol (further described in Appendix A):

1. Searched for relevant studies, including searching bibliographic databases (ERIC, PsychInfo, Google Scholar and Web of Science) and known sources of impact evaluations and grey literature (EEF Teaching and Learning toolkit, YEF Evidence and gap map). Checked the included studies of known systematic reviews of attendance, including Maynard et al. (2012).
2. Screened the search results for inclusion using the criteria described above using a two-stage process, first screening at title and abstract and then at full text level.
3. Extracted data from each included study, including information on methodological and substantive features, results, specifically effect sizes, associated confidence intervals where presented or other statistical information to allow us to calculate effect sizes and uncertainty, and any information around barriers and facilitators to successful implementation of the approach.
4. Due to the quick turnaround of the review, an adapted version of the domains from the Cochrane Risk of Bias 2 tool (Higgins et al. 2016) was used to appraise each study for risk of bias and to make a judgement on how much confidence to place in the findings of each included study (further information is provided in Appendix A).
5. Summarised the findings of each type of intervention and conducted meta-analysis where appropriate.

The PRISMA flowchart for inclusion and exclusion of studies at each stage of the process is shown in Figure 2.

Figure 2: PRISMA diagram of search process results

The initial searches returned 18,863 references, which were imported into the EPPI-reviewer software. After removing duplicates, 30 studies were reviewed by all members of the team to calibrate decisions on inclusion. There was agreement on all of the included studies. The priority screening function in EPPI reviewer was then used to order the remaining search results by probability of inclusion in the review, using the words in the title and abstract of the included and excluded papers from the training set. These were then screened on their title and abstract, until 100 studies were rejected in row. The remaining studies were also excluded on the basis that they were not prioritised by the screening function and therefore unlikely to meet the inclusion criteria of the review. Following this process, 205 references were

labelled for screening at full text. These studies were screened on full text, of which 79 were put forward to include in the review. During data extraction, a further 7 were excluded from the review for not meeting the inclusion criteria or having missing data. Data was extracted from 72 studies and findings fell into 8 categories based upon the description of interventions provided in the study. These are listed below and covered in detail in this report.

Categories of Interventions	Description	Targeted or whole school approach	Studies[1]
Mentoring	Pairing young people with an older peer or adult who acts as a positive role model.	Targeted	7
Parental Engagement	Schools engaging with parents to support and encourage their children to attend school. Two types: communication and targeted planning support.	Both	17
Responsive and targeted approaches	Responds to and targets attendance barriers in their design and approach.	Targeted	9
Teaching of social and emotional skills	Aim to build social and emotional skills that are correlated with school attendance.	Both	9
Behaviour interventions	Aim to reduce absence by solving school behaviour issues which may lead to more positive relationships at school.	Both	4
Meal provision	School breakfast and lunch programmes.	Whole school approach	15
Incentives and disincentives	Interventions that offer rewards for good behaviour (incentive) or punishments for poor behaviour (disincentive).	Whole school approach	5
Extracurricular activities	Provide additional educational opportunities outside of the regular curriculum.	Targeted	7
Other	Other interventions that did not fit these categories.	Both	9
TOTAL			72

Synthesis of included studies

After identifying our 72 included studies, we grouped them by the nine intervention categories presented above. We extracted data from each study in order to summarise the characteristics of each intervention, including duration, setting, and target population as well as the characteristics of the study including sample size, study design and participant characteristics. We extracted statistical data from each study to calculate standardised mean difference (Cohen's d) effect sizes and associated uncertainty. Finally, we assessed the risk of bias for each included study.

It was appropriate to meta-analyse effect sizes from studies in the following categories: parental engagement, responsive and targeted approaches and teaching of social and emotional skills. Factors that were considered to determine the feasibility of meta-analysis included number of studies, interventions that were conceptually similar based on design and the theory of change, similarities in control and intervention groups and whether studies present the necessary information to calculate effect sizes. Where we were unable to do meta-analysis, we undertook a narrative

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[1] Some studies are included in multiple sections since these interventions have several components.

synthesis, that is, a discussion of a range of effect sizes and associated confidence intervals alongside a discussion of the characteristics of the pool of studies, including their risk of bias.

The outcome of interest for this review was pupil attendance, which was typically reported as a continuous variable. That is, reported in terms of mean number of days attended or absent from school, mean number of classes absent, or mean percentage of days attended or absent. Therefore, we used statistical data on attendance or absenteeism extracted from each study to calculate effect sizes as standardised mean difference (SMD), interpreted as the magnitude of standard deviation changes in the outcome for the intervention group pupils as compared to pupils in comparison schools.

Limitations of the review

It is important to note the limitations of applying existing evidence to the current context, particularly the Covid-19 pandemic which has exacerbated school absences due to infections and isolation requirements set by the government. The studies considered in this review tested interventions and gathered data in a different context (studies published since 2000) and as such applicability needs to be carefully considered in line with the pressures schools face in responding to Covid-19 and the changing social, emotional and physical barriers faced by pupils and their families. It could well be the case that implementing the same interventions in the present context would result in different outcomes in similar populations.

The majority of studies (all but three from a total of 72) took place in schools in the USA. While these have the potential to be applicable to English context given some similarities in the system (e.g., access to free education), there are some concerns around external validity given the sheer number. Furthermore, there was a lack of evidence on approaches commonly used within the English system (e.g., attendance officers).

The domains from the Cochrane Risk of Bias 2 tool (Higgins et al. 2016) were adapted and used (e.g., randomisation) to assess risk of bias and how much confidence to place in the findings from the included studies. The overall evidence base for attendance interventions that assess attendance or absenteeism is of low quality. Over two-thirds of the studies included in the review were considered to have some concerns or a high risk of bias. While the findings can be helpful in illustrating the nature of evidence and the need for further rigorous evaluations in this area, they should be treated with caution.

The overall scope of the review was limited due to time constraints and narrowed inclusion criteria was selected for pragmatic reasons. We used broad search terms, rather than undertaking specific searches for each of the intervention areas we identified. We also used the priority screening function in the EPPI reviewer software to automatically exclude a large number of studies at title and abstract that had a lower probability of inclusion. It is therefore possible we may have missed some studies during our search and screening process. In addition, accompanying process evaluations that may have been published alongside our included studies have not been included in the review. Therefore, limited findings have been presented to address the research question on the facilitators and barriers of implementation and broader perspectives on how different aspects of interventions work together.

Mentoring

The intervention

Mentoring interventions involve pairing young people with an older peer or adult, who acts as a positive role model. In general, mentoring aims to build confidence and relationships, to develop resilience and character, or raise aspirations, rather than to develop specific academic skills or knowledge (EEF Teaching and Learning Toolkit, 2021). The interventions evaluated by studies included in this review needed to have some focus on young people's school attendance. All the studies included in this review targeted at risk pupils that were chronically absent from school, and in some cases were at risk of drop-out or not graduating from high school.

Mentors typically build relationships with young people by meeting with them one to one for about an hour a week over a sustained period, either during school, at the end of the school day, or at weekends. In all the included studies in this review, mentors needed to meet with their mentees at least once a week and sessions varied in length. Mentoring programmes also consisted of different types of activities. Some of the included mentoring programmes include academic support with homework or other school tasks. The subject of mentoring conversations varied and included attitudes towards school, exploration of a pupil's extracurricular interests, providing general emotional support or encouragement and aspirations for the future and careers. In some cases, the mentor was uncompensated for their time while others received a small stipend for acting in the role (Kraft, 2009). The included studies employed a range of different types of mentors, most commonly school staff but in some cases undergraduate students and volunteers from the local community.

We included eight studies, reporting on the impact of nine different mentoring programmes on pupil school attendance or absenteeism[2]. The characteristics of each of the included studies are described in table 1.

Findings and implications:

- The picture is mixed in terms of the impact of mentoring programmes on pupil attendance. However, there is a high risk of bias across most of the included studies and therefore results should be viewed with significant caution.
- We identified no studies with a low risk of bias. Two RCTs, each that took place in one school only and were rated as having some concerns due to small sample size and bias rising from the allocation process, found positive impacts on attendance.
- All studies compared outcomes for pupils receiving a school-based mentoring intervention to a group of pupils who experienced "business as usual" at school (that is, no mentoring).
- All included studies took place in schools in the USA, where the drivers of school absence may vary and the potential for mentoring to influence pupil attendance may be different to the UK context. Research is needed to understand the impact of mentoring programmes in England.

Table 1: Characteristics of Included Mentoring Studies

Authors and publication year	Intervention description	Country	Impact on pupil attendance (SMD = Effect size and 95% confidence interval)	Risk of bias assessment	Study design and sample size
Converse and Lignugaris/Kraft (2009)	Mentoring was offered to at-risk pupils aged 13 to 15 years old, based on high numbers of disciplinary referrals and unexcused absences at school. Staff at school were employed as mentors and received a small compensation for meeting regularly with their mentee. Weekly mentoring sessions took place over 18 weeks and focused on time commitment, prosocial behaviour, effective communicating and trust building.	USA	0.56[3] (-0.16, 1.28)[1]	Some concerns	Individual RCT (31 pupils, 1 school)
Dupuis (2012)	Mentoring was offered to at-risk pupils aged 10-14. Mentors could be staff at the school or recruits from the wider community. Mentors were expected to provide at least an hour of mentoring a week during the school year. Mentor activities with pupils included sharing meals at school, playing sport, providing emotional support and encouragement, providing academic support when needed and organisation of other activities such as arts or taking a walk. The programme also organised some group mentoring activities, including events for parents and holiday gatherings.	USA	0.19 (-0.24, 0.61)[1]	High risk of bias	Non-experimental study (83 pupils, 1 school)
Hilbert (2020) – mentoring programme one	Targeted pupils were 17-year-olds who were identified as at risk of not graduating based on chronic absenteeism from the previous year. Mentors met with pupils weekly, although in some cases this was daily. Mentors needed to report back to the head teacher on a monthly basis in terms of progress with the pupil.	USA	-0.66 (-1.21, -0.11)	High risk of bias	Non-experimental study (54 pupils, 1 school)
Hilbert (2020) – mentoring programme two	Mentors were volunteer staff at the school and were expected to meet with pupils at least twice a week. Pupils aged 14-17 were chosen for mentoring based on monitoring of attendance over previous months. They could request a	USA	0.29 (-0.13, 0.71)	High risk of bias	Non-experimental study (96 pupils, 1 school)

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[2] Hilbert (2020) reports on two mentoring programmes tested in two difference schools. They are reported separately in the table of characteristics.

[3] Positive effect sizes represent increases in attendance/reductions in absenteeism, while negative effect sizes represent decreases in attendance.

Authors and publication year	Intervention description	Country	Impact on pupil attendance (SMD = Effect size and 95% confidence interval)	Risk of bias assessment	Study design and sample size
	particular mentor if they already had a positive relationship with that member of staff.				
Mac (2017)	Mentoring was targeted at pupils aged 11-14 who had poor attendance, behaviour issues or needed support in class. Mentoring was provided by an external partner and mentors were either from the partner or from volunteers from the community. The programme focused on the close relationship between the mentor and pupil, monitoring of attendance, behaviour and course failure and implementation of interventions in response. Mentors were supposed to meet with the pupil for at least an hour every week.	USA	NA (unable to calculate effect size)	Some concerns	Non-experimental study (2243 pupils)
McQuillin and Lyons (2016)	Mentors were undergraduate students recruited in classes from departments linked to helping professions. The programme targeted pupils aged 11-14. The programme was based on an instrumental model of mentoring, that is, it was goal focused on behaviour or attainment but still placed value on a close mentor-mentee relationship. Each pupil received eight mentoring sessions, each lasting around 45 minutes. These were intentionally brief to test the effectiveness of a shorter mentoring relationship. All mentors received on-site supervision for each of the eight meetings and received a mentoring curriculum.	USA	0.82[1] (0.64, 1.00)	Some concerns	Individual RCT (72 pupils, 1 school)
Schnautz (2016)	The ISAGE program (Incentives for Students Achieving Great Expectations) targeted pupils aged 12-14 deemed to be at risk of school dropout based on their attendance and academic performance. Mentors were teachers at the school and received a small stipend for involvement in the programme and an additional amount if an individual mentee made progress in their academic attainment. They were required to meet with the pupil for at least one hour per week and monitor their attendance, behaviour and grades.	USA	0.06 (-0.40, 0.52)[1]	High risk of bias	Non-experimental study (72 pupils, 1 school)

[1]These studies originally reported decreases in days' absent rather than increases in attendance. The direction of the effect size has been reversed so that positive impacts consistently represent increases in attendance/reductions in absenteeism.

N.B. All effect sizes are expressed as standardised mean difference (SMD), interpreted as the magnitude of standard deviation changes in the outcome for the intervention group pupils as compared to pupils in comparison schools

What does the evidence say?

The range of effects reported for the impact of mentoring on pupil attendance was large, from a large negative impact on attendance for one of the mentoring programmes evaluated in Hilbert (2020) (E=-0.66 [-1.21, -0.11]) to a large positive effect reported in McQuillian and Lyons (2016) (E=0.82, [0.64,1.00]). Because of this, and because of the small number of includable studies and high risk of bias, we did not undertake a meta-analysis of mentoring studies. Results of individual studies are presented narratively below. Given the methodological concerns across the studies, **readers should view these results with significant caution.**

Two RCTs evaluated the impact of mentoring on pupil absence, one that employed school staff as mentors for at risk pupils (Converse and Lignugaris and Kraft (2009)) and one that employed undergraduate students as mentors (McQuillian and Lyons (2016)). Both found positive impacts on attendance, although both were rated as having some concerns in terms of bias and both only took place in one school respectively. Converse and Lignugaris/Kraft (2009) undertook an RCT to assess the impact of a mentoring programme where school staff acted as mentors for targeted pupils over an 18-week period. The programme targeted 13–15-year-olds that had a high number of unexcused absences and behaviour referrals. They found reductions in unexcused absences for pupils that received mentoring,

that is, improved attendance (E=0.56 [-0.16, 1.28]). McQuillian (2016) also found reductions in unexcused absences for pupils that received mentoring (E=0.82)

It should be noted a larger evidence base on mentoring interventions does exist – for example, **the Teaching and Learning Toolkit** has wider inclusion criteria than this rapid evidence assessment and identifies 44 studies that examine the impact of mentoring on academic attainment rather than attendance. The meta-analysis has found that the impact of mentoring varies but, on average, it is likely to have a small positive impact on attainment and they tend not to be sustained once the mentoring stops.

How secure is the evidence?

Of the eight studies included in the review, five were rated as having a high risk of bias and three were rated as having some concerns. Most studies employed a non-experimental design comparing a group of pupils receiving mentoring with a group of pupils not receiving mentoring but with very limited attempts to address confounding factors associated with the receipt of the intervention and attendance outcomes. In addition, all studies were conducted in one or two schools only, and so all were likely underpowered to detect effects on outcomes, as well as having limited generalisability beyond the very small pool of schools the studies were conducted in. None of the included studies evaluated mentoring in UK schools and so mentoring is yet to be rigorously evaluated in this context.

Overall, the evidence base linking mentoring interventions and pupil attendance is limited in size and has serious methodological flaws. Mentoring programmes may therefore represent a promising area for building the evidence base in England.

Parental engagement

The intervention

Parental engagement interventions are those that involve parents in supporting and encouraging their children to attend school. The studies included in the review identified two distinct types of parental engagement interventions: communication and targeted planning support with family members and/or guardians (e.g., Robinson 2018l; Shoppe 2019).

Parental communication interventions aim to increase awareness of the consequences of absenteeism or target commonly held parental misbeliefs undervaluing the important of regular attendance. The aim of these interventions are that greater awareness or eradicating misconceptions will lead to guardians' taking a more active role in improving their student's attendance.

Communication can occur in a range of ways including email, phone-calls, text messages and post, varying in quantity and time of day. Typically, these messages state information about the importance of attendance and add in specific information about the child's attendance history. One example of an included approach evaluated by **Robinson (2018)** consisted of delivering personalised information to parents of medium- and high-absence students through a series of mail-based communications. The mailers emphasised the value of regular school attendance in the early grades and reported the number of days their child had been absent alongside an insert that encouraged parents to reach out to others they could enlist to help improve their child's attendance. Another example was **Nudge letters** which were sent to parents/guardians of students identified as chronically absent. The letter focused on the importance of students' attendance to their learning and the school community and the number of days of school the student had missed the previous year alongside school contact details. The letter was translated into the most commonly spoken languages of families listed in the district records.

Targeted parental engagement interventions are responsive in nature and include approaches that involve staff having discussions with parents to gain information about the reasons for low attendance and collaboratively planning support students and their families need to overcome attendance barriers. These interventions are usually more intensive with families having access to multiple services e.g., counselling, mentoring, resources and family activities. Therefore, access to these interventions is usually assessed by monitoring attendance and identifying those pupils who are considered to have attendance issues and the approach is tailored to the needs of the pupil and the family. One example included in this review is the **Breakthrough Student Assistance Program** which responds to student and family concerns with individualised services, ongoing staff and parent training, and referrals to appropriate school or community-based services as needed. Components of the program include school counselling, support for military families, support for foster youth and foster parents, tobacco use prevention, intervention cessation, school achievement assessment and planning, an available district crisis team, suicide intervention, Insight drug and alcohol use intervention group, and the Breakthrough Family Conference.

We included 17 studies that evaluated the impact of parental engagement interventions on pupil school attendance or absenteeism. The characteristics of each of the included studies are described in table 2.

Findings and implications:

- There is a very small positive impact, on average for communication parental engagement on attendance and a small positive impact for other parental engagement interventions.
- For communication intervention studies, none were rated as high risk of bias and larger sample sizes were used in comparison to other intervention categories, indicating a subset of higher quality studies.
- Only one study took place in the UK context limiting their applicability. Further research is required to see if these interventions have a positive impact on attendance in English schools.

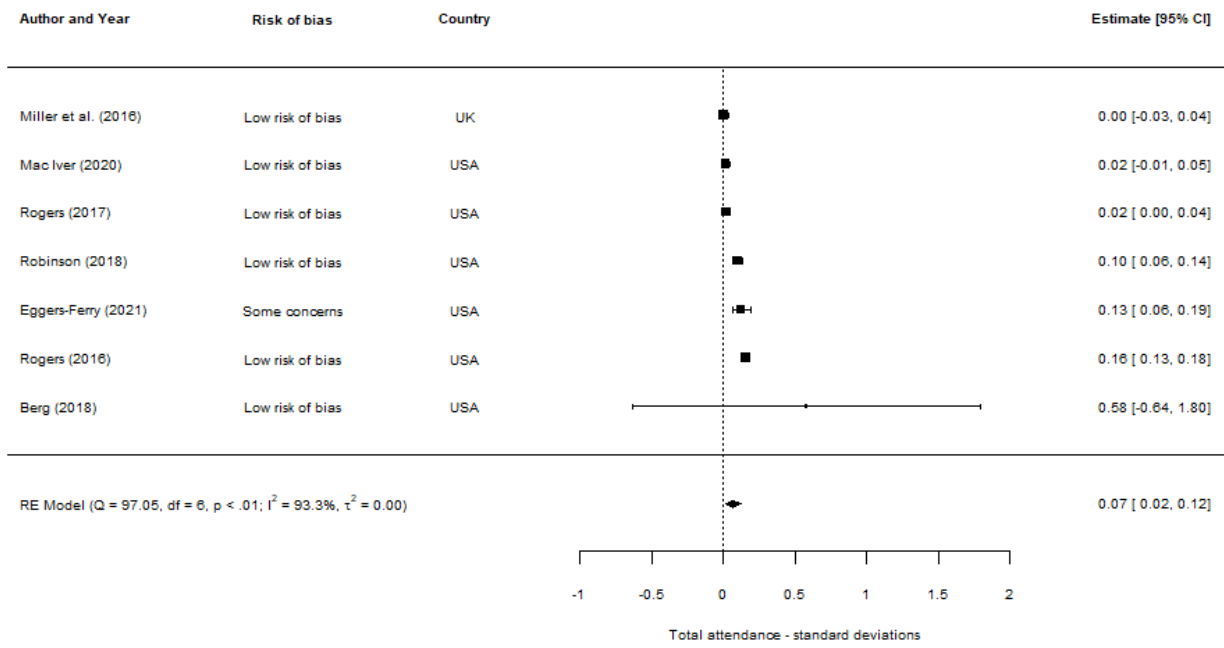Figure 1: Parental communications approaches (note that positive effects are to the right of the line)

Author and Year	Risk of bias	Country		Estimate [95% CI]
Miller et al. (2016)	Low risk of bias	UK		0.00 [-0.03, 0.04]
Mac Iver (2020)	Low risk of bias	USA		0.02 [-0.01, 0.05]
Rogers (2017)	Low risk of bias	USA		0.02 [0.00, 0.04]
Robinson (2018)	Low risk of bias	USA		0.10 [0.06, 0.14]
Eggers-Ferry (2021)	Some concerns	USA		0.13 [0.06, 0.19]
Rogers (2016)	Low risk of bias	USA		0.16 [0.13, 0.18]
Berg (2018)	Low risk of bias	USA		0.58 [-0.64, 1.80]
RE Model (Q = 97.05, df = 6, p < .01; I² = 93.3%, τ² = 0.00)				0.07 [0.02, 0.12]

Total attendance - standard deviations

Figure 2: Parental engagement approaches

Author and Year	Risk of bias	Country		Estimate [95% CI]
Smolkowski (2017)	High risk of bias	USA		-0.05 [-0.13, 0.02]
Shoppe (2019	Some concerns	USA		-0.00 [-0.18, 0.18]
Thomas (2011)	Low risk of bias	USA		0.10 [-0.05, 0.24]
Clayton (2012)	High risk of bias	USA		0.12 [-0.35, 0.58]
Rosales (2013)	High risk of bias	USA		0.13 [-0.67, 0.93]
Sheldon (2007)	Low risk of bias	USA		0.14 [-0.20, 0.47]
Judson (2008)	High risk of bias	USA		0.39 [0.28, 0.50]
Shoenfelt (2006)	Some concerns	USA		0.45 [-0.12, 1.02]
RE Model (Q = 46.09, df = 7, p < .01; I² = 77.5%, τ² = 0.03)				0.13 [-0.02, 0.28]

Total attendance - standard deviations
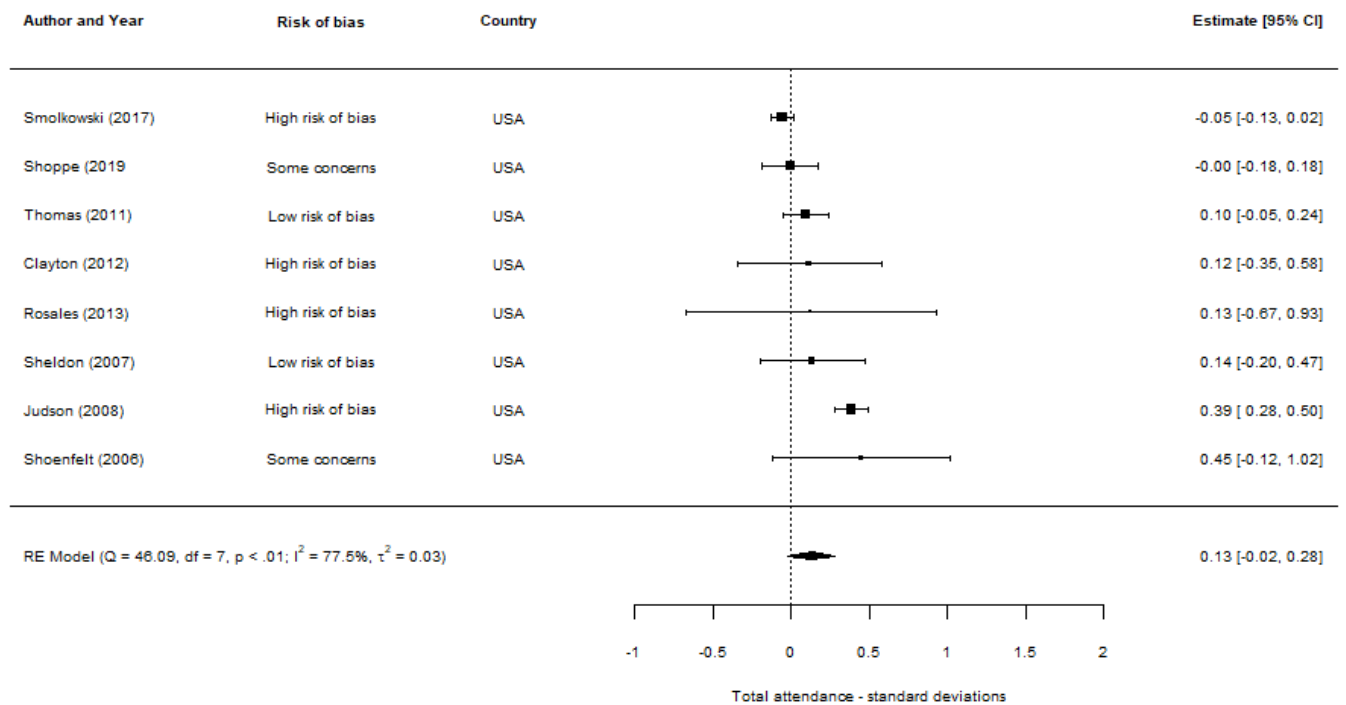
Table 2: Characteristics and Results of Included Parental Engagement studies

Parental communications interventions					
Study	**Intervention description**	**Country**	**Impact on pupil attendance (SMD = Effect size (and 95% confidence interval)**	**Risk of bias**	**Study design and sample size**
Berg (2018)	The ATI-UP intervention is a preventative, school-wide approach that guides school teams to create a multi-tiered, multi-system framework to increase attendance. These systems include a problem-solving team, systems to increase parental/community engagement and systems to promote attendance, and motivation for improvement in behaviour. Parental engagement involves communicating the importance of attendance.	USA	0.58 (-0.64, 1.8)	Low risk of bias	Cluster RCT (10285 pupils in 27 schools)
Eggers-Ferry (2021)	The personalised text message intervention was designed to be embedded into the school procedures so it could be conducted daily and weekly as part of staff routines. Four clerical members incorporated text messages into their communication routines for students who were late to school during the 2019-2020 school year and thirteen teacher volunteers were recruited to send text messages to students and parents once a week who had accumulated 64 missed class period (9.5 days).	USA	0.13* (0.06, 0.19)	Some concerns	Non-experimental study (6,410 pupils)
Robinson (2018)	The intervention consisted of delivering personalised information to parents of medium- and high-absence students through a series of mail-based communications. The mailers emphasised the value of regular school attendance in the early grades and reported the number of days their child had been absent alongside an insert that encouraged parents to reach out to others they could enlist to help improve their child's attendance.	USA	0.1* (0.06, 0.14)	Low risk of bias	Individual RCT (10,967 pupils, 10 school districts)
Rogers (2016)	The intervention comprised of multiple communication with parents/guardians during the school year to improve attendance. Communications consisted of (1) Encourage – reaching out to guardians and encouraging them to improve student attendance, (2) Self – informing guardians about their students' absences and (3) Norms – comparing students' absences to what's 'normal'.	USA	0.16* (0.13, 0.18)	Low risk of bias	Individual RCT (30,000 pupils)
Rogers (2017)	The intervention consisted of postcards sent to guardians – one encouraging guardians to improve their student's attendance and the other encouraging guardians to improve their student's attendance and adding specific information about the child's attendance history.	USA	0.02* (0.00, 0.04)	Low risk of bias	Individual RCT (42,561 pupils)
Mac Iver (2020)	This intervention consists of the district sending out 'nudge letters' to parents/guardians of students identified as chronically absent. The letter focused on the importance of students' attendance to their learning and the school community and the number of days of school the student had missed the previous year alongside school contact details. The letter was translated into the most commonly spoken languages of families listed in the district records.	USA	0.018 (-0.01, 0.05)	Low risk of bias	Non-experimental study (46,007 pupils)

Miller et al. (2016)	The Parent Engagement Project (PEP) was a school-level intervention designed to improve pupil outcomes by engaging parents in their children's learning. The intervention involved text messages being sent to parents using school communications systems, such as Schoolcomms. Texts informed parents about dates of upcoming tests, whether homework was submitted on time, and what their children were learning at school.	UK	0.00 (-0.03, 0.04)	Low risk of bias	Cluster RCT (7436 pupils, 36 schools)
Marvul, J. (2010)	The intervention was threefold (a) monitoring of attendance and parent notifications (b) participation in a moral character class and (c) participation in a club sports activity. Parents received calls at 6am every day from the researcher to inform them about absences, child's triumphs and upcoming events. They were asked to become partners in encouraging students to attend school.	USA	Unable to calculate a reasonable effect size. Reported as a positive impact on attendance.	Some concerns	RCT (40 students 1 school)
	Targeted Parental engagement interventions				
Judson, J (2008)	The Even Start family literacy program focuses on early childhood education, adult literacy and parenting education. The program focuses on improving the education of children and adults, integrating early childhood education and adult education for parents, providing in-home services and centre-based activities, facilitating access to community resources, empowering parents as advocates for their children, building effective partnerships between schools and families.	USA	0.39* (0.28, 0.5)	High risk of bias	Non-experimental study (318 pupils)
Clayton, M (2012)	The intervention is a multi-component three tier approach consisting of positive reinforcement and rewarding good attendance, and then parental engagement and finally counselling for pupils with poor attendance. Each tier lasts 20 days before moving to the next tier. Positive reinforcement consisted of the teacher reinforcing good behaviour and encouraging pupils to return then following day combined with weekly attendance certificates and a visit to the treasure box to select a prize. The second tier comprised of a conference between the teacher and the parents to identify issues leading to the unexcused absences and to brainstorm effective solutions to the problem. A daily visual reminder was sent home. students with 4 or more absences in 20 days received all three levels, the third level consisted of a referral by the teacher to a counsellor for individualised assessment and determination of need for more intensive individualised services.	USA	0.12 (-0.35, 0.58)	High risk of bias	Non-experimental study (72 pupils, 1 school)
Rosales, C. (2013)	The stay in school truancy program consists of multi-components such as social services including drug and alcohol abuse counselling and other social services such as food stamps, healthcare services and mental health related services. The program also helps schools with basic policies such as warning letters and meetings with teachers, students, administrators, counsellors, parents and the court system to address problems brought on by truancy.	USA	0.13 (-0.67, 0.93)	High risk of bias	Non-experimental study (24 school districts)

Sheldon, S. (2007)	The National Network of Partnerships Schools (NNPS) program consists of membership schools receiving tools and guidelines for establishing, maintaining, and improving school-wise partnership programs that reach out to the families of all students. The model indicates as a first step in establishing a partnership program, schools must form an action team for partnership (ATP). The ATP members include teachers, school administrators, parents, community members, and, at the high school level, students. The ATP is responsible for organising and implementing each school's involvement activities. The school ATP is encouraged to link family- and community involvement activities to specific goals, consistent with and supportive of those set by the school improvement team or school council.	USA	0.14 (-0.2, 0.47)	Low risk of bias	Non-experimental study (138 schools)
Shoenfelt, E. (2006)	The TCDP is a voluntary counselling program that bridges the communication barrier between parents and schools to address truancy issues. The TCDP includes mostly students who statutorily would be referred to court. After initial consent from parents to participate in the program, the child's school is asked to perform a home visit to investigate factors operating in the home of the student. The Family Resource Centre at each school is in direct contact with the judge, and the results of the student's specific home situation are made known to the informal court. Once all scholastic and personal data on the child are collected, the judge meets with the children, parents, counsellors, and principals and performs an initial interview, which typically lasts 15 to 30 minutes. For each student enrolled in the TCDP, a case plan is generated that outlines the responsibilities for both students and parents, as well as for the school.	USA	0.45* (-0.12, 1.02)	Some concerns	Non-experimental (144 pupils 4 schools)
Shoppe, R. (2019)	The Breakthrough Student Assistance Program responds to student and family concerns with individualized services, ongoing staff and parent training, and referrals to appropriate school or community-based services as needed. Components of the program include school counselling, support for military families, support for foster youth and foster parents, tobacco use prevention, intervention cessation, school achievement assessment and planning, an available district crisis team, suicide intervention, Insight drug and alcohol use intervention group, and the Breakthrough Family Conference.	USA	-0.002 (-0.18, 0.18)	Some concerns	Non-experimental study (210 pupils)
Smolkowski et al, (2017)	The positive family support intervention is a school-based approach providing a range of family management interventions for middle school children and their caregivers. The type of support is tailored according to the level of risk, with graded intervention intensity to address student at the universal, selected and indicated levels. Universal support includes schools sharing evidence-based parenting information, such as brochures, books, worksheets, and videos, alongside outreach activities such as family activities at the school. Selected level comprises of schools implementing incentives to promote student behavioural change and additional attendance and homework support and emails and text messages sent home. The indicated level offers more intensive support for high-risk students including family check-ups, support sessions and parent management training.	USA	-0.05* (-0.13, 0.02)	High risk of bias	Cluster-RCT (12,912 Pupils in 41 schools)
Thomas (2011)	The Truancy Assessment and service centre (TASC) is a community-based, intensive case management program that uses a staged approach to engage children and their families based on risk data. Once a child has missed give unexcused days, a referral is made to the appropriate TASC office and case managers assess the child's risk for continued truancy as low or high. Those that are deemed low-	USA	0.10* (-0.05, 0.24)	Low risk of bias	Non-experimental study (700 pupils)

	risk, warning letters are sent to families and with those that are high, TASC case managers begin the intervention process by planning a family conference, and a case management plan of required services is developed.				
Johnston, P. (2018)	A structural family therapy intervention with school refusing students (missing 4 or more days in a given 6-week period) and adults in the school setting that aimed to restructure adult and youth sub-systems to collaborate with each other on agreed upon steps supporting youth attendance and success at school. With families of school-refusing youth that did not participate in family therapy at school, a relationship building intervention that consisted of a 30-minute basketball games were offered to those at school.	USA	0.22 (-0.08, 0.97)	Some concerns	Non-experimental study (52 students, 1 school)

* These studies originally reported decreases in days' absent rather than increases in attendance. The direction of the effect size has been reversed so that positive impacts consistently represent increases in attendance/reductions in absenteeism.

What does the evidence say?

Targeted parental engagement interventions

We were able to include eight of the targeted parental engagement studies in a meta-analysis exploring the average impact on pupil attendance / absenteeism. One study within this category (Johnston, 2018) sought to do intensive structural therapy with families but no parents were recruited, so it has not been included in the evidence summary.

The overall impact of targeted parental engagement studies was small and positive SMD ES=0.13 (-0.02, 0.28).[4] The small number of studies (9) and the varying risks of bias mean this finding should be interpreted with caution. However, despite the large weighting Smolkowski (2017) has on the outcome, which reported a very small negative impact, the average impact of targeted parental engagement interventions is a positive one. Weighting refers to the influence the study has on the overall pooled effect size. In this case the large sample size in the Smolkowsi's (2017) study compared to the others means that it is weighted more highly in the meta-analysis. It is important to note the author identifies challenges with implementation which could contribute to their effect size. All the other studies included in this category had small sample sizes and occurred in a small number of schools. There is not enough research to identify which specific elements of the targeted parental engagement approaches were most impactful on average.

A key component of the interventions was building effective partnerships between schools and parents, through discussions, meetings and conferences. The purpose of these partnerships was to identify issues leading to absences and collaboratively source effective solutions to the problems. All interventions in this category were multi-component in nature, featuring a range of services available to parents and pupils. Some examples of services include counselling, parent training and sharing of resources. Due to the tailored nature of these interventions, some of the approaches included services related to specific reasons for absences, for example, crisis teams and drug and alcohol support groups.

Similar to stepped care, several of the parental engagement interventions are tiered, and get more intensive based on an assessment of risk of the students. Those who either are deemed high risk (e.g., high rates of absence), or those where other 'light-touch' interventions have not been successful are offered access to multiple services planned with their families. An example is, **'The positive family support'** intervention which is a school-based approach providing a range of family management interventions for middle school children and their caregivers. The type of support is tailored according to the level of risk, with graded intervention intensity to address student at the universal, selected and indicated levels. Universal support includes schools sharing evidence-based parenting information, such as

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[4] Weighted standardised mean difference of 0.13 (-0.02, 0.28) using a random effect model.

brochures, books, worksheets, and videos, alongside outreach activities such as family activities at the school. Selected level comprises of schools implementing incentives to promote student behavioural change and additional attendance and homework support and emails and text messages sent home. The indicated level offers more intensive support for high-risk students including family check-ups, support sessions and parent management training.

Parental engagement communication interventions

We were able to include seven of the included communication parental engagement studies in a meta-analysis exploring the average impact on pupil attendance / absenteeism. One study (Marvul, 2019) met the inclusion criteria and reported a positive impact on attendance, but we could not calculate a plausible effect size.

The overall impact of communication parental engagement studies was a very small positive impact SMD ES=0.07 (0.02, 0.12).[5] Six of the seven studies included in the meta-analysis were considered low risk of bias, primarily because they employ large sample sizes (typically over 5,000 student) and control for confounding factors. While the number of studies included in this analysis is small, and they were mostly conducted in the USA, we can have some confidence in this finding.

While the overarching premise of the interventions in this category was to communicate and send messages to parents, the design models varied considerably. Some of the interventions consisted of one message type that was sent to parents e.g., nudge letters focusing on the importance of students' attendance to their learning and the number of days the school had missed the previous year. Other interventions comprised of different types of messages to improve attendance. For example, in one study Communications consisted of (1) Encourage – reaching out to guardians and encouraging them to improve student attendance, (2) Self – informing guardians about their students' absences and (3) Norms – comparing students' absences to what's 'normal'. There was not enough data to compare the effectiveness between these types of interventions.

How secure is the evidence?

Of the 17 parental engagement studies included in the review, five are rated as high risk of bias, four as having some concerns and eight as low risk of bias. Higher ratings were given to those studies that have small samples or made limited attempts to address confounding. While there is a variety in their ratings of risk of bias, all of the studies that were meta-analysed for parental engagement communication interventions were low risk of bias, with all employing larger sample sizes comparatively to the other interventions. This suggests, more confidence can be placed when interpreting the very small positive effect size. However, the findings overall do have limited scope for generalisability, in particular applicability to the English context since all but one (Miller et al. 2016) of the studies took place in the USA, particular for targeted parental engagement interventions since the barriers to attendance may be context specific. However, for communication parental engagement interventions, it is plausible that the theory of change, that is informing parents about the value of schooling or about their own child's attendance so that they will encourage their child to attend school, could be transferrable to the English context.

Overall, these interventions indicate a promising area for building the evidence base in England.

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[5] Weighted standardised mean difference of 0.13 (0.02, 0.12) using a random effects model.

Responsive and targeted approaches to attendance

The intervention

Many approaches to improving attendance to not have a specified "intervention" but instead aim to be responsive to the reasons for low attendance by an individual pupil. These approaches are often multi-component and may involve one to one support for the pupil that has low attendance. One of the key characteristics across all of these approaches is monitoring and identification of pupils that need attendance support and the reasons for low attendance. Some of the approaches combine the targeting of barriers with the positive re-enforcement of good behaviour.

The responsive interventions are delivered by a variety of staff from social workers to teachers. One example of an included approach is a called **Social Worker Teacher Classroom Collaboration** (Viggiani 2002). In this approach a social worker identifies barriers to attainment and attendance and pro-actively intervenes to overcome them. An example intervention described in the report is identifying an older "walking buddy" for a pupil with high absences due to lack of transportation. Another example intervention used a three-tier model, which combined whole class rewards for good attendance, monitoring and parent communication for pupils with lower-than-average attendance, and individualised support from a guidance counsellor for those with the lowest attendance rates.

Approaches that examine the presence of social workers or mental health provision within schools only but without any other targeted attendance interventions have been included a later section (see other approaches). Approaches that focus on one-to-one mentoring relationships are described in Mentoring (above).

We included 9 studies that evaluated the impact of responsive and targeted approaches to attendance on pupil school attendance or absenteeism. The characteristics of each of the included studies are described in table 3.

Findings and implications:

- The average impact of responsive and targeted approaches to attendance is positive.
- There are a small number of studies and very few studies with low risk of bias. None of the studies have taken place in the United Kingdom. More research is required to estimate the impact of these approaches in English schools.
- Common characteristics of these approaches include staff monitoring of pupil absences, the identification of the causes of absences and then responsive, individualised interventions that tackle those causes.
- There was some variation in the people delivering the interventions and the intensity of the chosen interventions – some of the approaches had very intensive responses, such as home visits by social workers.

Table 3: Characteristics and results of Included Responsive and Targeted Approaches studies

Study	Intervention description	Country	Impact on pupil attendance (SMD Effect size (and 95% confidence interval)	Risk of bias	Study design and sample size
Rosales (2013)	The **Stay in School Truancy Program** helps schools with basic policies such as warning letters and meeting with teachers, students, administrators, counsellors, parents, and the court system to remedy problems brought on by truancy. Participants are offered social services such as mental health screenings, drug abuse counselling, food stamps, and other services for young mothers and families. GPS monitoring devices and more rigorous counselling for students with chronic truancy.	USA	0.13[1] (-0.67, 93)	High risk of bias	Non-experimental study (24 school districts)

Study	Intervention description	Country	Impact on pupil attendance (SMD Effect size (and 95% confidence interval)	Risk of bias	Study design and sample size
Martha Abele Mac Iver (2011)	The primary component of the program was identifying at-risk pupils and the provision of a facilitator or adult advocate who served as a link between these (around 60) program students and the school, encouraging students regarding attendance, their academic coursework, and personal issues.	USA	0.04 (-0.22, 0.30)	Some concerns	RCT (225 pupils, 2 schools)
Clayton (2012)	This study examined a three-tier approach to managing attendance. Positive re-enforcement and rewards were provided to the whole class. The secondary level of intervention was a conference between the teacher and the parents to identify issues leading to the unexcused absences and to identify effective solutions to the problem. The third level consists of referral by the teacher to a guidance counsellor for individualised assessment and determination of need for more intensive individualised services. Pupils with 4 or more absences in 20 days receive all three levels.	USA	0.12[1] (-0.35, 0.58)	High risk of bias	Non-experimental study (72 pupils, 1 school)
Berg (2018)	The **ATI-UP** intervention was a multi-tier system that included established a team to monitor and review attendance, including an administrator, interventionist and teacher. The intervention would then track attendance and intervene including through parental communication, promoting attendance and using motivation systems.	USA	0.58 (-0.64, 1.8)	Low risk of bias	Cluster RCT (10285 pupil in 27 schools)
DeSocio et al. (2017)	This multi-faceted intervention included a school based co-ordinator and a number of interventions such as mentoring, family involvement, school-based health centre enrolment, and tutoring.	USA	0.39[1] (-0.05, 0.82) (Reduction in pupil absence / Increase in attendance)	High risk of bias	Individual RCT (92 pupils, 1 school)
Shoppe, R. (2019)	The **Breakthrough Student Assistance Program** responds to student and family concerns with individualised services, ongoing staff and parent training, and referrals to appropriate school or community-based services as needed. Components of the program include school counselling, support for military families, support for foster youth and foster parents, tobacco use prevention, intervention cessation, school achievement assessment and planning, an available district crisis team, suicide intervention, Insight drug and alcohol use intervention group, and the Breakthrough Family Conference.	USA	-0.002 (-0.18, 0.18)	Some concerns	Non-experimental study (210 pupils)
Mac (2019)	The EWI team model seeks to engage all of the important school adults who are in contact with a potential dropout. The model provides guidelines, training, and a sequenced approach to guide the team in monitoring student outcomes and providing appropriate interventions. Support might include assisting with family issues to examining specific academic struggles.	USA	0.27 (0.09, 0.45)	Low risk of bias	Non-experimental study (7985 pupils in 40 schools)
Viggiani (2002)	Social workers and teachers collaborating directly in the classroom. One teacher and one social worker in the classroom working 2 full school days per week. Directly dealing with behaviour, attendance issues. Sometimes the social worker would visit absent pupils homes.	USA	0.44[1] (-0.01, 0.89)	Some concerns	Non-experimental study (76 pupils in 1 school)

Study	Intervention description	Country	Impact on pupil attendance (SMD Effect size (and 95% confidence interval)	Risk of bias	Study design and sample size
Thomas (2011)	The **Truancy Assessment and service centre (TASC)** is a community-based, intensive case management program that uses a staged approach to engage children and their families based on risk data. Once a child has missed give unexcused days, a referral is made to the appropriate TASC office and case managers assess the child's risk for continued truancy as low or high. Those that are deemed low-risk, warning letters are sent to families and with those that are high, TASC case managers begin the intervention process by planning a family conference, and a case management plan of required services is developed.	USA	0.10[1] (-0.05, 0.24)	Low risk of bias	Non-experimental study (700 pupils)

1. * These studies originally reported decreases in days' absent rather than increases in attendance. The direction of the effect size has been reversed so that positive impacts consistently represent increases in attendance/reductions in absenteeism.

N.B. All effect sizes are expressed as standardised mean difference (SMD), interpreted as the magnitude of standard deviation changes in the outcome for the intervention group pupils as compared to pupils in comparison schools

What does the evidence say?

The overall impact of targeted and responsive interventions was a small positive impact SMD ES=0.14 (0.04, 0.25).[6] The small number of studies and some concerns over risk of bias mean that this result should be treated with caution. This is the average impact of multi-component approaches that monitor and responds to pupil needs. There is not enough research to identify which specific interventions within the multi-component approach were most impactful on average.

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[6] Weighted standardised mean difference of 0.14 (0.04, 0.25) using a random effect model.

Figure 3: Forest plot of pupil attendance outcomes for responsive and targeted approaches
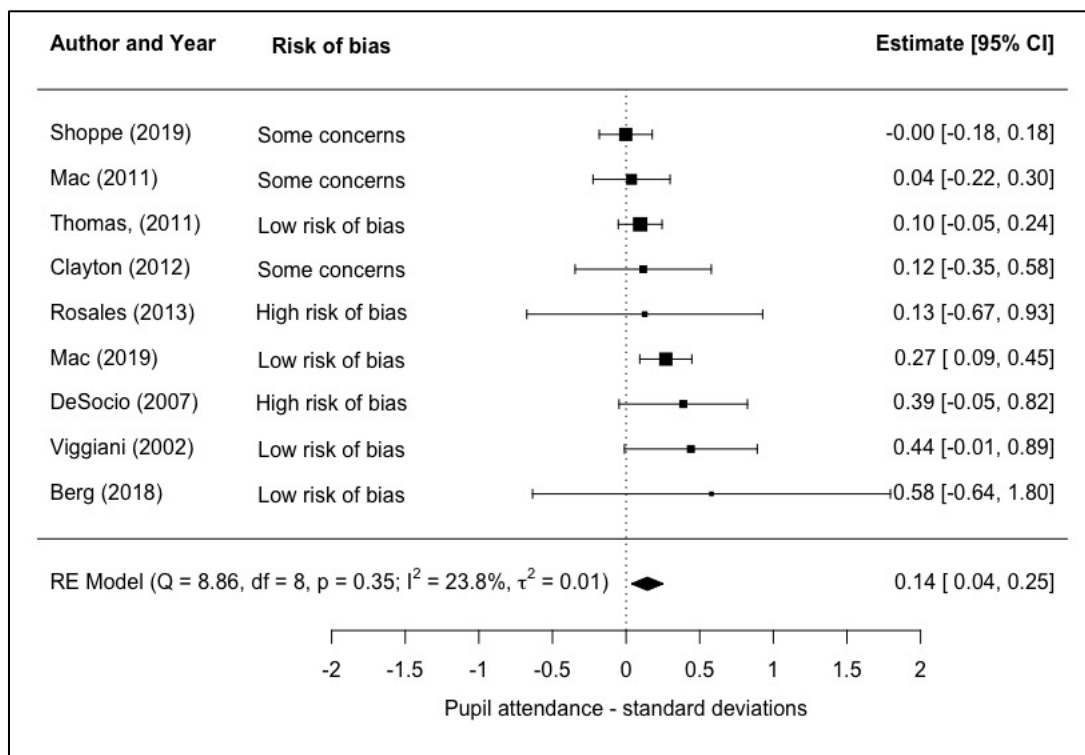
All of the included approaches featured close monitoring of pupil absences – usually by a member of staff with specific responsibility to track attendance. Several of the approaches featured multiple "tiers" of intervention, in which whole class attendance support was provided to all pupils but increasingly intensive interventions were applied for pupils that had high numbers of absences (Clayton, 2012, Thomas 2011). Many of the approaches included intensive interventions for the pupils that had high absence rates, including home visits, counselling, and developing case management plans with social workers. Some of the approaches involve dealing with very specific barriers for pupils, such as health issues, drug-use, teen pregnancy. One of the approaches, did not detail specific interventions at the individual level, but aimed to be responsive at the whole class level, with a team monitoring common causes of absence and applying whole class interventions (Berg 2018).

How secure is the evidence?

Of the nine studies included in the meta-analysis, four are rated as low risk of bias. Two of the studies have high risk of bias, while the other three have some risk of bias concerns. While the results are small and positive, in general they lack statistical power due to the use of small samples, and therefore replication research with larger number of participants would be needed. A further challenge when interpreting these findings is around the transferability of the approaches to the English school system. All of the studies that detailed these responsive approaches took place in the USA. While the underlying theory of identifying causes of absence and using targeted responses to mitigated absence, is likely to be transferable, many of the specific aspects of the programmes (for example, the challenges and barriers to attendance) may be influenced by context. These programmes may represent a promising area for building the evidence base in England.

Teaching of social and emotional approaches

The intervention

These approaches aim to build social and emotional skills and outcomes that have been shown to be correlated with school attendance. For example, approaches might build pupils resilience or self-regulation skills that might assist when social and emotional barriers to attendance do arise.

Interventions are often delivered by school counsellors or classroom teachers and are delivered either in regular classroom time or as part of school assemblies. The type of skills varies between different approaches, interventions identified in this review have targeted goal setting, reducing test anxiety, topics related to self-concept, and others. For example, multiple studies looked at the Student Skills Successes (SSS) programme, in which counsellors teach skills such as goal setting and performing under pressure.

We included 9 studies that evaluated the impact of teaching social and emotional skills on pupil school attendance or absenteeism. The characteristics of each of the included studies are described in table 4.

Findings and implications

- The average impact of whole class teaching of social and emotional skills on attendance is small and positive, but there is high variation between studies and the statistical uncertainty around the result includes negatives impacts, as well as higher positive impacts. However, there is large variation in results across studies – with some interventions reporting strong positive impacts (e.g., **Positive Action [Snyder, 2010]**). Other approaches were associated with decreases in attendance or null impacts.
- None of the studies took place in English schools and only two studies were considered to have a low risk of bias.
- While the teaching of social and emotional skills may have other benefits, more research is required to understand whether, and in what contexts, these interventions have an effect on pupil school attendance.

Figure 4: Forest plot of pupil attendance outcomes for teaching of social and emotional skills
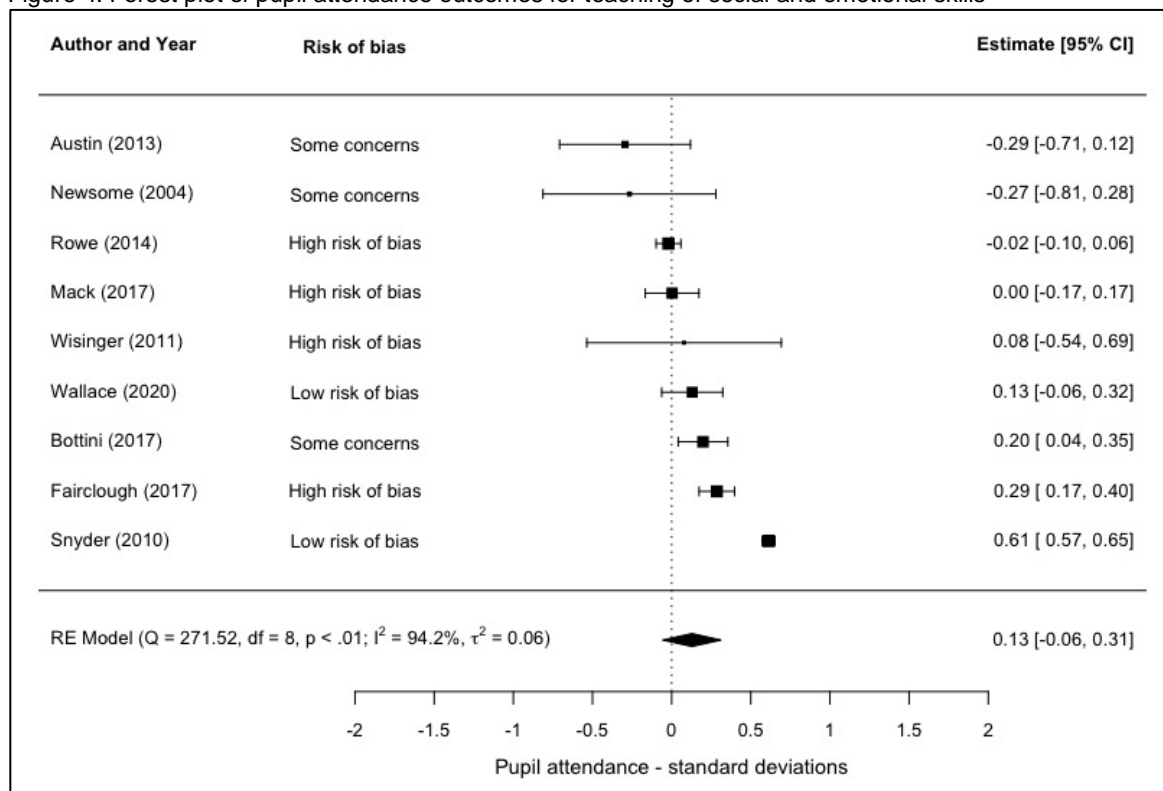
Table 4: Characteristics and results of studies that evaluated teaching social and emotional skills

Study	Intervention description	Impact on pupil attendance (Effect size (and 95% confidence interval)	Risk of bias	Study design and sample size
Austin (2013)	The intervention time frame consisted of one 9 week grading period. During the regular language arts class, a counsellor provided instruction to all of the students in the quasi-experimental group.. The counselor provided the **Effective Teens** training multimedia presentation activity in four sessions during a 3 week period. The lessons lasted approximately 45 minutes each and were delivered at the beginning of the class.	-0.29[1] (-0.71, 0.12)	Some concerns	Non-experimental study (110 pupils, one school)
Bottini (2017)	This was a comprehensive school counseling program called **Student Skills Successes Programme** that teaches skills introduced including (a) goal setting and progress monitoring; (b) building a community of caring, support, and encouragement; (c) building cognition and memory skills; (d) performing under pressure and managing test anxiety; and (e) building healthy optimism.	0.20[1] (0.04, 0.35)	Some concerns	Cluster RCT (12984 pupils, 30 schools)
Fairclough (2017)	Evaluation of the **Student Skills Successes Programme (SSS),** which is classroom program is a comprehensive, evidence-based, counselor-led program that supports the development of key skills.	0.29[1] (0.17, 0.40)	High risk of bias	Cluster RCT (1254 pupils,30 schools)
Mack (2017)	Evaluation of the **Student Skills Successes Programme (SSS),** which is classroom program is a comprehensive, evidence-based, counselor-led program that supports the development of key skills.	0.00 (-0.17, 0.17)	Some concerns	Non-experimental study (4321 pupils, 30 schools)
Newsome (2004)	This was a **solution-focused brief therapy** intervention that consisted of 8 sessions delivered by social workers. The therapy included goal setting that focused on academic and school goals and the use of purposeful language and the use of scaling questions with the whole class.	-0.27[1] (-0.81, 0.28)	Some concerns	Non-experimental study (52 pupils, 1 school)
Rowe (2014)	The **Rachel's Challenge Elementary Program** is a K-5 program that consists of eight components: professional development for staff, a kick-off assembly for students, informational materials for parents and stakeholders, guidance lessons, school displays, a Kindness and Compassion Club, activities, and a year-end celebration. The purpose of this study was to evaluate the effect of Rachel's Challenge Elementary Program on student attendance and academic achievement rates.	-0.02 (-0.10, 0.06)	High risk of bias	Non-experimental study (1633 pupils, 12 schools)
Snyder (2010)	**Positive Action** consists of K-12 classroom curricula, of which only the elementary curriculum was used in the present randomised trial; a school-wide climate development component, including teacher/staff training by the developer, a PA coordinators (principals) manual, school counsellor program, and PA coordinator/committee guide; and family- and community-involvement programs." "The sequenced elementary curriculum consists of 140 lessons per grade, per academic year, offered in 15-20 minutes by classroom teachers.	0.61[1] (0.57, 0.65)	Low risk of bias	Cluster RCT (10,020 pupils 20 schools)
Wallace (2020)	In **Working on What Works (WOWW)**, an MFT or other mental health professional serves as a coach or consultant who provides weekly feedback sessions to a classroom on positive progress toward learning goals. During each WOWW classroom session, the WOWW coach observed the classroom for 40 minutes and wrote his or her strength-based compliments either on sticky notes to hand out to the students or on notes for him or herself.	0.13[1] (-0.06, 0.32)	Low risk of bias	Cluster RCT (558 pupils, 10 schools)

Study	Intervention description	Impact on pupil attendance (Effect size (and 95% confidence interval)	Risk of bias	Study design and sample size
Wisinger (2011)	This study examined a short-term intervention, designed to reduce maths anxiety around algebra tests. The treatment group received a presentation on dealing with and normalising anxiety around maths tests. Practical strategies for dealing with stress were introduced to the treatment group.	0.08[1] (-0.54, 0.69)	High risk of bias	Non-experimental study (58 pupils, 2 schools)

1. *These studies originally reported decreases in days' absent rather than increases in attendance. The direction of the effect size has been reversed so that positive impacts consistently represent increases in attendance/reductions in absenteeism.*

N.B. All effect sizes are expressed as standardised mean difference (SMD), interpreted as the magnitude of standard deviation changes in the outcome for the intervention group pupils as compared to pupils in comparison schools

What does the evidence say?

After the systematic search of the evidence base nine studies were identified in which social and emotional learning programmes aimed to improve attendance outcomes. There was a very small positive impact overall SMDES=0.13 (-0.06, 0.31)[7] but the result was not statistically significant. This means that the statistical uncertainty around the result means that it is consistent with a null or slightly negative impact on attendance overall.

Table 4 gives the detail of the included studies in the analysis. Two of the studies that did not identify a positive impact on attendance overall were a study of "solution focused brief therapy" and "Effective Teens Training". The solution-focused brief therapy consisted of eight sessions delivered by social workers to the class. The Effective Teens Training Programme was a three-week training programme delivered by school counsellors based on a book that identified positive habits in teenagers.

The only study identified with a low risk of bias that analysed a large sample, showed a strong positive result for the Positive Action intervention. Positive Action was a sequenced curricula that involved multiple components and regular sessions delivered by class teachers (typically 140 lessons in a year). While this intervention may seem worth exploring in further research, **a pilot study of the Positive Action** intervention in English schools was funded by the EEF in May 2018. The pilot did not collect outcome data on attendance so is not included in this review. The findings of the pilot, however, did indicate that the programme was not transferable to the English context in its current format, and would require further adaptation to be ready for trial.[8]

There were not enough studies to statistically explore the characteristics associate with more positive outcomes. Some of the key aspects identified that might support the implementation of effective SEL approaches included considering how wider SEL education relates to other support such as meetings with school counsellors, school psychologists and treatment providers in the community. Some of the positive aspects of implementation identified in the evaluation of Positive Action included the comprehensive nature of the approach, which is embedded across the school, and the use of feedback and communication.

How secure is the evidence?

Only two of the seven studies were identified as having low risk of bias. Many of the studies were very small, and none of the studies took place in English schools. The limited quality of the studies and the questions around transferability of findings mean that schools should treat the evidence summarised with caution. More research is required to estimate the likely impact of teaching social and emotional learning on attendance in English schools.

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[7] Weighted standardised mean difference of 0.13 (-0.06, 0.31) using a random effects model.

[8] O'Hare, L; Stark, P; Orr, K; Biggart, A; Bonnell, C, (2018) Postive Action Pilot Report, Education Endowment Foundation

Behaviour interventions

The intervention

Behaviour interventions aim to reduce absenteeism through solving school behaviour issues. There are a number of possible causal pathways that these interventions may work through. The first is that through reducing individual behaviour problems, they might be more likely to attend school – either through this leading to more positive relationships between pupil and teacher or reducing behavioural referrals and eventual exclusions. Another theory might be that behaviour interventions reduce the consequences of bad behaviour on other pupils. For example, anti-bullying interventions might increase the attendance of pupils that are uncomfortable being in school due to bullying.

Most of the interventions identified in this review were examples of **Positive Behaviour Interventions and Support (PBIS)** – a multi-tiered framework that guides the organisation of behaviour support within a school, and includes universal and targeted support. Another intervention is **Playworks** an extracurricular behaviour approach that seeks to reduce school "aversion" through the removal of bullying.

The focus of this review is only on interventions that explicitly aim to increase attendance through a behaviour intervention. It is, therefore, not a comprehensive overview of behaviour interventions and the impact they might have on behaviour itself or on academic outcomes, this report also did not explicitly review interventions to reduce exclusions.[9]

We included only four studies that evaluated the impact of behaviour interventions on pupil school attendance or absenteeism. The characteristics of each of the included studies are described in table 5.

Findings and implications:

- The included studies targeted school aversion caused by bullying or other anti-social behaviour.
- All the studies identified take place in the USA and the wide variety of approaches labelled as a behaviour intervention mean that it is not possible to calculate an average impact for the approaches on attendance. All were rated as having a high risk of bias or some concerns and therefore results should be treated with caution.
- While there are mixed results overall, with some studies reporting either null or negative findings on attendance, a positive result was also reported for one of the Positive Behaviour Interventions and Support programmes. The small number of studies mean it is not possible to determine whether there are specific characteristics of behaviour interventions that lead to positive impacts.

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[9]https://youthendowmentfund.org.uk/toolkit/

Table 5: Characteristics and results of studies that evaluated behaviour interventions

Study	Intervention description	Country	Impact on pupil attendance (Effect size (and 95% confidence interval)	Risk of bias	Study design and sample size
Freeman (2016)	This study examined **School Wide Positive Behavior Interventions and Support (SWPBIS),** a multi-tiered framework that guides the organization of behaviour support within a school with the goal of improving both behaviour and academic outcomes for all students. It includes universal and targeted support.	USA	0.02 (-0.07, 0.11)	Some concerns	Non-experimental study (883 schools)
Gill (2018)	This study examined **Positive Behaviour Interventions and Support (PBIS**) is a structure/framework for the selection and implementation of wide range of interventions at a whole-school level. Expectations established and taught and publicized. Positive incentives given in form of tokens that could then be spent in school store.	USA	0.30* (0.24, 0.36)	High risk of bias	Non-experimental study (3574 pupils in 4 schools)
Molina (2020)	This study examined a **Positive Behaviour Interventions and Support (PBIS).** Behavior management systems were put into place to foster and create a safe environment. The goal of these systems was to instill a proactive and systematic process through consistency.	USA	-0.14 (-0.20, -0.08)	High risk of bias	Non-experimental study (3800 pupils, 6 schools)
Leos-Urbel (2015)	This study examined **Playworks** an extracurricular behaviour approach, which aims to reduce bullying and promote conflict resolution through extra-curricular play based activity.	USA	0.00 (0.00, 0.01)	High risk of bias	Non-experimental study (49,208 pupils, 171 schools)

What does the evidence say?

While the studies do consistently identify poor behaviour as a factor that can lead to decreased attendance within school, the evidence on how to positively impact attendance through behaviour interventions is limited. The four studies identified in the review have mixed results. The small number of studies and large variation in intervention types mean that it is not appropriate to calculate an average impact. It is also not possible to run analysis to identify factors associated with positive impacts.

Three of the four studies examined variations of Positive Behaviour Interventions and Support (PBIS). These approaches combine universal approaches, such as setting expectations and rewarding good behaviour, with more targeted support for pupils with additional behaviour challenges. There was mixed evidence between the studies, with one showing no positive impact, one showing a small negative impact, and the other a moderate positive impact on attendance.

The final study examined a play-based approach to bullying reduction called **Playworks**. No impact was found on attendance.

How secure is the evidence?

Only four studies were identified that meet the inclusion criteria for the review. None of the studies have a low risk of bias and all the studies take place in the USA. One of the studies has very large pupils numbers and would have been weighted highly if meta-analysis had been undertaken. This study, however, has high risk of bias with risks identified around allocation, attrition and deviation from the interventions.

It should be noted a larger evidence base on behaviour interventions does exist – for example, the **Teaching and Learning Toolkit** has a wider inclusion criteria than this rapid evidence assessment and identifies 89 studies that examine the impact of behaviour interventions on academic attainment rather than attendance. The meta-analysis found that both targeted interventions and universal approaches have positive overall effects and there is evidence across a range of different intervention with highest impacts for approaches that focus on self-management or role-play and rehearsal. Where behaviour interventions are shown to influence other outcomes, such as levels of bullying, it may be possible to infer some promise in improving attendance, but more evidence is required to establish a causal link between behaviour interventions and attendance outcomes.

Meal provision

The intervention

Some studies on school breakfast and lunch programmes have sought to identify whether meal provision affects overall school attendance. There are many reasons why the consumption of a school breakfast or lunch may improve a pupils' experience of school, and subsequently assist good attendance. For example, meal provision may have nutritional benefits leading to improved health and reduced sickness leading to fewer absences from school. Providing free or reduced-price meals may also remove a barrier to school engagement for economically disadvantaged pupils. Similarly, the reduction or removal of a financial burden for less affluent families could act as a way of improving pupils' economic circumstance, which is a well-known driver of educational outcomes. It is also possible that by receiving meals within the school environment pupils are incentivised to arrive early to school in the morning for breakfast provision, or to remain on site for lunch. This in turn may reduce the likelihood of lateness to lessons and increase the chance of good or improved attendance.

Despite the large number of total studies (15), there was high variation between the different types of analyses, which means that an overall meta-analysis has not been conducted. The narrative synthesis below describes the different comparison types and results. The studies identified within this review address a variety of related interventions and comparisons:

- Universal meal provision that removes individual application processes for schools to provide free school lunches, breakfasts or both. Often through Community Eligibility Provision (CEP), which is evaluated for impact on attendance across a number of school districts in the USA. The comparison here not with a counterfactual of no breakfast provision.
- The introduction of breakfast provision or breakfast clubs to school systems where the counterfactual is business as usual that does not always include breakfast provision (e.g., Mhurchu et al 2012; Crawford et al 2019)
- Comparing the impact of breakfast provision in the school classroom with breakfast provision in a school canteen (Anzman-Frasca et al 2015).

All the studies included in this review looked at universal programmes, meaning that all pupils within the schools that meals were provided in had access to free breakfasts or lunches. In comparison, many of the control groups in the studies used standard meal pricing, although this usually included some meal provision and subsidisation, particularly for pupils from more economically disadvantaged families. The most reported rationale for this universal approach is to reduce the possible stigma experienced by disadvantaged pupils, as existing data suggests that participation in free or reduced-price lunches from this group is much lower than the quantity of pupils who are eligible.

Named programmes within this area are Magic Breakfast, Breakfast in the Classroom (BiC) (as part of School Breakfast Program), School Breakfast Program (SBP), and Community Eligibility Provision (CEP).

We included fifteen studies that evaluated the impact of meal provision on pupil school attendance or absenteeism. The characteristics of each of the included studies are described in table 6.

Findings and implications:

- The meal provision studies identified through the systematic search suggest that the provision of universal breakfast programmes has had either a null or small positive effect on pupil attendance, although some studies found that impacts were not identifiable in every year of the programme's implementation (e.g., CEP), or were not statistically significant.
- Some studies examined the impact of breakfast provision within the classroom in comparison to providing breakfast in the school cafeteria. The results were either positive or null. A promising area for future research might be around how to maximise the impact of breakfast clubs.

- One study was conducted in England and found a non-significant positive result of the Magic Breakfast programme on school attendance.

Table 6: Characteristics and results of meal provision studies

Study	Intervention description	Country	Impact on pupil attendance (Effect size (and 95% confidence interval)	Risk of bias	Study design and sample size
Andreyeva & Sun (2021)	The Community Eligibility Provision (CEP) aimed to improve access to free school meals by removing household application processes and providing universal free school meals in high poverty schools.	USA	0.07 (0.02, 0.13)	Some concerns	Non-experimental study (2100 schools, 10350 pupils)
Anzman-Frasca et al. (2015)	A universal free breakfast programme named 'Breakfast in the Classroom' was delivered within elementary (primary) schools. Breakfast was served in the classroom at the start of the school day for all pupils, whereas the control group served free or reduced-price breakfasts the school cafeteria for less economically affluent pupils only.	USA	0.28 (0.09, 0.47)	Some concerns	Non-experimental study (446 schools)
Bartfield (2020)	A universal free breakfast and lunch programme named 'Community Eligibility Provision' was delivered within elementary (primary) schools. To be eligible for the programme, schools or school groups in Wisconsin must have had at least 40% of pupils eligible for free meals through the Supplemental Nutrition Assistance Program. In comparison to the programme's universal approach to meal provision, schools in the control group implemented their regular school breakfast provision that determines free meal eligibility according to pupils' family income.	USA	0.07 (0.05, 0.10)[1]	Some concerns	Non-experimental study (145 schools, 28916 pupils)
Bartfield et al. (2019)	The School Breakfast Program (SBP) provides free or low cost meals to pupils. SBP has been posited as a potential vehicle for increased school engagement through increasing positive attitudes towards school.	USA	0.00 (0,00, 0.00)	Some concerns	Non-experimental study (1007 schools, 481799 pupils)
Bernstein et al. (2004)	The School Breakfast Program (SBP) funds schools to serve breakfasts that meet federal nutrition standards and provide free or low cost meals to pupils.	USA	Unable to extract effect size. The availability of universal-free school breakfast had no significant impact on pupil attendance.	Low risk of bias	Cluster-RCT (2696 pupils, 138 schools)
Crawford et al. (2019)	A universal free breakfast club programme named 'Magic Breakfast' was delivered within primary schools. Schools implementing the programme were provided with free healthy food, capital funding, and resources and support about establishing and successfully delivering a breakfast club.	United Kingdom	0.04 (-0.01, 0.08)[1]	Some concerns	Non-experimental study (106 schools, 8085 pupils)
Corcoran (2016)	Breakfast in the Classroom (BIC) is a variant of traditional school breakfast provision, which offers free breakfast in class at the start of the day rather than in a school cafeteria before school hours	USA	Elementary pupils: 0.001 (-0.00, 0.00) Middle school pupils: 0.005 (-0.00, 0.01)	Some concerns	Non-experimental study (1,100 schools, 730,000 pupils)

Gordanier et al. (2020)	A universal free lunch programme named 'Community Eligibility Provision' was delivered within elementary and middle schools (Years 1-9). To be eligible for the programme, schools or school groups in South Carolina must have had at least 40% of pupils eligible for free meals through the Supplemental Nutrition Assistance Program, unless they were in a district with high average free school meal eligibility in which case all schools in the district would be eligible. In comparison to the programme's universal approach to meal provision, schools in the control group used standard meal pricing.	USA	Elementary pupils: 0.01 (0.00, 0.02) Middle school pupils: 0.01 (0.00, 0.02) [1]	Some concerns	Non-experimental study (780 schools, 332761 pupils)
Imberman and Kugler (2012)	The large urban school district (LUSD) in-class breakfast program provides breakfast to students in their classrooms during the first 15-20 minutes of the school day. This is contrasted with the previous practice of providing breakfast in the school cafeteria.	USA	0.03 (-0.12, 0.18)	Some concerns	Non-experimental study (88 schools, 38,425 pupils)
Leos-Urbel et al. (2013)	A universal free school breakfast program in New York City made school breakfast free for all pupils regardless of income, while increasing the price of school lunch for those ineligible for meal subsidies.	USA	0.01 (0.01, 0.02)	Some concerns	Non-experimental study (723,843pupils, 668 schools)
McLaughlin et al.(2002)	A universal free breakfast programme named the 'School Breakfast Program' was delivered in six school districts. Within each school district, schools were randomly assigned to implement a universal free-school breakfast programme or not. Schools that were not selected for the programme and made up the control group implemented their regular school breakfast provision that determines free meal eligibility according to pupils' family income.	USA	-0.07 (-0.13, 0.00)	Low risk of bias	Cluster RCT (153 schools,4300 pupils)
Mhurchu et al. 2012	The intervention was a free daily school breakfast programme either the Red Cross Breakfast in Schools programme or one provided by the private sector.	New Zealand	0.25 (-0.82, 1.32)	Low risk of bias	Cluster RCT (14 schools, 424 pupils)
Ribar and Haldeman (2013)	The intervention was the provision of universal free school breakfasts in Guilford County Schools in North Carolina.	USA	-0.01 (-0.05, 0.03)	Some concerns	Non-experimental study (14 schools, 5614 pupils)
Schwartz and Rothbart (2017)	The intervention was the extension of free school lunch to all pupils regardless of income in New York City middle schools.	USA	-0.04 (-0.18, 0.09)	Some concerns	Non-experimental study (1,103 schools, 222,456 pupils)
Timmer (2018)	The Community Eligibility Provision expands free school breakfast and lunch offerings to allow schools in high-poverty areas to provide universal free school meals.	USA	0.18 (0.08, 0.28)[1]	Some concerns	Non-experimental study (2020 schools)

1. *These studies originally reported decreases in days' absent rather than increases in attendance. The direction of the effect size has been reversed so that positive impacts consistently represent increases in attendance/reductions in absenteeism.*

N.B. All effect sizes are expressed as standardised mean difference (SMD), interpreted as the magnitude of standard deviation changes in the outcome for the intervention group pupils as compared to pupils in comparison schools

What does the evidence say?

Breakfast provision vs business-as-usual

Two of the included studies compared the introduction of breakfast clubs or other breakfast provision with business-as-usual schools (rather than with existing targeted programmes that provided breakfasts to low-income pupils). One study evaluates the impact of the Magic Breakfast programme (Crawford, 2019). In this study, schools were given the funding to enable meal provision with healthy foods and supplementary support and resources to help teachers and schools establish a breakfast club. The other study examined a daily breakfast programme being introduced to schools in New Zealand.

While both studies had positive results, neither was statistically significant. Meta-analysis has not been conducted due to the small number of studies. The studies are both randomised controlled trials with low risk of bias.

Universal breakfast provision vs targeted breakfast provision

The meal provision studies identified through the systematic search suggest that participation in universal programmes has had either a null or small positive effect on pupil attendance when compared with targeted free breakfast provision.

All the included approaches involved making breakfast, lunch, or breakfast and lunch available free of charge for all pupils in treatment schools. Most of the interventions were delivered at the school level and were carried out by distributing school administration board funding (e.g., state or district authorities) to ensure that universal provision could be made possible.

There were not enough studies to explore statistically the characteristics of different meal provision interventions upon attendance or other proximal outcomes. One study (Bartfield, 2020) that controlled for pupils' level of socio-economic disadvantage did find that the increases it found the breakfast and lunch intervention (CEP) to have on attendance were particularly concentrated among more disadvantaged students, although caution should be taken when generalising this result as we found this study to have some risk of bias due to the lack of controlling for confounding variables and rate of attrition.

Classroom breakfast provision vs cafeteria breakfast provision

Three of the studies included did not examine the comparison of universal breakfast provision with either targeted provision or business as usual – but instead examined the comparison between providing universal breakfast provision in the classroom rather than the school cafeteria.

One of these studies found a moderate positive impact (Anzman-Frasca et al. 2015). The other two studies found very small positive impacts. The small number of studies means that meta-analysis has not been conducted.

How secure is the evidence?

We rated all included meal provision studies as having either some risk of bias (12 studies) or low risk of bias (3). Most employed a non-experimental design with a naturally occurring sample of schools. Compared to other areas of the review, these studies tended to have large sample sizes of pupils and schools and employed more rigorous non-experimental methods such as difference-in-difference analysis (e.g., Gordanier et al. 2020). McLaughlin et al. (2002) and Mhurchu et al. (2012) were the only studies providing effect sizes from an RCT. Bernstein et al. (2004) also presented results from an RCT but we were unable to calculate standardised effect sizes.

The counterfactual comparison schools in every meal provision study also implemented some form of subsidised or free meal provision for specific groups of pupils, and therefore it is possible that the impact estimates listed in Table 6 may be more modest than if the universal approaches were compared with no meal funding or support at all. Only one study (Crawford, 2019) was conducted within the UK.

Incentives and disincentives

The intervention

The review identified some interventions that encourage pupils to adopt certain behaviours by either offering rewards for good behaviour (incentive) or punishments for poor behaviour (disincentive). Underlying all the incentive and disincentive interventions is the idea that pupils can be prompted to sustain good behaviour through extrinsic sources of motivation. Some of the interventions within this category used financial rewards and penalties to try to motivate pupils, an action that could have a differential impact on pupils from different economic circumstances (and possibly their families also), given the relative value of the incentive or disincentive to their own financial circumstances.

Incentive interventions often promised certain rewards to pupils at the start of the academic term or year that would be redeemed at the end of this time window (e.g., prizes, financial assistance with future college fees, or cash), contingent upon pupils sustaining good behaviour throughout this time. This format of incentive removal means pupils can lose something in their own name and thus makes them responsible for their own loss aversion.

The disincentives used in interventions came mostly in the form of penalties for pupils, and their parents and carers. One study (Jones, 2002) threatened to remove pupils from their family's social security certificates, should attendance fall below a certain threshold. Removal from the parents' public assistance grant would result in a de facto cut to the family's welfare funding. Another study (Barnard, 2014) threatened pupils and parents with financial and legal penalties in response to pupil truancy. Penalties for parents included a fine between $25 and $100, month-long incarceration, court-mandated community service, or a combination of all these sanctions. Pupils 'aged 12-16 who do not abide by the attendance contract' could be 'sent to the Juvenile Court for Truancy'.

Named programmes and approaches trialled within this area are, Student Truancy Attendance Review Team (START), The School Attendance Demonstration Project (SADP), Positive Action (PA), and the A+ Schools programme.

Findings and implications:

- While most studies in this area found that the trialled interventions increased pupil attendance, effect size estimates varied in strength and statistical significance. One study (Bernard, 2014) also found that the punitive disincentive approach it tested led to a decrease in attendance, when compared to a non-punitive counterfactual intervention.
- Overall, there is limited evidence that incentive or disincentive interventions increase pupil attendance. Only half of the studies included were found to have a low risk of bias. One of these was a multi-component intervention that involved school-climate development, a school counsellor program, and other changes to standard practice, in addition to the tokens and certificates used to encourage desired behaviours.
- Only one of the studies took place in English schools (Sibieta, 2014), but this did not provide an attendance effect size estimate, and therefore presents no indication of impact.

Table 7: Studies

Study	Intervention description	Country	Impact on pupil attendance (Effect size (and 95% confidence interval)	Risk of bias	Study design and sample
Bernard (2014)	School social workers refer pupils and parents to programme after incurring 10 unexcused absences. Parents and pupils will attend a compulsory meeting during which parents sign an attendance contract that details their parental responsibility to send their child to school. Failure to attend the compulsory meeting or fulfil responsibilities in the parental contract may lead to parental prosecution by the solicitor general's office which can involve a financial penalty, incarceration, community service, or a combination of these sanctions. Pupils aged 12-16 who break the attendance contract may be sent to the Juvenile Court for Truancy.	USA	-0.44[1] (-0.74, -0.14)	Some concerns	Non-experimental (176 pupils)
Clayton (2012)	The intervention is a multi-component three tier approach consisting of positive reinforcement and rewarding good attendance, and then parental engagement and finally counselling for pupils with poor attendance. Each tier lasts 20 days before moving to the next tier. Positive reinforcement consisted of the teacher reinforcing good behaviour and encouraging pupils to return then following day combined with weekly attendance certificates and a visit to the treasure box to select a prize. The second tier comprised of a conference between the teacher and the parents to identify issues leading to the unexcused absences and to brainstorm effective solutions to the problem. A daily visual reminder was sent home. students with 4 or more absences in 20 days received all three levels, the third level consisted of a referral by the teacher to a counsellor for individualised assessment and determination of need for more intensive individualised services.	USA	0.12[1] (-0.35, 0.58)	High Risk of bias	Non-experimental study (71 pupils, 4 classes)
Hyatt (2010)	A school graduate scholarship programme that offers the incentive of post-secondary financial assistance for meeting specific criteria during high school. Pupils who attend a school in which the programme is implemented must maintain a 95% or above attendance rate, a pre-specified attainment average, tutor or mentor younger pupil for 50 hours, and follow citizenship requirements to receive financial assistance to attend a post-secondary community college or vocational trade centre. Tuition fees for these academic pursuits will be reimbursed to pupils providing they meet obligations.	USA	0.35 (-0.04, 0.75)	High risk of bias	Non-experimental study (100 pupils)
Jones (2002)	A financial incentive scheme that offers public assistance to a pupil's family, contingent upon the pupil sustaining good school attendance (above 80%). Pupils whose attendance drops less than 80% receive a notice to attend an 'orientation meeting'. 'If the pupils' attendance is less than 80% after 2 months, and they do not attend an orientation, they could receive a financial penalty notice. The financial penalty could occur in the next month. To avoid the penalty, the student had to present 4 weeks' verification of attendance of at least 80%, attend the orientation, or provide verification of good cause for nonattendance. The penalty consisted of the teen being deleted from their parents' public assistance grant.'	USA	0.14 (0.05, 0.22)	Low risk of bias	RCT (2780 pupils)
Robinson et al (2021)	Two reward schemes were examined. Pre-announced (prospective) awards and surprise (retrospective) awards to increase attendance.	USA	Prospective: -0.012[1] (-0.06, 0.03) Retrospective: -0.064[1] (-0.12, 0.01)	Low risk of bias	Inidvidual RCT (15,329 pupils)

| Sibieta (2014) | Two schemes for improving pupil motivation and effort were implemented. The first provided pupils with a financial incentive, who were told they had £80 at the beginning of each half-term. Money was deducted if they did not reach the threshold in four measures of effort: attendance, behaviour, classwork, and homework. £10 was deducted if the pre-specified attendance threshold was not met. The second provided an incentive of a trip or event. Pupils were allocated a number of 'tickets' at the start of term and lost these if they failed to meet targets on the same set of four effort thresholds. Pupils that retained enough 'tickets' were rewarded with an event, chosen by pupils in the year group at the start of the school term. | UK | Not possible to calculate an effect size. Small positive impact but non-significant | Low risk of bias | Cluster RCT (7730 pupils, 48 schools) |

1. These studies originally reported decreases in days' absent rather than increases in attendance. The direction of the effect size has been reversed so that positive impacts consistently represent increases in attendance/reductions in absenteeism.

N.B. All effect sizes are expressed as standardised mean difference (SMD), interpreted as the magnitude of standard deviation changes in the outcome for the intervention group pupils as compared to pupils in comparison schools

What does the evidence say?

Across the studies there were mixed outcomes with multiple studies reporting negative impacts. There were a very broad range of different intervention types within these studies, so it was deemed inappropriate to calculate an overall effect size for this approach.

The two studies that tested disincentive approaches whereby parents and pupils were threatened with financial and legal penalties showed contrasting results, with one suggesting that the punitive approach led to a reduction in attendance whilst the other found a very small positive impact overall.

One study (Robinson et al. 2021) examined contrasting approaches for rewards within schools, either sending reward certificates to pupils with high attendance retrospectively or prospectively announcing rewards for high attendance. Neither approach had a positive impact on attendance – the retrospective condition decreased attendance overall. Exploratory analysis also indicated that attendance reduced when rewards were removed.

There were not enough studies to systematically explore the characteristics of different incentive and disincentive interventions associated with more positive attendance outcomes. One study (Jones, 2002) found that the disincentive approach trialled did not help improve the attendance of certain pupil and family groups, despite finding a positive impact for the entire treatment population: groups that struggled to meet the attendance requirements of the punitive scheme were "students from single-parent families, Hispanic students, females, students in alternative schools, teens from families receiving child protective services, and probationers". The only study conducted within English schools (Sibieta, 2014) found some implementation challenges with the incentive intervention. The establishment of systems to pay and subtract financial incentives to and from pupils was seen as a particular challenge that schools would need to develop a system for if choosing to deliver consistently, and the logistical complications involved in organising events as rewards posed financial and organisational barriers to implementation.

One of the studies with a positive impact, included rewards as part of a multi-component responsive approach to improving attendance (Clayton 2012). This study is also included in the section on responsive interventions (above). It is not possible to isolate the impact of the incentives within this intervention – but is an example of incentives being used alongside other approaches to improve attendance.

How secure is the evidence?

We rated the incentive and disincentive studies included in the review as having either low risk of bias (2 studies), some risk of bias (1) or high risk of bias (2). Half employed an experimental design whereby interventions were allocated to schools, with some using random allocation. Many of the studies involved a moderate number of schools and pupils, aiding the generalisability of findings. This said, all studies that provide an effect size estimate were conducted in the USA and therefore caution should be taken when applying the results to different contexts, particularly with studies that

focus on financial incentives given the alternative forms of welfare support offered within different countries and jurisdictions.

Extracurricular activities

The intervention

Extracurricular activities interventions are those that provide additional educational opportunities outside of the regular curriculum. These approaches aim to increase student engagement in school which may then increase overall school attendance. The review identified seven studies. Interventions included a variety of athletic and non-athletic activities. Athletic activities included a range of sports, while non-athletic activities music, drama, play activities and others. All extracurricular activities were delivered after school. Four of the seven interventions included multiple components.

One example of an included approach is called **OrchKids**. In this approach, participants are provided with musical instruments at no cost and receive lessons with certified teachers in small groups. The intervention also includes additional components, including homework support and academic instruction.

Another example intervention is **Playworks**, an extracurricular behavioural intervention that seeks to reduce school "aversion" through the removal of bullying. The intervention includes out-of-school-time support and interscholastic leagues that promote skill building in particular sports to students in the upper grades.

Findings and implications:

- There is limited evidence that extracurricular activities increase pupil attendance. There are a small number of studies and all studies were considered to have some risk of bias or high risk of bias.
- Of the seven studies identified, while five studies reported that extracurricular interventions had a small positive impact on pupil attendance, effect sizes varied in strength. One study found a null impact on attendance. However, these findings need to be read with caution due to small sample sizes and selection bias including sampling and attrition.
- None of the studies took place in English schools.
- It is difficult to assess the impact of extracurricular activities as four of the trialled interventions included additional components. More research is required to establish a clear impact on improvements in attendance.

Table 8: Studies

Study	Intervention description	Impact on pupil attendance (Effect size (and 95% confidence interval)	Country	Risk of bias	Study design and sample size
Beavers (2014)	The intervention involved participation in different types of school-sponsored extracurricular activities: solely athletic activity (e.g., baseball, football, track); only non-athletic activity (e.g., drama, speech, debate, band, Future Farmers of America, foreign language clubs); and both athletic and non-athletic activity.	0.38 (0.13, 0.63)	USA	High risk of bias	Non-experimental study (429 students, 3 schools)

Durham (2018)	**OrchKids** afterschool programme offered free year-round music-based programming for students from pre-Kindergarten to eighth grade. The overall goal of the programme is to expose students and their families to music and provide students opportunities to participate in musical ensembles, as well as provide students with instruments at no cost and lessons with certified teachers in small-groups. Participants are provided with meals, academic instruction, homework support and adult/peer mentorship via partnerships with community-based organisations. The aims include increasing participants' exposure to classical music, increasing participants' confidence and accomplishment as musicians, improving academic outcomes and supporting the development of 21st century skills such as collaboration, teamwork, self- discipline, and creativity. The program aims to engage with families through regular performances, parties or events at schools, and fieldtrips out of the neighbourhood.	0.07 (-0.07, 0.21)	USA	Some concerns	Non-experimental study (2610 students, 6 schools)
Holmes (2015)	The **Stacey and Bo Porter SELF Foundation Afterschool Program** offered academic support along with life skills activities, character building, sports, and spiritual enrichment and field trips. Enrichment activities, including club baseball, flag football, soccer, and lacrosse. Guest speakers and inspirational messages were fundamental components of the program, focusing on self-esteem and character-building. The DOORS program (Discovery Opportunities that Offer Real Success) was implemented as a supplement to the afterschool program to help eighth-grade students transition to high school. The topics of discussion were conflict resolution, test-taking strategies, and high-school clubs. Students were provided dinner at the end of the day at most sites. Site coordinators helped to coordinate program activities at their school, while a program director, employed by the foundation, provided oversight of the full program.	0.1[1] (-2.33, 2.53)	USA	High risk of bias	Non-experimental study (2817 students, 3 schools)
Johnston, P. (2018)	A structural family therapy intervention with an extracurricular component for school refusing students (missing 4 or more days in a given 6-week period) and adults in the school setting that aimed to restructure adult and youth sub-systems to collaborate with each other on agreed upon steps supporting youth attendance and success at school. With families of school-refusing youth that did not participate in family therapy at school, a relationship building intervention that consisted of a 30-minute basketball games were offered to those at school.	0.33	USA	High risk of bias	Non-experimental study (57 students, 1 school)
Leos-Urbel (2015)	**Playworks** is a program that provides opportunities for inclusive play, and physical activity, through trained, full-time coaches focused on recess in low-income elementary schools across the country. Playworks coaches lead and organize games during recess, work with teachers and lead games in the classroom, run a before or after school program, and coordinate out of school sports leagues. The program includes four components: 1) class game time where students, classroom peers, and teachers learn games and tools to solve problems; 2) the Junior Coach program, which provides students in the upper grades with opportunities to be leaders on the playground; 3) out-of-school-time support and mentoring for Junior Coaches provided by the Playworks coach; and 4) interscholastic leagues that promote skill building in particular sports to students in the upper grades.	0.00 (0.00, 0.01)	USA	High risk of bias	Non-experimental study (49208 students)

Marvul (2010)	The intervention was threefold (a) monitoring of attendance and parent notifications (b) participation in a moral character class and (c) participation in a club sports activity. The sports club component involved involvement in either a flag football or basketball club and instruction in sports psychology and philosophy. As part of the involvement in the sports clubs, participants played games against other schools. The intervention was delivered by the researcher.	N/A[10]	USA	Some concerns	RCT (40 students 1 school)
McCoach (2017)	The study examined participation in after school extracurricular music and athletic activities provided by a middle school. The activities offered included baseball, softball, track and field, boys' and girls' soccer and basketball, wrestling, band, and chorus.	0.14[1] (-0.06, 0.35)	USA	High risk of bias	Non-experimental study (393 students, 1 school)

1. These studies originally reported decreases in days' absent rather than increases in attendance. The direction of the effect size has been reversed so that positive impacts consistently represent increases in attendance/reductions in absenteeism.

N.B. All effect sizes are expressed as standardised mean difference (SMD), interpreted as the magnitude of standard deviation changes in the outcome for the intervention group pupils as compared to pupils in comparison schools

What does the evidence say?

Due to the limited strength of the evidence, we have not been able to extract tangible findings on the impact of extracurricular activities interventions on attendance. There were a small number of extracurricular activities studies and there were high concerns of risk of bias.

Table 8 gives details of the studies included in the review. Five studies reported small positive effect sizes, ranging from 0.07 to 0.38, and one study (Leos-Urbel, 2015) reported a null effect. Of the five studies that reported positive effective sizes, it should be noted that four had confidence intervals that spanned into the negative range with one study having an especially large confidence interval (-2.33, 2.53). Therefore, although these effect sizes are positive, there is a chance that some pupils were negatively impacted. It should also be noted that while the Johnston (2018) found a positive effect size, attendance decreased for pupils in the basketball intervention group, but less so than it did for comparison pupils. Marvul (2019) met our inclusion criteria and reported a positive impact on attendance, but we could not calculate a plausible effect size. Overall, these findings need to be read with caution due to small sample sizes and selection bias including sampling and attrition.

Four of the studies assessed interventions that included multiple components. It is difficult to assess the impact of extracurricular activities as five of the trialled interventions included additional components, such as academic support, meal provision, and parental engagement. More research is required to establish a clear impact on improvements in attendance.

How secure is the evidence?

We rated the included studies as having either some risk of bias (2) or high risk of bias (5). Most studies employed a non-experimental design with a naturally occurring or non-random sample of students who were receiving the intervention. Three studies were carried out in only one school and two of these three were very small, and so were likely underpowered to detect effects on outcomes, as well as having limited generalisability beyond the very small pool of schools the studies were conducted in. All identified studies were carried out in the USA. More research is required to estimate the likely impact of extracurricular activities on attendance in English schools.

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[10] While this study met the inclusion criteria, a plausible effect size could not be calculated.

Other approaches

There were a number of approaches that did not fit into any of the above categories. This section provides an overview of these approaches and briefly describes the impact and security of the studies. It does not attempt a narrative or quantitative synthesis, due to the large variation in approaches.

Findings and implications

- Other approaches that have been used by schools to try and improve attendance include academic interventions; big structural changes to the school; and provisions of services search as mental health support.
- The evidence for these approaches is significantly weaker than other interventions described in this review – this does not mean that the approaches are less effective but does indicate that they have been researched less than other interventions with regards to attendance outcomes.
- Many of the approaches identify key determinants of attendance within their theories of change, such as the importance of high quality learning or support with mental health barriers.

Figure 5: Forest plot of other approaches
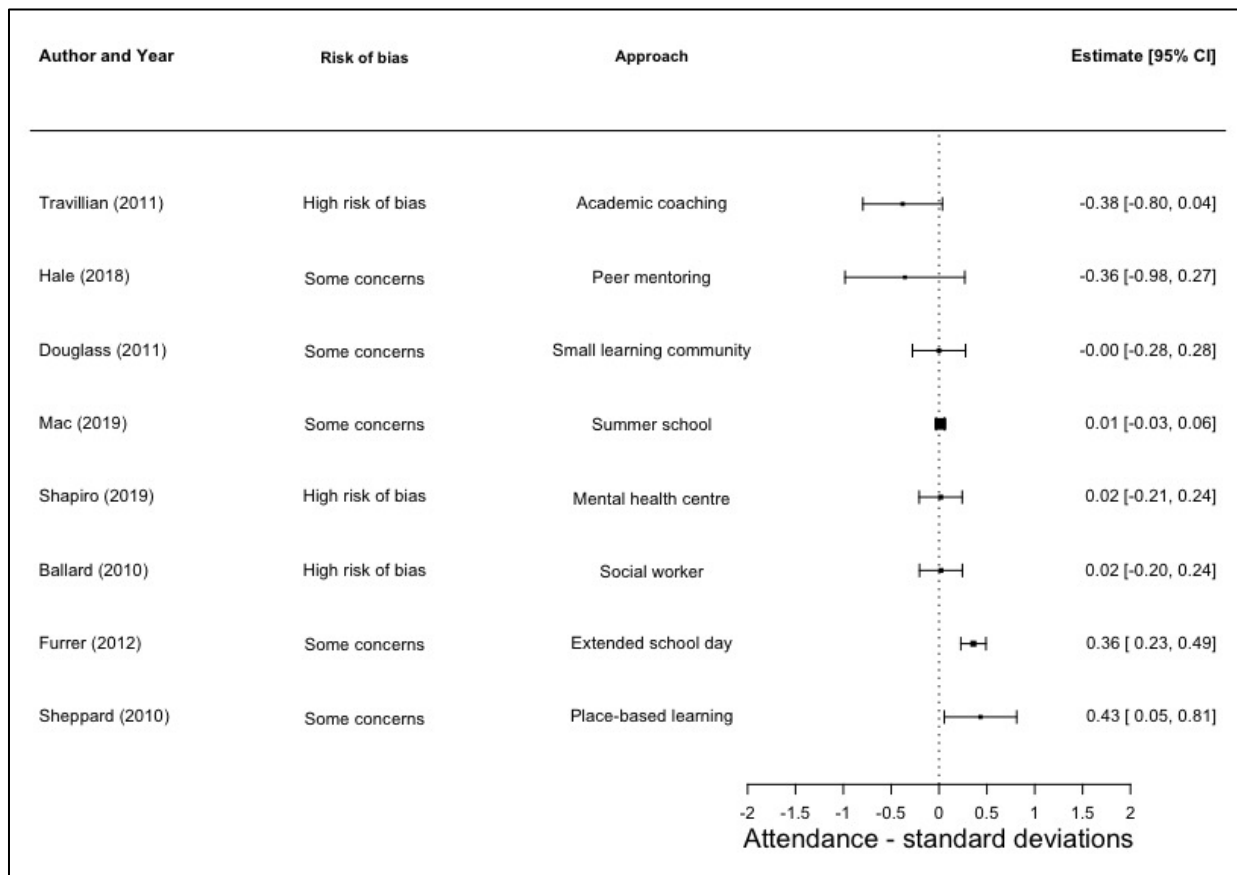
Some of the approaches that were identified in searches but not reviewed thematically include:

- Summer schools
- Alternative school structures
- The provision of services with no defined intervention – for example, mental health services or social workers working alongside school staff.
- Peer tutoring approaches

A number of these approaches aim to improve attendance through targeting academic work. For example, the summer schools and project-based learning interventions aimed to improve academic outcomes in addition to attendance. One approach examined coaches that provided academic support to pupils with low attendance. These studies sometimes aim to improve attendance through making the learning process seem more relevant and engaging. Struggling academically is also identified as a potential barrier to attendance in and of itself. While there is a coherent theory of change to removing academic barriers or increasing pupil engagement, there is not enough evidence to assess whether these approaches are effective.

Another set of studies look at availability of services and support. Several studies examined making mental health support available or placing social workers within schools (Shapiro 2019; Ballard 2010; Newsome 2008). While there is some crossover to the responsive and targeted interventions discussed above, these studies were excluded from that section due to not having a specified approach to assessing and targeting needs.

One of the studies examined a peer mentoring programme. This is likely to operate under a similar theory of change to the wider mentoring approaches but was excluded from that section due to the pupil led delivery of mentoring. The evaluation of the structured peer mentoring support did not detect an improvement in attendance for pupils receiving the intervention (Hale 2018).

The final identified studies looked at larger changes to the school. One study examined a small learning community intervention, in which a number of pupils in a large school were taught by the same teachers in one classroom, rather than being part of the larger school (Douglass 2011), no positive impact on attendance was found. The final larger intervention was an extended school day programme that featured one to one academic support among other activities. This study did find some evidence of impact but given this is a single study with concerns over risk of bias and took place in the USA, it is not possible to draw conclusions on evidence of promise.

Table 9: Included studies

Study	Intervention description	Impact on pupil attendance (Effect size (and 95% confidence interval)	Risk of bias	Study design and sample size
Mac (2019)	The primary goal of this five-week summer program implemented by the school district was to provide additional out of school time focused on mathematics instruction and robotics so that enrolled students could increase their mathematics grade-level aptitude by the end of the program and develop interest in technology and STEM college majors and careers. The robotics component was expected to increase student engagement (including attendance).	0.01 (-0.03, 0.06)	Some concerns	Non-experimental study (166 pupils)
Sheppard (2010)	This evaluation examined a place-based learning approach in which intervention pupils were engaged through real-life community problem solving. Groups met for 90 minutes each week during a combined science-social studies block; group leaders presented their expertise and taught a self-designed curriculum based on their expertise, including but not limited to classroom activities, field trips, grade-level presentations, neighbourhood observations, and relevant reading and research.	0.43[1] (0.05, 0.81)	Some concerns	Non-experimental study (1 school, 194 pupils)
Ballard (2010)	The intervention in this study was placing a full-time licensed masters or doctoral level clinician (e.g., social worker, psychologist) on-site at each of the schools. No intervention was defined beyond availability of the service.	0.02 (-0.21, 0.24)	High risk of bias	Non-experimental study (307 pupils, 14 schools)
Shapiro (2019)	This study examined the implementation of a school-based mental health centre. No intervention was defined, but a range of services were provided including individual, family, and group counselling, teacher training and consultation groups, school-wide workshops, and trauma-informed culture building.	0.02 (-0.21, 0.24)	High risk of bias	Non-experimental study (295 pupils, 3 schools)

Furrer (2012)	This intervention comprised a structured extended school day programme- component of SUN Community Schools in Portland, Oregon. One-third of activities offered were academically focussed, including homework help and credit recovery services (where students can work at own pace on what they need to learn in online classes monitored by instructors who offer one-to-one help). Each student has an annual plan which details goals and how coordinators intended to reach goals.	0.36 (0.23, 0.49)	Some concerns	Non-experimental study (930 pupils, 12 schools)
Hale (2018)	The Believe It Or Not I Care (BIONIC) programme is a peer mentoring intervention BIONIC mentors are chosen through an application process that requires faculty recommendation. Peer mentors specialise in one of five BIONIC teams: Transfer, Extended Illness, Grief, Intergenerational, and Freshmen.	-0.36 (-0.98, 0.27)	Some concerns	Non-experimental study (370379 pupils)
Newsome (2008)	This study did not have a set intervention but monitoring the impact of social worker activities across schools. Interactions were reported to take place with pupils, school personnel, parents and outside agencies. The most common intervention recorded was a social worker meeting one on one with the youth directly.	Not enough information is provided to calculate an E.S. Impact is described as non-significant.	Low risk of bias	Non-experimental study (115 pupils in 5 schools)
Douglass (2011)	This study examined a **Small Learning Community (SLC)** intervention. All SLC pilot students had the same four teachers for math, English, social studies, science and homeroom. The teachers were given a common planning period and met every other day to discuss the team and student concerns. SLC students had four classes and homeroom in the same building.	-0.00 (-0.28, 0.28)	Some concerns	Non-experimental study (199 pupils in 1 school)
Travillian (2011)	Graduation coach programme: a graduation coach was placed in the school to support pupils who had problems with school attendance, were at risk of drop-out and therefore not graduating. Their focus was broad: they could support pupils struggling with academic classes, provide remedial support, support with the transition from elementary to middle school and from middle to high school and with careers.	-0.38[1] (-0.79, 0.03)	High risk of bias	Non-experimental study (92 pupils, 1 school)

1. These studies originally reported decreases in days' absent rather than increases in attendance. The direction of the effect size has been reversed so that positive impacts consistently represent increases in attendance/reductions in absenteeism.

N.B. All effect sizes are expressed as standardised mean difference (SMD), interpreted as the magnitude of standard deviation changes in the outcome for the intervention group pupils as compared to pupils in comparison schools

Conclusion

Key findings and implications

1. **There is large variation in the strategies that have been researched with the aim of improving pupil attendance.**
   The review identified 8 different categories of intervention and several additional strategies that were not included. Some of the difference in approaches can be explained through targeting different barriers to attendance (e.g., non-attendance due to bullying vs non-attendance due to motivation). Some approaches were responsive to the particular barrier to attendance, while others attempt to change behaviour through offering additional benefits from attendance or punishments for truancy.

2. **The overall quality of evidence is weak, reporting low impacts and more research is required.**
   The overall methodological quality of many of the studies was low. Few studies were rated as low risk of bias. Risk of bias aside, there are concerns about the transferability and relevance of much of the academic research for schools in England. Almost all of the studies took place in the USA, and there is little research on commonly used attendance strategies (e.g., the use of attendance officers in English schools).

3. **The is some evidence of promise for several strategies including parental engagement approaches and responsive interventions that target the individual causes of low attendance**
   Positive impacts were found for both parental communication approaches and targeted parental engagement interventions. The impact was larger for targeted approaches. Responsive intervention in which a member of staff or team use multiple interventions and target approaches specifically to the needs of individual pupils was also found to be effective. There may be crossover with these approaches and the approaches used in English schools by attendance officers. While these results are promising, the study quality means that they should be treated with caution.

4. **Many of the interventions that were not targeted either had not enough evidence to reach a conclusion or seemed to have no impact.**
   There was not enough evidence to reach a conclusion for the efficacy of mentoring or behaviour approaches. Whole class teaching of social and emotional skills did not have a positive impact overall. While the study quality and number mean that caution should be applied while interpreting these results, it is clear that not all whole-class approaches are likely to have positive impact on attendance outcomes.

Intervention area	Impact[11]	Number, location and design of studies.	Quality of the evidence base	Impact heterogeneity
Mentoring	Mixed evidence with studies reporting positive and negative impacts.	7 studies from USA 5 non-experimental studies, 2 randomised controlled trials	Low quality (4 studies with high risk of bias, 3 studies with some concerns)	Large amount of heterogeneity. Too few studies to perform meta-analysis or to identify characteristics associated with higher impacts on attendance.
Parental engagement	Parental communications ES= 0.07 (0.02,0.12)	16 studies from USA, 1 study from UK	8 studies with low risk of bias 5 studies with some concerns	While there is high heterogeneity within the parental communications approaches (I^2=93.3%), the range of impacts is low, with 6 of the

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[11] Average effect size and 95% Confidence Interval if meta-analysis undertaken, narrative summary of effects otherwise.

	Parental engagement ES=0.13 (-0.02,0.28)	7 RCTs, 10 non-experimental studies	4 studies with high risk of bias	studies impacts ranging between 0.00 and 0.16. There was heterogeneity within parental engagement approaches (I^2=77.5%). There were too few studies to perform meta-regression and to explore the causes of heterogeneity.
Responsive and targeted approaches	ES=0.14 (0.04, 0.25)	8 studies from USA 2 RCTs, 6 non-experimental studies	2 studies with high risk of bias 3 studies with some concerns 3 studies with low risk of bias	Heterogeneity was low (I^2 = 23.8%) There were too few studies to perform meta-regression and to explore the causes of heterogeneity.
Teaching of social and emotional skills	ES=0.13 (-0.06, 0.31)	9 studies from USA 4 RCTs, 5 non-experimental studies	4 studies with high risk of bias 3 studies with some concerns 2 studies with low risk of bias	Heterogeneity was high (I^2= 94.2%) There were too few studies to perform meta-regression and to explore the causes of heterogeneity.
Behaviour interventions	Mixed evidence with studies reporting positive and negative impacts.	5 studies from USA 5 non-experimental studies	3 studies with high risk of bias 1 study with some concerns	Meta-analysis was not possible. There was high heterogeneity in results with a large range of impacts from d=-0.14 to d=0.30.
Meal provision	Mixed evidence with studies largely reporting small impacts. Most studies compare universal provision with targeted provision rather than meal provision overall	13 studies from USA 1 study from UK 1 study from New Zealand 3 RCTs and 12 non-experimental studies	3 studies with low risk of bias 12 studies with some concerns	Heterogeneity in the comparison for meal provision. The heterogeneity in research questions and control conditions meant meta-analysis was not conducted.
Incentives and disincentives	Mixed evidence with some negative impacts	5 studies from USA 1 study from UK	2 studies with high risk of bias 1 study with some concerns 3 studies with low risk of bias	There was heterogeneity in outcome and approaches. Many of the approaches included incentives alongside other approaches. Meta-analysis was not conducted.
Extracurricular activities	Mixed evidence with no negative outcomes and some null impacts.	7 studies from USA 1 RCT and 6 non-experimental studies	5 studies with high risk of bias 2 studies with some concerns	There was heterogeneity in outcome and approaches. There was large variation in the type of extra-curricular activities. Meta-analysis was not conducted.

Research questions

1) Do interventions that aim to increase pupil school attendance affect attendance behaviours of school-aged pupils?

The large variation in intervention types mean that the average impact across all the studies in this review is not a meaningful result. While the average impact across all the interventions is positive[12], the level of variation means that the more meaningful results are the synthesis that occurred for the individual approaches (see research question 3).

2) What are the common elements of interventions that improve primary and secondary student attendance?

Moderator analysis was conducted across the studies. No significant differences were found between delivery phase (primary, secondary, middle school, and cross-phase delivery). No significant differences were found between the group size or deliver (whole school, whole class, large group, small group, one to one, variable). No significant differences were found for the staff delivering the intervention (counsellors, external teachers, social workers, volunteers, peers, digital technology, researchers, other, not reported).

This moderator analysis at the review level is likely to be less meaningful than examining causes of variation at the level of each intervention (e.g., within parental communication approaches). Unfortunately, the number of studies for each intervention is insufficient to perform the analysis.

3) Are certain types of interventions more effective at improving primary and secondary student attendance?

Average impacts were, however, calculated using random-effects meta-analysis for targeted and responsive interventions, parental communication approaches, targeted parental interventions and whole class social and emotional learning. Positive impacts were found for all approaches, apart from whole class SEL, which had a null impact.

Narrative synthesis discusses the efficacy of mentoring, meal provision, behaviour approaches and extracurricular approaches above.

4) What are the barriers and facilitators to effective implementation of attendance interventions?

Only six of the included studies included information from a process evaluation. The rapid nature of the review precluded additional searches of qualitative studies that did not meet the methodological inclusion criteria of the original search. Where barriers and facilitators have been identified by study authors, these are summarised for each approach individually in the discussion of overall efficacy.
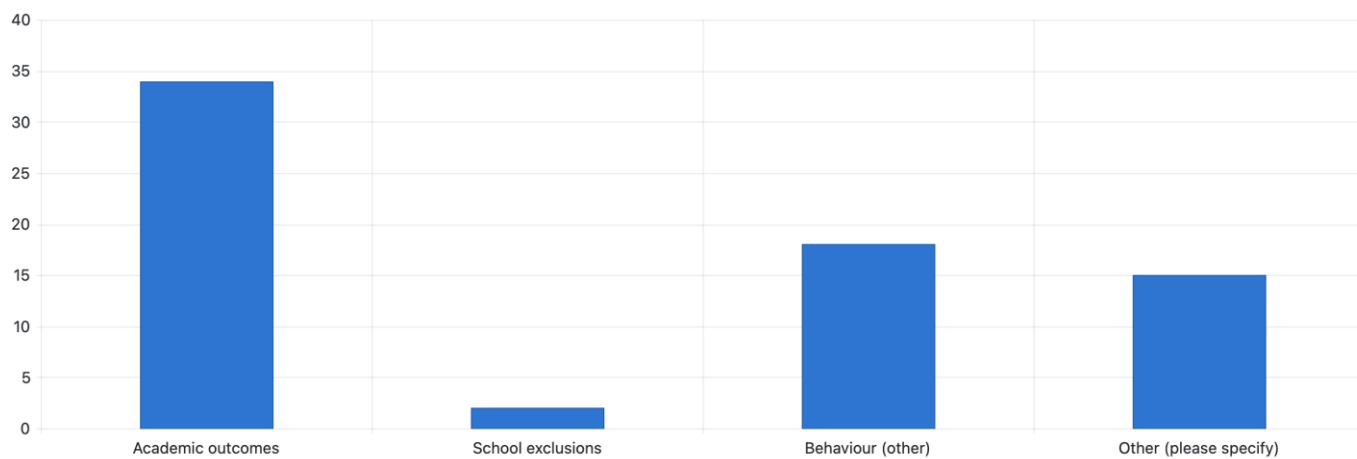
5) Do studies examine the extent to which improvements in attendance act as a mediating variable for attainment and behavioural outcomes? If so, what are these outcomes? (e.g., substance misuse, bullying perpetration and victimisation, mental health and wellbeing)

The low study quality across the review and the limited number of studies that contained multiple outcome data with sufficient quality mean that it was not possible to run analysis on the relationship between attendance and other outcomes.

Analysis was run to examine which outcome data was most commonly collected within the studies alongside attendance. Over half of the studies also examined academic outcomes. A high percentage examined behaviour, usually in the form of behavioural referrals. Very few examined school exclusions. Studies also reported a large amount of other data. This typically included proximal outcomes to the interventions or self-reported outcomes, for example anxiety, metacognition, and self-confidence

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[12] The overall ES is 0.11 (0.06, 0.16) I^2 =97.425%

Figure 6: Other outcome data that was collected in studies

Limitations

It is important to note the limitations of applying existing evidence to the current context. The evidence in this review has taken place consistently outside of the context of the covid-19 pandemic. The review is designed to inform long-term research on successful strategies to improve attendance, so will not address attendance issues directly related to the pandemic.

The majority of studies (all but three from a total of 72) took place in schools in the USA. While these have the potential to be applicable to English context, there are some concerns around external validity given the sheer number. Furthermore, there was a lack of evidence on approaches commonly used within the English system (e.g., attendance officers). Additionally, the overall evidence base for attendance interventions that assess attendance or absenteeism is of limited quality. Using an adapted version of the Cochrane Risk of Bias 2 tool (Higgins et al. 2016), over two-thirds of the 72 studies included in the review were considered to have some concerns or a high risk of bias. Moderator analysis did not find significant differences between studies with low risk of bias, some concerns and high risk of bias.

The overall scope of the review was limited due to time constraints and narrowed inclusion criteria was selected for pragmatic reasons. As a result, accompanying process evaluations that may have been published alongside these studies have not been included in the review. Therefore, limited findings have been presented on the facilitators and barriers of implementation and broader perspectives on how different aspects of interventions work together.

Several other decisions were made in order to facilitate the speed of the review. While the methods of the search were systematic and pre-specified (the protocol is registered at: **https://doi.org/10.17605/OSF.IO/4V6FJ)**, we describe the review as a rapid evidence assessment due to the fact:

- Priority screening in EPPI-reviewer was used to facilitate the screening process.[13] We do not believe that the priority screening introduced bias into the process, but it is possible that some relevant studies were excluded at the end of the priority screening process.
- A light touch risk of bias assessment was used (see appendix A). While the assessment captured key risks (attrition, deviation from intervention, and attrition bias) there may be risks of bias that were not captured in these assessments.
- If the review was systematic the team would have undergone additional targeted searches for some of the intervention categories and specific programmes that emerged during the process (for example, breakfast clubs or Student Success Skills programme). While the search terms were broad and should have picked up any programmes with a stated aim of improving attendance, it is possible that additional targeted searches would identify additional studies for some of the approaches summarised in the review.

Future research

While additional review work may be useful in this space – for example, the additional targeted searches described above – the key gap for English schools is the lack of primary research.

Only three studies in this review took place in English schools and there are a number of approaches commonly used in schools which have not been evaluated. The Education Endowment Foundation and Youth Endowment Foundation have committed to fund a number of primary studies on attendance and exclusions in order to build the evidence in these areas.

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[13] Thomas, J., Brunton, J., Graziosi, S. (2010). EPPI-Reviewer 4: software for research synthesis. EPPICentre Software. London: Social Science Research Unit, UCL Institute of Education.

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Appendix A: Methodology

For this REA, we drew on the Cochrane Rapid Reviews Methods Group's (RRMG) guidance for conducting rapid reviews (Garrity et al. 2021) and the Civil Service REA methodological guidance (Government Social Research Service, 2009). The scope of the review was informed by the research questions, resources, and the timeframe. The following criteria was used to determine whether a study would be included in the review. A protocol for the review is registered at the Open Science Framework Registry at: **https://doi.org/10.17605/OSF.IO/4V6FJ**

Inclusion and exclusion criteria for the review

	Include	**Exclude**
Study design	RCTs and quasi-experimental evaluations of interventions that aim to increase school attendance (see further criteria below).	Single group pre/post-test studies, qualitative studies and narrative, non-systematic reviews.
Population	School-aged children – Primary and secondary school settings including alternative provision and special schools. Pupils that have an identified attendance problem or are truant and those who do not but receive a whole-school intervention.	Children outside of primary or secondary school age. Early childcare settings, post-16 education, Higher Education.
Types of interventions	Interventions with a stated primary goal of increasing student attendance (or decreasing absenteeism) among primary or secondary school students. The intervention could take place in any format (e.g., face-to-face, online, one-off, or multiple sessions) and could be targeted for specific pupils or for whole-school and be community based. Some examples of included interventions are: • Mentoring sessions • Parental engagement workshops • Additional staff support • Peer tutoring	Court-based interventions.
Comparison	No treatment, or business as usual or another treatment, e.g., comparison of two attendance interventions.	Studies that do not include a comparison group.
Outcome measures	The study needed to report on a measure of pupil attendance or absenteeism. If the studies collected other data on pupil	Studies that did not include pupil attendance as an outcome.

	attainment, engagement, and behavioural outcomes, we made note of this.	
Other criteria	Published since 2000	Published before 2000
	Published in English	Published in languages other than English
	Studies conducted in the United States, Canada, the United Kingdom, and Australia	Conducted in any other country than the United States, Canada, the United Kingdom, and Australia
	Journals or grey literature	

Study design

We included any studies utilising randomised controlled trial (RCT) or quasi-experimental designs (QED) with a comparison group that received no treatment or treatment as usual. We excluded any study outside of this methodological approach, for example a single group pre-post-test design. A RCT is a study where participants are randomly assigned to be in one of 2 (or more) groups to test a specific intervention. One group (the experimental group) has the intervention being tested while the other (the comparison or control group) has an alternative intervention or no intervention. The groups are followed to monitor the effectiveness of the intervention. We included RCTs with assignment at individual, household, community, or school level. A QED is a study used to estimate the impact of an intervention on a target population with non-random assignment of those groups. QED studies vary in approaches and designs and are often given different names. We included the following designs:

- Non-randomized studies with selection on unobservables:

    - Regression discontinuity designs, where assignment was done on a threshold measured at pre-test, and the study used prospective or retrospective approaches of analysis to control for unobservable confounding.

    - Studies using design or methods to control for unobservable confounding, such as natural experiments with clearly defined intervention and comparison groups, which exploit natural randomness in implementation assignment by decision makers (e.g., public lottery) or random errors in implementation, and instrumental variables estimation.

- Non-randomized studies with pre-intervention and post-intervention outcomes data in intervention and comparisons groups, where data were individual level panel or pseudo-panels (repeated cross-sections), which used the following methods to control for confounding:

    - Studies controlling for time-invariant unobservable confounding, including difference-in-differences, or fixed- or random-effects models with an interaction term between time and intervention for pre-intervention and postintervention observations.

    - Studies assessing changes in trends in outcomes over a series of time points (interrupted time series, ITS), with or without contemporaneous comparison (controlled ITS), with sufficient observations to establish a trend and control for effects on outcomes due to factors other than the intervention.

- Non-randomized studies with control for observable confounding, including nonparametric approaches (e.g., statistical matching, covariate matching, coarsened exact matching, propensity score matching) and parametric approaches (e.g. propensity-weighted multiple regression analysis).

We only included those RCTs and QEDs that address the effectiveness of attendance interventions and measure attendance as an outcome measure. We drew on information on implementation in the included RCTs and QEDs to answer question 5, rather than exploring broader literature.

Population

We included only those RCTs and QEDs that used school-aged pupils in their population sample, that means pupil who attend primary and secondary schools (terminology may differ in those studies conducted in countries outside of England). Since the review aimed to capture both whole-school and targeted interventions, pupils who have significant attendance issues and those who may not but are involved in whole-school approaches were included.

Types of interventions

We included any type of intervention that includes school-aged pupils and aims to increase attendance. These interventions could be both school-based such as mentoring and workshops or community-based such as programmes that take place in local youth sector organisations.

Outcomes

We included studies that reported a measure of pupil attendance or decreasing absenteeism. If these studies also reported on other outcomes such as attainment, engagement and behavioural outcomes, we took note of these but did not calculate effect sizes or attempt to synthesise them due to time constraints.

Other criteria

Adopting the approach of Maynard et el. (2012) and due to differences in educational systems, this review only included those studies conducted in the United States, Canada, the United Kingdom, and Australia. They needed to be written in English and published post 2000. We included studies published in journal articles or in grey literature.

We included any follow-up duration, coding multiple outcomes where studies report multiple follow-ups.

Search strategy for identification of studies

Search systems and databases to be searched

Searches used a combination of search systems and bibliographic databases, including ERIC, PsychInfo and Google Scholar. We also screened studies for inclusion from known existing systematic reviews of attendance interventions (Maynard et al. 2012, Sutphen el al. 2010 and Freeman et al. 2019).

Search Systems and databases to be searched:

- ERIC
- PsychInfo
- Google Scholar[14]
- Web of Science

Other sources:

- Review of Education Research: **https://journals.sagepub.com/home/rer**
- Education Research Review: **https://www.journals.elsevier.com/educational-research-review**
- EEF Teaching and Learning Toolkit
- YEF Evidence and Gap Map: **https://youthendowmentfund.org.uk/evidence-and-gap-map/**
- EIF Guidebook: **https://guidebook.eif.org.uk/**

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[14] Google scholar has a 256 character limit and does not automatically search for truncations. We will look at the first 200 results in Google Scholar, in line with the recommendation of Haddaway et al. 2015.

Both toolkit resources are based on systematic reviews as well as including grey literature, adding to the comprehensiveness of the search for this rapid evidence assessment.

Search terms

We drew on the search terms used in the Maynard et al. (2012), Sutphen et al. (2010) and Freeman et al. (2019) reviews, combined with new search terms to cover the wider scope of this current review. The terms were used to search on titles and abstracts and adapted as necessary depending on the search functions of the search systems and databases.

Because of the review timeframe, we decided to limit the number of unique combinations of search terms to ensure adequate time to conduct the searches across peer reviewed and non-peer reviewed sources and review the search results to select material for inclusion. To this end, we used search strings that combined multiple terms and operators (e.g., AND, OR, and wildcards). Where it was possible to refine searches using filters such as categories on web of science, we excluded categories not related to education and attendance. Where filters on sites corresponded to inclusion criteria, we also filtered during the search – for example, only searching studies published from 2000.

The table below shows the search strings. Synonymous terms are grouped within parentheses and separated using 'OR'. Variants of words can be searched using wildcards, e.g., 'Evaluation*' will include 'evaluation', 'evaluate' and 'evaluations. These search strings and operators work in both academic databases and Google search.

Category	Search terms
Targeted population AND	"High School" OR "Secondary school" OR "Primary School" OR "Elementary School" OR "Students" OR "Pupils" OR "Schools"
Intervention AND	"Evaluation" OR "Intervention" OR "Program" OR "Policy" OR "support" OR "Treatment" OR "Outcome" OR "Mentoring" OR "Parental engagement"
Targeted behaviour/outcome	"Attendance" OR "Absence" OR "Truancy" OR "Absenteeism"

Selection of studies

The results of the search were imported into EPPI reviewer and duplicates removed. Each search result was screened at least twice, first on abstract and title only, then if needed, on the full text. After initial calibration, each screening stage was completed by one reviewer only due to the timeline for this project. However, we took a "safety first" approach at both screening stages (Shemilt et al., 2016); that is, the reviewer had the option of marking a search result as unclear for review by a second reviewer.

At the title and abstract and full-text stage, every reviewer began by screening the same 30 search results. The results of this screening were compared to ensure that the inclusion and exclusion criteria were being interpreted and applied in the same way. The priority screening tool within EPPI-reviewer (Thomas et al., 2010) was used for title and abstract screening to order results by probability of inclusion and stop screening once we reach a certain point when relevant studies are no longer being identified. The priority screening function orders the results based on the words in the title and abstract of the included and excluded papers from a training set of screening. It does this using machine learning text mining technology. We initially screened a random set ofthe search results as the training set.

Reviewers stopped screening after 100 studies were rejected in a row using the tool. As a check on this approach, we randomly sampled 30 of the unscreened titles to see if this approach missed any relevant studies.

The results of this process are documented using a PRISMA-style flow chart generated from EPPI-reviewer.

Data extraction and management

We systematically extracted data in EPPI-reviewer web using our data extraction tool. The tool can be found in Appendix B. We followed a similar approach to the Maynard et al. (2012) review and coded on: 1) study descriptors 2) sample descriptors 3) intervention descriptors using Tidier[15] 4) Risk of bias 5) Outcome and 6) effect size data. We extracted descriptive data about the type of intervention, and the comparator (that is- whether the participants who were usually getting 'business as usual' may have been receiving some other form of help), duration, method of delivery, reach, attrition figures, outcomes measured by the study, description of the effect sizes and any information about implementation of the attendance intervention. The core team did double data extraction on 20% of studies (randomly selected).

Appraisal of included studies

One of the common shortcuts applied to rapid reviews is to either undertake a light-touch or no risk of bias assessment (Haby et al. 2016). Risk of bias assessments are generally underutilised in education – a recently conducted review of systematic reviews found that fewer than 10% conducted full risk of bias assessments. Despite this, an understanding of study quality is an important factor in both practitioner facing recommendations and funding decisions.

In designing the risk of bias assessment for this review, the team attempted to balance an approach that would identify key threats to validity in the underlying studies, with an assessment approach that was possible to deliver within the timeline of a rapid review.

The domains from the Cochrane Risk of Bias 2 tool (Higgins et. al. 2016) were assessed and adapted. The domains are listed and discussed below. Domains have been omitted where RoB assessment was unlikely to differentiate between studies or where assessing the risk of bias was unfeasible in the timelines of a rapid review.

Cochrane Risk of Bias 2 domains:

Domain 1: Risk of bias arising from the randomization process

We capture risk of bias around allocation through extracting information on the method of assigning participants, and the comparability of groups after allocation.

Risk of bias questions:

- How were the participants assigned?
- Was the method of analysis executed adequately to ensure the comparability of groups throughout the study and prevent confounding?
- Risk of bias for allocation? [High/Some concerns/Low]

Domain 2: Risk of bias due to deviations from the intended interventions (effect of assignment to intervention/effect of adhering to intervention)

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[15] Better reporting of interventions: template for intervention description and replication (TIDieR) checklist and guide; **BMJ 2014;348:g1687**

In the education studies participants cannot be blinded to the intervention. A question has been included that captures whether appropriate analysis has been used to capture deviations from intended intervention (i.e. intention to treat analysis).

Domain 3: Missing outcome data

We assess whether the method of analysis was adequately executed to ensure the comparability of groups and prevent confounding.

Domain 4: Risk of bias in measurement of the outcome

Given the outcome of interest is attendance, which is routinely collected through school administrative data, the rapid review has not included a separate risk of bias assessment on the basis of outcome measurement. This domain was therefore omitted.

No risk of bias questions included.

Domain 5: Risk of bias in selection of the reported result

While there is a risk of bias from selective reporting, the rapid nature of this review mean that it is not feasible to identify and review protocols to make a comprehensive risk of bias assessment. The data extraction tool does capture the independence of the evaluation team. It is a limitation in the overall assessment of risk of bias that will be highlighted in the final report. The

Light touch risk of bias tool for REA

Domain 1: Risk of bias arising from the allocation process		
How were the participants assigned?	Random, non-random studies with selection on unobservables, Non-random studies with pre/post intervention outcome data, Non-random with control for observable confounding, not assigned but matched, non-random not matched prior to treatment, unclear, not assigned.	How were the participants assigned or allocated to their group (i.e. treatment and control)? *Random:* Select this code where the report describes the participants' allocation to their group as random or pseudo-random (computer generated). Please highlight in the text or add information to the info box about the randomisation details. *Non-random studies with selection on unobservables:* - Regression discontinuity designs, where assignment was done on a threshold measured at pre-test, and the study used prospective or retrospective approaches of analysis to control for unobservable confounding. - Studies using design or methods to control for unobservable confounding, such as natural experiments with clearly defined intervention and comparison groups, which exploit natural randomness in implementation assignment by decision makers (e.g., public lottery) or random errors in implementation, and instrumental variables estimation. *Non-random studies with pre/post intervention outcome data:* - Studies controlling for time-invariant unobservable confounding, including difference-in-differences, or fixed- or random-effects models with an interaction term between

time and intervention for pre-intervention and postintervention observations. - Studies assessing changes in trends in outcomes over a series of time points (interrupted time series, ITS), with or without contemporaneous comparison (controlled ITS), with sufficient observations to establish a trend and control for effects on outcomes due to factors other than the intervention.

Non-random with control for observable confounding: - including nonparametric approaches (e.g., statistical matching, covariate matching, coarsened exact matching, propensity score matching) and parametric approaches (e.g. propensity-weighted multiple regression analysis).

Unclear [Selectable (show checkbox)]

Please only select this code if there are no details about control and intervention allocation or if the information is so unclear as to prevent a reasonable inference.

Not assigned - naturally occurring sample: This is where researchers take advantage of a situation where a comparison can be made between groups from changes that either are planned or have already happened which will give and estimate of the impact of the intervention or approach of interest.

Confounding: (Was the method of analysis executed adequately to ensure the comparability of groups throughout the study and prevent confounding?)	Yes, Probably Yes, Probably No, No, Unclear	Select appropriate category Notes: **a) Baseline characteristics are similar in magnitude;** **b) Unbalanced covariates at the individual and cluster level are controlled in adjusted analysis;** Score "Yes" if criterion a) and b) are satisfied; -Score "Probably yes" if a) is not satisfied but b) is satisfied and imbalances are small in magnitude OR if only a) is satisfied. -Score "Unclear" if no balance table is provided or if imbalances are controlled for but they are very large in magnitude and assignment mechanism is not coded as "Yes" or "Probably yes". -Score "Probably no" if a) and b) are not satisfied and the magnitude of imbalances are small.

		-Score "No" if a) and b) are not satisfied and the magnitude of imbalances are large and covariates are clear determinant of the outcomes.
Allocation risk of bias	Low risk of bias Some concerns High risk of bias	**Low risk of bias:** Allocation is random and Y or PY Non-random with selection on unobservables and Y Non-random with pre-post outcome data and Y **Some concerns:** Allocation is random and PN Non-random with selection on unobservables and PY or unclear Non-random with pre-post outcome data/control for observables and PY Naturally occurring sample and Y **High risk of bias:** Allocation is random and N Non-random with selection on unobservables and PN or N Non-random with pre-post outcome data/control for observables and unclear, PN or N Naturally occurring sample and PY, PN or N

Domain 2: Risk of bias due to deviations from the intended interventions (effect of assignment to intervention/effect of adhering to intervention)

Was an appropriate analysis used to estimate the effect of assignment to the intervention?	High risk of bias Some concerns Low risk of bias	Score "high risk" if either naïve 'per-protocol' analyses (excluding trial participants who did not receive their assigned intervention) or 'as treated' analyses (in which trial participants are grouped according to the intervention that they received, rather than according to their assigned intervention) Score "low risk" if intention to treat analysis is used Score "unclear" if it is unclear what type of analysis is used.

Domain 3: Missing outcome data

Selection bias	High risk of bias Some concerns Low risk of bias	Select appropriate category -Score "Low risk of bias" if there is less than 20 per cent attrition and the study establishes that attrition is randomly distributed

		-Score "Some concerns" if there is an attrition problem but no information provided on the relationship between attrition and treatment status or if there is attrition which is likely to be related to the intervention
		-Score "High risk of bias" if there is evidence of differential attrition affecting more than 20 per cent of the data.
Overall risk of bias judgement		
Overall judgement	High risk of bias Some concerns Low risk of bias	Select the category that corresponds with the highest risk in any of the domains (e.g. if any domains have high risk of bias this will be the overall rating).

Data synthesis

We undertook narrative synthesis of the included studies to answer the review questions where meta-analysis was not feasible. Where appropriate, we undertook meta-analysis where studies were sufficiently similar based on their theory of change, where they presented effect sizes and associated measures of uncertainty or the necessary information to calculate effect sizes. The outcome of interest for this review was attendance, which for the most part was reported as a continuous variable, for example being reported in terms of mean number of days attended or absent, mean number of classes absent, or mean percentage of days attended or absent. We therefore undertook meta-analysis of standardised mean differences from each study. We undertook random-effects, inverse variance meta-analysis, using the metafor package in R.

Where studies had multiple treatment arms with only one control group and several attendance outcomes are presented for the same study…. We did not extract all effect sizes and only included one effect estimate per study in our meta-analysis. Where we identified several publications reporting on the same study we used effect sizes from the key publication only. For studies with outcome measures at different time points, we synthesised on the outcome measured closest upon completion of the intervention.

To answer question 2 and 4, we extracted qualitative and quantitative information where available in the study on barriers and facilitators to effective implementation of attendance intervention. We planned to use thematic analysis to synthesise the results. Thomas and Harden (2008) outline the three stages of thematic synthesis: the coding of text 'line-by-line'; the development of descriptive themes and the generation of 'analytical themes'. Due to the tight turnaround of this review, we need not code line-by-line but extracted the factors that seem to be barriers or facilitators or appear to mediate the effects from studies into descriptive themes.

To answer question 3, about whether certain types of interventions are more effective at improving attendance, we used meta-regression analysis to compare intervention type for moderating effects, using the metafor package in R.

To answer question 5, we extract data on other outcomes, if presented, for example academic attainment and behavioural outcomes (e.g., substance misuse, bullying perpetration and mental health and wellbeing).

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Conflicts of interest

No conflicts of interest

Timeline

	Task	Completion date
Protocol Development	Peer review protocol	10th September
	Finalise protocol	20th September
	Data extraction tool finalised	20th September
Search	Academic search	15th September
	Search grey literature and organisational websites	17th September
	Citation tracking (checking included studies in the relevant systematic reviews and meta-analyses	17th September
Screening	Screening at title (and abstract)	1st October
	Full text retrieval	6th October
	Full text screening	29th October
Data Extraction	Data extraction (descriptives, intervention, implementation, effect sizes), assuming 10 per day	19th November
	Check data extraction	23rd November
	Data extraction (critical appraisal of studies)	29th November
Synthesis and write-up	Narrative synthesis	6th December
	Write up of new synthesis	13th December
	Review of findings by senior team	20th December
	Write up draft technical report using REA template	End of December
Peer Review	Select and approach two peer reviewers	20th December
	Send to peer reviewer	5th January
	Peer reviews complete	14th January
	Integrate peer review comments	21st January
Publishing	Publish report	February
	Summary document	End of Jan

	Task	Completion date
Supportive resources for schools	Feedback from wider team	February
	Finalise school facing findings document	February

Appendix B: Data extraction tool

Q	Question	Codes
Study descriptors		
	Type of publication	Journal article, Dissertation or thesis, Technical report, Book or book chapter, Conference paper, Other (please specify)
Sample descriptors		
	Sample population age	Tick box (in pupil ages rather than school years)
	Intervention sample size (at analysis)	Numerical value
	Comparison group sample size (at analysis)	Numerical value
	What is the proportion of low SES/FSM students in the sample?	FSM or low SES percentage, Further information about FSM or SES in the study sample, No SES/FSM information provided
Intervention descriptors		
	Country in which intervention was implemented	United States, Canada, England, Scotland, Wales, Northern Island and Australia
	Name of programme/intervention	Write the name of the programme/intervention
	Describe any rationale, theory, or goal of the elements essential to the intervention	Open response
	Description of intervention	Open response
	Year intervention started	State year
	Where was the intervention delivered?	Primary school, Secondary school, community centre, virtually, other (please specify)
	When did the intervention take place?	During regular school hours, before/after school, evenings and/or weekends, summer/holiday period, other (please specify), Unclear/not specified
	Was training for the intervention provided?	Yes (please specify), No, Unclear/Not specified
	What is the intervention delivery approach?	Whole school, Whole class, Large group (+6), Small group (3-5), One to one, Peer to Peer, Student alone (self-administered), Other (please specify)
	Length of individual intervention session	Less than an hour, one- hour, half a day, one-day, other (please specify)
	Frequency of intervention	One-off, fortnightly, weekly, two times a week, daily, other (please specify)
	Overall duration of intervention	One day, one week, two to three weeks, 1 month, 1 month to 3 months, 3 months to 6 months, 6 months to 1 year, more than 1 year
	Type of intervention (select as many as apply)	Mentoring, Parental engagement,

		Peer support, academic, cognitive skills training, behavioural interventions, extracurricular activities, Counselling, Social Work or other Therapeutic intervention (individual), Social Work or other Therapeutic intervention (group), social and emotional learning, breakfast clubs, Incentives/rewards schemes, other (please specify)
	Person(s) providing the intervention	Not stated/unclear, class teachers, external teachers, social worker, teaching assistants, other school staff, parents/carers, volunteers, peers, research staff, digital technology, other (describe)
	Educational setting	Primary/elementary, Middle school, Secondary/high school, Residential/boarding school, Independent/private school, Home, alternative provision, Other educational setting (please specify)
	Are the costs reported?	Yes (please specify), No
Risk of bias		
	Allocation bias - Type of allocation	Random, non-random studies with selection on unobservables, Non-random studies with pre/post intervention outcome data, Non-random with control for observable confounding, not assigned.
	Confounding: (Was the method of analysis executed adequately to ensure the comparability of groups throughout the study and prevent confounding?)	Yes, Probably Yes, Probably No, No, Unclear
	Overall allocation bias	High, some concerns, low
	Was an appropriate analysis used to estimate the effect of assignment to intervention?	Low risk, High risk, Unclear
	Attrition bias	Low risk, some concerns, high risk
	Overall RoB assessment	High risk of bias, some concerns, low risk of bias
Research methods		
	What is the level of assignment?	Individual, class, school - cluster, school - multi-site, region/district, not provided/not available
Outcomes		
	Outcome on attendance	
	What is the comparison?	No treatment, treatment as usual, another treatment, other (specify)

	Timing of post-intervention data collection	Number of days/weeks/months after intervention or NA if unknown
	Type of outcome (attendance)	Days absent, total attendance, persistent absence classifier
	Other outcomes?	Academic outcomes, school exclusions. Criminal justice outcomes, substance abuse, behaviour (other), other (please specify)
	What is the level of assignment?	Individual, class, school - cluster, school - multi-site, region/district, not provided/not available
Effect Size data		
	Attendance outcome measure (Outcome description in EPPI-reviewer)*	Open response (How the study has monitored/measured attendance rates)
	Is there more than one treatment group?	Yes (please specify), No, Not specified/N/A
	Standard error	Numerical value
	Standard deviation	Numerical value
	Confidence interval lower	Numerical value
	Confidence interval upper	Numerical value
	Effect Size measure	Numerical value
Qualitative information		
	Is there a process evaluation	Yes/No
	Facilitators to implementation	Open response, no detail
	Barriers to implementation	Open response, no detail
	Other notes	Open response

Appendix C: Model results for moderator analysis
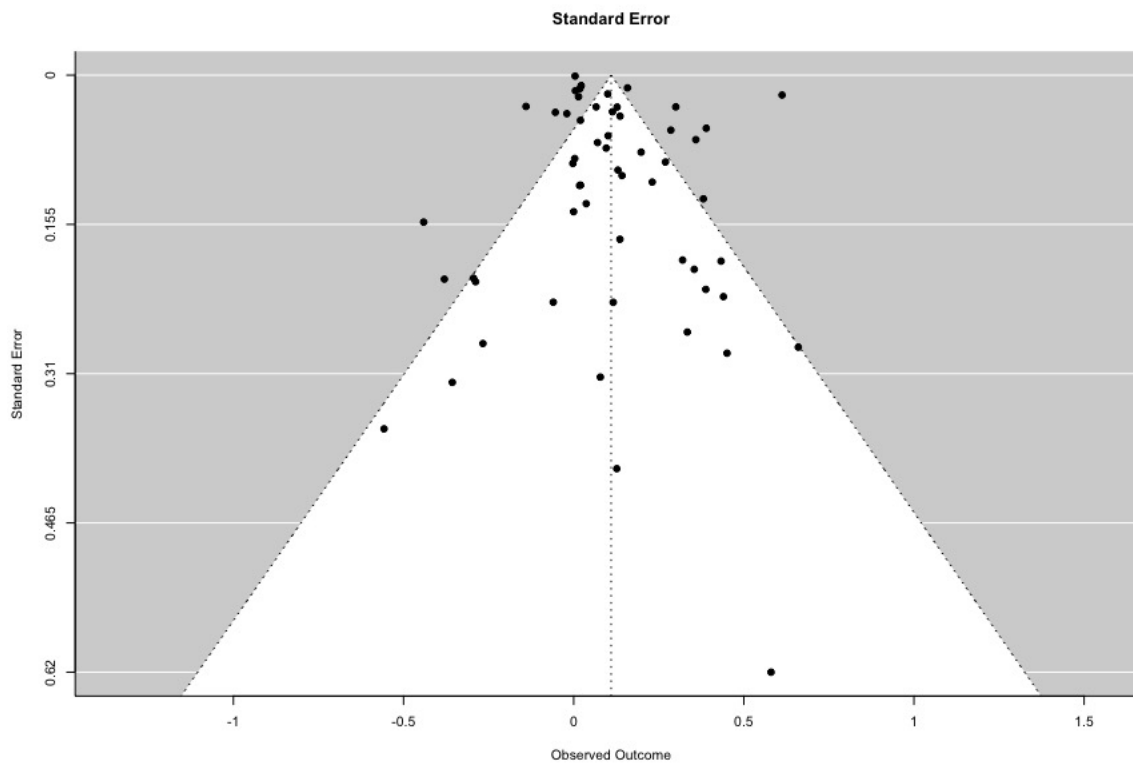
Standard Error

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Mixed-Effects Model (k = 56; tau^2 estimator: REML)

tau^2 (estimated amount of residual heterogeneity):     0.0329 (SE = 0.0098)
tau (square root of estimated tau^2 value):             0.1813
I^2 (residual heterogeneity / unaccounted variability): 94.34%
H^2 (unaccounted variability / sampling variability):   17.68
R^2 (amount of heterogeneity accounted for):            0.00%

Test for Residual Heterogeneity:
QE(df = 45) = 753.8681, p-val < .0001

Test of Moderators (coefficients 2:11):
QM(df = 10) = 3.2608, p-val = 0.9746

Model Results:

                                estimate      se     zval    pval     ci.lb   ci.ub
intrcpt                           0.1301  0.0680   1.9143  0.0556   -0.0031  0.2633  .
factor(Staff)Counsellors         -0.0208  0.1094  -0.1898  0.8495   -0.2352  0.1937
factor(Staff)Digital technology  -0.1081  0.1939  -0.5577  0.5770   -0.4881  0.2719
factor(Staff)External teachers   -0.0970  0.1100  -0.8825  0.3775   -0.3126  0.1185
factor(Staff)Mixed               -0.0385  0.1224  -0.3149  0.7528   -0.2785  0.2014
factor(Staff)N/A                  0.0163  0.1006   0.1624  0.8710   -0.1809  0.2136
factor(Staff)Other                0.0120  0.0948   0.1263  0.8995   -0.1739  0.1979
factor(Staff)Peers               -0.4867  0.3731  -1.3044  0.1921   -1.2181  0.2446
factor(Staff)Researcher          -0.0301  0.1946  -0.1546  0.8771   -0.4114  0.3512
factor(Staff)Social worker       -0.0308  0.1365  -0.2255  0.8216   -0.2983  0.2368
factor(Staff)Volunteers          -0.0026  0.1964  -0.0132  0.9895   -0.3875  0.3823

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Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
```

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Mixed-Effects Model (k = 56; tau^2 estimator: REML)

tau^2 (estimated amount of residual heterogeneity):     0.0316 (SE = 0.0089)
tau (square root of estimated tau^2 value):             0.1776
I^2 (residual heterogeneity / unaccounted variability): 97.40%
H^2 (unaccounted variability / sampling variability):   38.40
R^2 (amount of heterogeneity accounted for):            0.00%


Test for Residual Heterogeneity:
QE(df = 49) = 1138.3298, p-val < .0001

Test of Moderators (coefficients 2:7):
QM(df = 6) = 1.3030, p-val = 0.9715

Model Results:

                            estimate      se     zval    pval    ci.lb   ci.ub
intrcpt                       0.0470  0.1289   0.3643  0.7156  -0.2057  0.2997
factor(Delivery)N/A           0.0561  0.1539   0.3647  0.7153  -0.2455  0.3578
factor(Delivery)One to one    0.0540  0.1493   0.3618  0.7175  -0.2387  0.3467
factor(Delivery)Small group   0.1671  0.2020   0.8274  0.4080  -0.2288  0.5631
factor(Delivery)Variable     -0.0497  0.2055  -0.2420  0.8088  -0.4525  0.3531
factor(Delivery)Whole class   0.0848  0.1479   0.5734  0.5664  -0.2051  0.3748
factor(Delivery)Whole school  0.0670  0.1361   0.4923  0.6225  -0.1998  0.3338
```

```
Mixed-Effects Model (k = 56; tau^2 estimator: REML)

tau^2 (estimated amount of residual heterogeneity):      0.0274 (SE = 0.0080)
tau (square root of estimated tau^2 value):              0.1656
I^2 (residual heterogeneity / unaccounted variability): 94.04%
H^2 (unaccounted variability / sampling variability):   16.78
R^2 (amount of heterogeneity accounted for):            0.00%


Test for Residual Heterogeneity:
QE(df = 50) = 1178.8207, p-val < .0001


Test of Moderators (coefficients 2:6):
QM(df = 5) = 5.8433, p-val = 0.3218


Model Results:

                                   estimate      se      zval     pval
intrcpt                             0.3895  0.1746    2.2314   0.0257
factor(Phase)Middle                -0.3853  0.2059   -1.8718   0.0612
factor(Phase)N/A                   -0.2821  0.1834   -1.5388   0.1239
factor(Phase)Primary               -0.2189  0.1822   -1.2013   0.2296
factor(Phase)Primary and Secondary -0.3472  0.2019   -1.7195   0.0855
factor(Phase)Secondary             -0.3159  0.1814   -1.7414   0.0816
                                     ci.lb    ci.ub
intrcpt                             0.0474   0.7316   *
factor(Phase)Middle                -0.7888   0.0181   .
factor(Phase)N/A                   -0.6415   0.0772
factor(Phase)Primary               -0.5760   0.1382
factor(Phase)Primary and Secondary -0.7429   0.0486   .
factor(Phase)Secondary             -0.6714   0.0397   .
```