Associations between socioeconomic status (including school- and pupil-level interactions) and student perceptions of school environment and health in English secondary schools.

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Conflict of interest

There are no conflicts of interest to declare

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Abstract

This paper examines interactions between school-level and pupil-level measures of socio-economic status for pupil reports of the school environment and a range of risk behaviours and health outcomes. The baseline survey for the INCLUSIVE trial provided data on pupil affluence and pupil reports of the school environment, smoking, drinking, anti-social behaviour at school, quality of life and psychological wellbeing for over 6000 pupils (age 11/12 years) in 40 schools within a one hour train journey from central London. The level of socio-economic disadvantage of the school was measured using the percentage of pupils eligible for free school meals. Multilevel regression models examined the association between pupil affluence, the socio-economic composition of the school, and the interaction between these with the school environment, risk behaviours and health outcomes. Our findings provide some evidence for interactions, suggesting that less affluent pupils reported lower psychological wellbeing and quality of life in schools with more socio-economically advantaged intakes. There appears to be a complex relationship for anti-social behaviour. Where pupil affluence and school socio-economic composition were discordant, pupils reported a higher number of anti-social behaviours. This paper provides further evidence that less affluent pupils are more likely to engage in a variety of risk behaviours and experience worse health outcomes when they attend schools with more socio-economically advantaged intakes, supporting some of the mechanisms described in the theory of human functioning and school organisation.

Keywords

School environment; socio-economic; wellbeing

Introduction

Schools are an important site for public health intervention because of their near universal coverage of young people at a critical stage in the life course (Bonell et al. 2007). While health education delivered in classrooms is effective in improving knowledge and attitudes, effects on behaviour are inconsistent and are often not sustained (Faggiano et al. 2008; Foxcroft & Tsertsvadze 2011; Thomas et al. 2013; Vreeman & Carroll 2007). Hence there is increasing interest in interventions to modify the school environment, addressing some of the multiple upstream determinants of young people's health, with emerging evidence that such interventions are effective (Langford et al. 2011; Shackleton et al. 2016). Schools are key settings through which inequality in young people's health may be reproduced or reinforced as well as reduced, but few studies to date have examined the mechanisms by which institutional processes may affect this.

The theory of human functioning and school organisation (Markham & Aveyard 2003) is the only theory which engages with how institutional processes in schools influence pupil health behaviours (Bonell et al. 2013). Informed by Bernstein (Bernstein 2000), it suggests that healthier school environments promote pupil commitment to the school's 'instructional' (learning and knowledge) and 'regulatory' (conduct and behaviour) orders. If pupils do not become committed to the instructional order they are '*estranged*'; if they are uncommitted to the regulatory order they are '*detached*'; and if committed to neither they are '*alienated*'. Students from disadvantaged social backgrounds are more likely to become estranged, detached or alienated because of the greater likelihood of cultural differences, for example in terms of the priority given to academic attainment, between school and family among these pupils.

Commitment to the instructional order enables pupils to develop '*practical reasoning*' and commitment to the regulatory order enables development of '*affiliation*'. Practical reasoning is the ability to understand and manage one's own feelings (Nussbaum 1990). Affiliation is the capacity for developing mutually beneficial relationships. Practical reasoning and affiliation provide pupils with the cognitive and social supports required to develop autonomy and make healthy decisions.

The theory suggests that commitment is achieved by schools implementing policies and practices which promote student-centred framing of teaching and decision-making and by schools eroding various boundaries and improve linkages within the school between:

- staff – so authority is distributed rather than concentrated among senior staff;
- staff and pupils – so relationships are collaborative rather than authoritarian;
- between pupils – so positive relationships are encouraged and pupils are treated equitably;
- different areas of pupils' life – so teachers focus on pupils' overall wellbeing and development rather than merely academic progress, and support is provided across the whole school rather than merely in the classroom; and
- the school and its local community – so the cultures of each are mutually supportive and pupils and staff fully benefit from local resources.

An earlier analysis by Moore et al (2017) explored some of the mechanisms suggested by this theory, working with cross-sectional data from 9,055 pupils aged 11-16 years from 82 Welsh secondary schools examined interactions between schools' aggregate socio-economic composition and social relationships in mitigating or perpetuating pupil health inequalities. It found that schools with more affluent pupils were most unequal in terms of various pupil risk behaviours and a single-item measure of subjective wellbeing. Students from affluent families reported less risk and greater wellbeing in affluent schools while pupils from poorer families reported lower subjective wellbeing in these schools. In terms of the theory these findings might be interpreted as suggesting that schools with more affluent pupils are likely to be more alien environments for pupils from socially

disadvantaged backgrounds, and may make fewer efforts to engage disadvantaged pupils by eroding the boundaries listed above.

Moore et al's analysis provided evidence suggesting that pupil–staff relationships are a key mechanism underlying the worse health of disadvantaged pupils in more affluent schools: poor relationships with staff were predicted by a pupil's position within schools' SES hierarchy and associated with worse health outcomes (Moore et al. 2017). Students from the poorest families reported better relationships with teachers where they attended less affluent schools.

The present analysis examines the same mechanisms within a sample of secondary schools in south-east England. It focuses on the same constructs of school engagement and social relationships as used by Moore et al., and like Moore et al examines pupil smoking and alcohol use. Extending the previous analysis, it uses a validated multi-item measure of psychological wellbeing, examines health-related quality of life (QoL) and also examines a measure of school-based violence and anti-social behaviour.

This paper assesses whether there are significant pupil- and school-level SES interaction effects for a range of risk behaviours, wellbeing and quality of life, and school-environment outcome measures

Methods

Participants

We use data from the INCLUSIVE trial of a multi-component intervention focused on restorative practice to reduce bullying and aggression, conducted between 2014 and 2017. This cluster-randomised trial recruited N=40 state secondary schools within a 1 hour train journey from central London and not judged by the national school inspectors as 'inadequate'. The study design is

described in detail elsewhere (Bonell et al. 2017a). Here we use data collected at trial baseline, before allocation or intervention. Students were surveyed at the end of year 7 (aged 11–12 years). Surveys were completed in classrooms or school halls administered by trained fieldworkers under exam conditions with teachers present to help maintain order but remaining at the front and unable to read pupil responses. Students gave written informed consent to participate. Parents were informed and could withdraw their children from the surveys. The study was approved by the Institute of Education (FCL 566) and the University College London (5248/001) ethics committees. The procedures followed were in accordance with the Declaration of Helsinki 1975, revised Hong Kong 1989.

Measures

Socio-economic disadvantage

Government data on the percentage of pupils within each secondary school eligible for free school meals (FSM) is routinely available (Gov.uk 2017). FSM eligibility is determined by parental benefit receipt. We used FSM as a measure of school-level socio-economic disadvantage, with a higher percentage of pupils receiving FSM indicating a socio-economically disadvantaged intake of pupils. The socio-economic status of individual pupils was determined from their survey responses to the Family Affluence Scale (FAS) (Currie et al. 2008). The FAS is a four-item scale comprising measures of vehicle and computer ownership, frequency of holidays and bedroom occupancy. A lower FAS score denotes socio-economic disadvantage.

Outcomes

School environment

Student reports of supportive teacher relationships (10 items), sense of belonging (8 items), commitment to academic values (4 items), and opportunities for participation in the school environment (6 items) were measured using subscales from the Beyond Blue School Climate

Questionnaire (BBSCQ). The scale was originally developed in Australia (Sawyer et al. 2010), using items selected from the Quality of School Life (Epstein & McPartland 1976), Patterns of Adaptive Learning (Roeser et al. 1996), and Psychological Sense of School Membership questionnaires (Goodenow 1993). It consists of 28 items, which produce an overall score and also assess four key domains of school climate (subscale). Each item was coded 1–4 on a four-point scale. Responses ranged from 'Yes, totally agree' to 'No, totally disagree'. The subscale scores were treated as continuous variables with higher scores representing a positive report of each aspect of the school climate. Cronbach's alphas for the belonging and academic commitment subscales of .85 and .82 were reported for a sample of similar age (personal communication, Lyndal Bond, 21 July 2011).

Risk behaviours

We used self-report single-item binary measures of ever having smoked and ever having drunk alcohol previously used in the Ripple trial (Stephenson et al. 2008). We measured anti-social behaviour at school in the last three months using a count measure derived from an amended 13-item version of the Edinburgh Study of Youth Transitions and Crime (ESYTC) school misbehaviour subscale (Table 2) (Smith 2006), adding three items piloted in a previous study designed to examine threats, hitting/kicking and getting into fights (Bonell et al. 2015). The total score was a summed frequency of anti-social behaviour violence at school. Cronbach's alpha among a sample of similar age was .85 (Bonell et al. 2015).

Wellbeing and Quality of Life

We used the Short Warwick–Edinburgh Mental Well-Being Scale (SWEMWBS), which consists of seven items designed to measure positive mental well-being, including psychological functioning, cognitive-evaluative dimensions and affective-emotional aspects (Clarke et al. 2011). Items were rated on a five-point scale: none of the time (score = 1), rarely (2), some of the time (3), often (4), all of the time (5). The responses were scored and aggregated to form a 'well-being index' (total score),

which can range from a minimum of 7 (those who answered 'rarely' on every statement) to a maximum of 35 (those who answered 'all of the time' to all statements). Higher scores represented improved mental well-being.

QoL was measured using the 30-item Paediatric Quality of Life Inventory (PedsQL) version 4 (Varni et al. 2006). The PedsQL has been shown to be a reliable and valid measure of QoL in general adolescent populations (Varni et al. 2006). It consists of 30 items representing five functional domains: physical, emotional, social, school and well-being. Items are rated on a series of five-point Likert scales ranging from 0, 'never', to 4, 'almost always'. The PedsQL yields a total QoL score, and two summary scores for 'physical health' and 'psychosocial health'. For the total QoL score, items are reverse-scored and linearly transformed to a scale of 0–100 (i.e. 0 = 100, 1 = 75, 2 = 50, 3 = 25 and 4 = 0) with higher scores representing better QoL.

Analysis

Analyses were conducted using Stata version 14 (StataCorp 2015). We examined the distribution of and response rates to all independent and dependent variables. The joint distribution between pupil reported FAS and FSM is available in the web only appendix.

Next, we considered the relationships:

A. between pupil reported FAS and various aspects of the school environment (supportive teacher relationships, sense of belonging, commitment to academic values, and participative school environment) and pupil health and risk behaviours (smoking, alcohol consumption, anti-social behaviour, mental wellbeing and QoL using the measures above) (model A);

B. Between the percentage of children eligible for FSM within a school and the same measures of the school environment and pupil health and risk behaviours (model B). These were adjusted for sex.

C. Finally, we tested the interaction between FAS and FSM (model C). As the outcome variables and reports of FAS were at the pupil-level, and FSM was at the school level, we used multi-level models. We report coefficients to three decimal places.

The choice of model was based on the distribution of the dependent variable. We used linear multi-level models (with random intercepts) for aspects of the school environment, SWEMWBS and QoL. The results are presented as beta coefficients (β). For Smoking and alcohol consumption, we used multi-level logistic regression models with random intercepts to account for clustering at the school level, and present the results as odds ratios (OR), and for the ESYTC measure of anti-social behaviour at school (a zero-inflated count variable with over dispersion), we used a multi-level negative binomial regression with random intercepts and present the results as incidence rate ratios (IRR).

Multilevel models were used to account for the hierarchical structure of the data (with pupils nested within schools). These models account for the dependency between observations from pupils within the same school to estimate appropriate standard errors. These models also allow the use of covariates measured at any of the levels of a hierarchy (pupil-, or school- level), and for cross-level interactions, such that a covariate measured at the pupil level can be interacted with a covariate measured at the school level (Shackleton 2018). Where interactions were significant ($p<0.05$) or borderline significant ($p<0.10$), we present these in graphical format for easier interpretation of the relationship.

The predicted values and confidence intervals presented in these graphs were calculated using the "margins" command in Stata, using the "at" option to specify values of the covariates. We obtained predicted values for pupils in schools with 10%, 30%, 50% and 70% FSM as these values fall within the values of FSM included in our sample and for all levels of FAS (0-9). For linear models these are the predicted means, for logistic models these are predicted probabilities and for the negative binomial regression these are the predicted counts.

Results

Of eligible pupils, 6,667 (93.6%) completed questionnaires. Of those that completed questionnaires, item-level non-response ranged from 0.5% to 6% (Table 1). The characteristics of the sample are described in Table 1. All scales used to measure outcomes in the analysis had acceptable Cronbach's alpha values (>0.70). The Cronbach's alpha values for the subscales of the BBSCQ ranged from 0.74 to 0.88 (supportive teacher relationship=0.88; sense of belonging=0.80; participative environment=0.80; commitment to academic values=0.74), and were 0.83, 0.89 and 0.90 respectively for the SWEMWBS, ESYTC scale and the PedsQL scale.

As shown in Table 2 (model A), there was no association between pupil-reported FAS and pupil reports of relationships with teachers or participative environment. However pupils from more affluent families tended to report significantly greater sense of belonging and more commitment to academic values. Students in schools with a higher number of pupils entitled to FSM (indicating less affluent intakes) tended to report poorer relationships with teachers, sense of belonging, and participative environment, but there were no such associations with pupil reports of commitment to academic values (Table 2, Model B).

Table 2 (Model C) also shows the interactions between pupil-level FAS and school-level FSM in relation to the school environment. A significant interaction means that the relationship between pupil-level FAS and the outcome (as measured by the β i.e. the slope) changes with increasing school-level FSM. There was an interaction of borderline significance for pupil teacher relationships ($p=0.09$). There was also evidence for a statistically significant interaction for commitment to academic values ($p<0.05$). These interactions are depicted in Figure 1 which demonstrates the predicted slopes for all values of FAS (0-9), and for schools with 10%, 30%, 50% and 70% of pupils entitled to FSM. In schools with a more affluent intake (lower %FSM), there was a positive relationship between pupil FAS and pupil-reported commitment to academic values, whereas in schools with a less affluent intake (higher % FSM) there was no relationship between pupil-level FAS and pupil reported commitment to academic values (as demonstrated by the flat line).

As shown in Table 3 (Model A), pupil reports of smoking do not differ by pupil-reported FAS scores. Higher FAS scores were associated with increased risk ever having drunk alcohol, increased psychological wellbeing, increased QoL and less anti-social behaviour at school. There was no evidence that schools with fewer pupils entitled to FSM had higher rates of pupil smoking, psychological wellbeing or QoL (Table 3, Model B). However, a higher percentage of pupils entitled to FSM was associated with a lower percentage of pupils reporting ever having drunk alcohol, and higher rates of anti-social behaviours.

Table 3 (Model C) and Figure 2 show the interaction between pupil-level FAS and the school-level FSM rates for well-being ($p<0.05$), QoL ($p<0.05$) and anti-social behaviour ($p<0.05$). In schools with more affluent intakes (lower % FSM), the predicted relationship between pupil FAS and psychological wellbeing was positive, but in schools with less affluent intakes (higher % FSM), there was no relationship between pupil FAS and psychological wellbeing (as demonstrated by the flat

line). The strength of the relationship between FAS and QoL decreased with increasing percentage of pupils eligible for FSM, as demonstrated by the decreasing steepness of the slope.

In schools with fewer pupils entitled to FSM, lower FAS is associated with worse psychological wellbeing and lower QoL, but in schools with more pupils entitled to FSM, there is little association between FAS and these outcomes.

With regard to anti-social behaviours, in schools with more affluent intake (fewer pupils entitled to FSM), low pupil FAS score is associated with increased reported counts of antisocial behaviour, but for schools with more less affluent intakes, high pupil-reported FAS is associated with increases in reported counts of antisocial behaviour.

Discussion

Summary of key findings

We sought to repeat and extend the analyses done by Moore et al (2017). We found that pupils from less affluent families tend to report lower sense of belonging and lower commitment to academic values but not worse relationships with teachers or participative school environment. We found that in schools with more socio-economically advantaged intakes, there was evidence of greater inequalities in pupil reports of commitment to academic values, such that less affluent pupils reported lower commitment. There was some evidence for a differential relationship between pupil affluence and pupil-reported relationships with teachers, whereby relationships were reported as better when the social status of the school overall and of the pupil were more similar, but this interaction was only of borderline significance. There was evidence for greater inequalities in pupil reported psychological wellbeing and QoL, such that less affluent pupils reported worse outcomes, in schools with more socio-economically advantaged intakes. We found a more complex relationship for pupil-reported anti-social behaviours. In schools with more socio-economically advantaged

intakes, it was the less affluent pupils who reported more anti-social behaviours whereas in schools with less advantaged intakes it was actually the more affluent pupils who reported a greater number of anti-social behaviours.

Some findings were thus consistent with Moore et al's research in Welsh secondary schools. Both studies found no evidence for greater inequalities in alcohol use according to the social profile of schools, and both studies found evidence for significant interactions between pupil affluence and schools' overall social composition in terms of the association between pupil affluence and measures of health and wellbeing, suggesting there is a stronger association between low pupil affluence and poorer outcomes in schools with more socially advantaged intakes.

Study limitations

Our sample excluded schools poorly rated by school inspectors and this may have reduced the diversity of social composition among our school sample. Compared with English schools overall, our sample somewhat over-represented schools with more pupils eligible for FSM. The measures for ever having tried smoking and drinking alcohol use could not distinguish regular smoking or drinking from experimentation. The theory of human functioning and school organisation would predict that reduced commitment to school would be associated with the former more than the latter because of its being an indicator of greater deviance from conventional norms. Use of measures of frequency was precluded by the low rates of this among pupils who were aged only 11-12 years.

Nonetheless, early use ever of substances is a good marker of later harmful use (Lando et al. 1999; Viner & Taylor 2007). Our study focused on pupils in their first year of secondary school; school effects may increase as they move through secondary school. Due to the measures available at the time, we used the FAS II to measure affluence which has lower discriminatory power and fewer items than a more recent version of this measure. Our study was cross-sectional so that causal

directions cannot be inferred. Thus, our findings should be considered as hypothesis-refining rather than testing. Longitudinal research should assess these hypotheses.

Implications for research and policy

Our study extended Moore et al.'s work not merely by focusing on younger pupils in English secondary schools but also by drawing on different measures of health and wellbeing. We used instruments that have been developed for adolescents and validated within this age group to assess QoL and psychological well-being, whereas Moore et al used a single-item measure of wellbeing and a composite index of health behaviours consisting of responses to substance use, fruit consumption and physical activity. The replication of these findings in a different sample, with better measures of health and wellbeing, strengthens the case for the importance of school-level social composition as a potential mechanism for increasing adolescent health inequalities. Our results suggest these mechanisms which exacerbate inequalities might be operating in early adolescence at the start of pupils' secondary school careers.

However, in contrast to Moore et al's work, we found no evidence that school-level social composition could increase inequalities by pupil affluence in smoking behaviour. In Moore et al's paper smoking was measured using responses to a question asking how often young people reported that they currently smoked, with 'I do not smoke' coded as 0, and any other response (less than weekly-daily) coded as 1. In the present study, we also used a binary indicator, but this was based on reports of ever having tried a cigarette. While 5.2% of Moore et al's sample of pupils' aged 11-16 years reported currently smoking, 5.25% of pupils in our own sample aged 11-12 year reported ever having tried smoking. It is not possible to tell the extent to which this difference in the wording of the questions and the available response categories might have influenced the difference in findings. Moore et al identified that students in poorer schools in Wales tended to report better relationships with their teachers, a finding which was not replicated in the present analysis. It may

be that this is explained by some difference in measurement or by real differences in the nature of the English and Welsh education systems as these have diverged in recent years. Future research should examine such possibilities and future trends.

This paper provides further evidence suggesting that socially disadvantaged pupils are more likely to report a variety of risk behaviours and worse health outcomes when they attend more affluent schools. This study thus provides further evidence to support some of the mechanisms described in the theory of human functioning and school organisation. Further research is now required to establish whether these worse outcomes reflect specific organisational structures and practices within these schools such as the maintenance of strong boundaries between and among staff and pupils, between different areas of school life and between the school and the local community. These have to date only been explored with measures of limited reliability drawing only on cross-sectional data (Bonell et al. 2017b).

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Table 1. Characteristics of the sample.

	Mean	SD	n	Item non response %	Min	Max
Age	11.76	0.43	6542	1.9	10	13
Pupil affluence (FAS)	6.06	1.83	6452	3.2	0	9
Pupil mental wellbeing (SWEMWBS)	24.21	5.91	6309	5.4	7	35
Pupil Quality of Life (PedsQL))	80.68	14.20	6409	3.9	0	100
Pupil count of anti-social behaviours at school (ESYTC)	2.82	4.81	6265	6.0	0	39
Pupil report of Supportive teacher relationships	21.89	5.59	6631	0.5	1	31
Pupil report of Sense of belonging	16.93	4.40	6613	0.8	1	25
Pupil report of Participative environment	14.72	3.21	6600	1.0	1	19
Pupil report of Commitment to academic values	11.55	1.65	6581	1.3	1	13
School level socioeconomic disadvantage (school % FSM)	34.64	19.92	40		3	79.2
	%	%/n	n			
Female	52.67	3453	6556	1.7		
Ever Smoked	5.25	340	6474	2.9		
Ever drunk Alcohol	13.72	880	6414	3.8		

FAS: Family Affluence Scale, SWEMWBS: Short Warwick–Edinburgh Mental Well-Being Scale , QoL: Paediatric Quality of Life Inventory (PedsQL) version 4, ESYTC: Edinburgh Study of Youth Transitions and Crime - school misbehaviour subscale
FSM: Percentage of children within a school eligible for Free School Meals

Table 2. Relationship between pupil-level and school-level SES and aspects of the school environment.

	Supportive Teacher Relationships			Sense of Belonging			Participative environment			Commitment to academic values		
	A	B	C	A	B	C	A	B	C	A	B	C
FAS	0.007 (-0.070; 0.084)		0.122 (-0.040; 0.284)	0.105 (0.043; 0.167)		0.166 (0.035; 0.296)	-0.008 (-0.053; 0.037)		-0.008 (-0.103; 0.087)	0.037 (0.013; 0.060)		0.083 (0.034; 0.132)
School % FSM		-0.0036 (-0.059; -0.014)	-0.015 (-0.047; 0.018)		-0.015 (-0.028; -0.001)	-0.001 (-0.024; 0.023)		-0.012 (-0.024; 0.000)	-0.011 (-0.029; 0.008)		0.001 (-0.003; 0.005)	0.009 (0.001; 0.017)
FAS*School %FSM			-0.003 (-0.007; 0.000)			-0.002 (-0.005; 0.001)			-0.000 (-0.002; 0.002)			-0.001 (-0.002; -0.000)
Number of pupils	6,430	6,631	6,430	6,418	6,613	6,418	6,405	6,600	6,405	6,388	6,581	6,388
Number of Schools	40	40	40	40	40	40	40	40	40	40	40	40

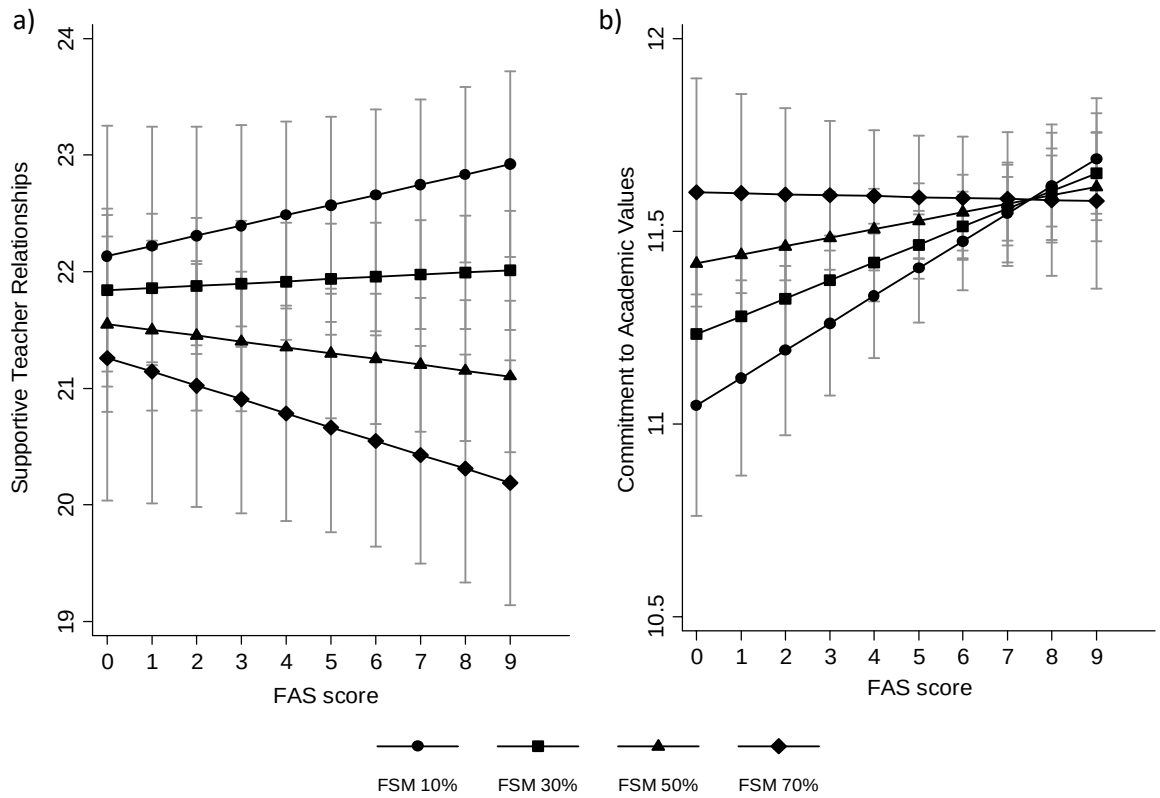
Model A: Family Affluence Scale + Gender

Model B: Percentage entitled to Free School Meals + Gender

Model C: Family Affluence Scale + Free School Meals + Family Affluence Scale*Free School Meals + Gender

95% Confidence Intervals in parentheses

Figure 1. Interactions between pupil reported FAS and the percentage of children in a school eligible for FSM for a) supportive teacher relationships and b) commitment to academic values.



Note: Error bars represent 95% Confidence Intervals. These interactions were estimates from regression models (coefficients presented in Table 2). The values of FSM 10% to FSM 70% were chosen as these values fall within the values observed in this sample. There are 5 schools with 10% or fewer pupils entitled to FSM. There are 2 schools with over 70% of pupils entitled to FSM, and an additional three school with ~65% entitled to FSM.

Table 3. Relationship between pupil-level and school-level SES and risk behaviours and health

	smoking (OR)			Alcohol (OR)			ESYTC (IRR)			SWEMWBS (β)			QOL (β)		
	A	B	C	A	B	C	A	B	C	A	B	C	A	B	C
FAS	0.955 (0.895; 1.019)		0.914 (0.793; 1.052)	1.124 (1.032; 1.224)		1.181 (1.000; 1.394)	0.977 (0.957; 0.996)		0.929 (0.883 - 0.975)	0.202 (0.116; 0.288)		0.464 (0.285; 0.643)	0.493 (0.289; 0.698)		0.904 (0.478; 1.331)
School % FSM		1.007 (0.997; 1.016)	0.997 (0.976; 1.019)		0.984 (0.969; 0.999)	0.998 (0.968; 1.030)		1.012 (1.007; 1.017)	1.003 (0.995; 1.011)		-0.001 (-0.016; 0.015)	0.049 (0.018; 0.079)		0.004 (-0.028; 0.037)	0.081 (0.011; 0.151)
FAS* School %FSM			1.001 (0.998; 1.004)			0.998 (0.994; 1.003)			1.001 (1.000; 1.002)			-0.007 (-0.012; -0.003)			-0.011 (-0.021; -0.001)
Number of pupils	6,193	6,377	6,193	6,139	6,321	6,139	6,000	6,172	6,000	6,047	6,217	6,047	6,136	6,315	6,136
Number of Schools	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40

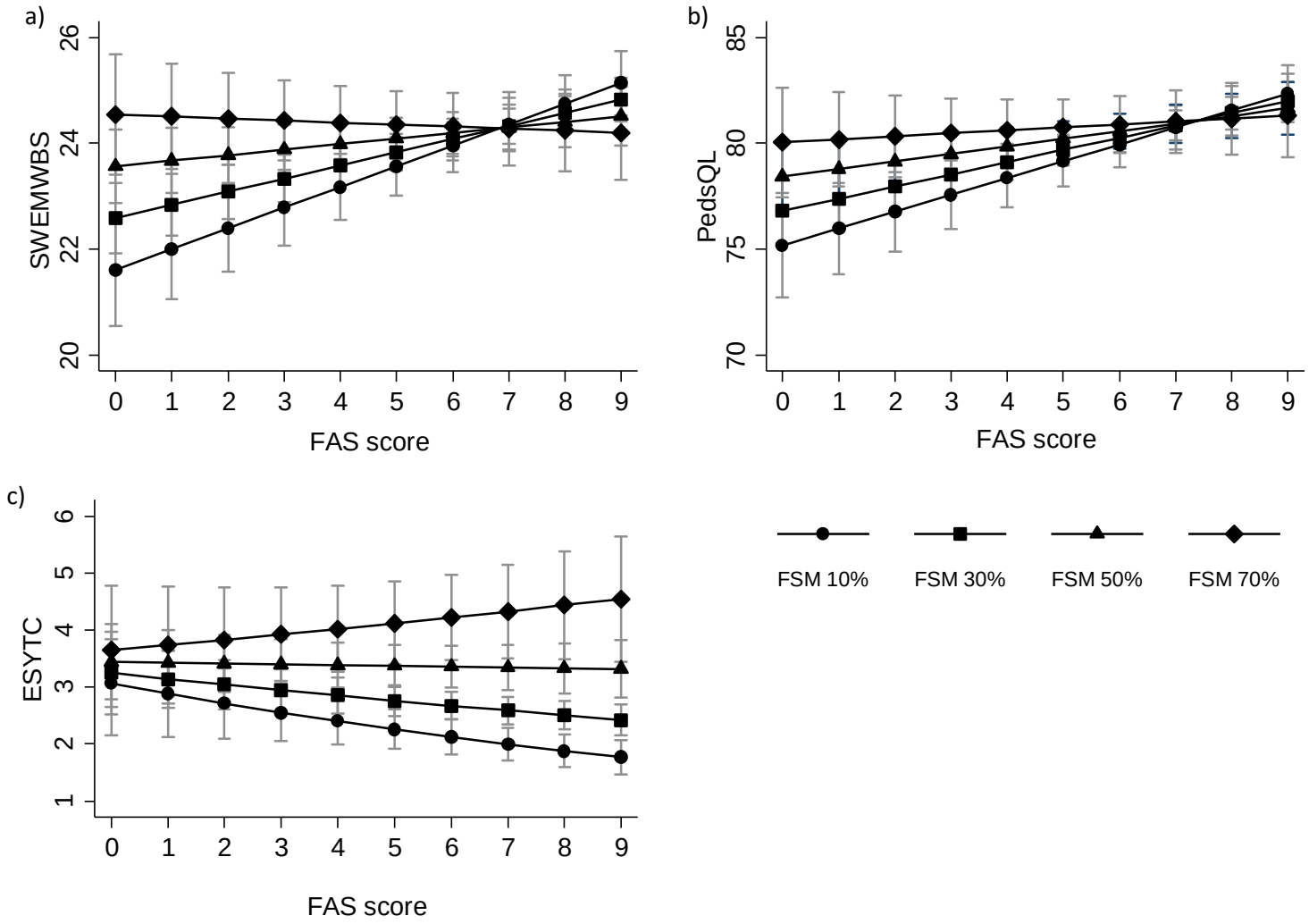
Model A: Family Affluence Scale + Gender

Model B: Percentage entitled to Free School Meals + Gender

Model C: Family Affluence Scale + Free School Meals + Family Affluence Scale*Free School Meals + Gender

95% Confidence Intervals in parentheses

Figure 2 Interactions between pupil reported FAS and the percentage of children in a school eligible for FSM for a) wellbeing as measured using SWEMWBS, b) QoL measured using the Paediatric Quality of Life Inventory (PedsQL) and, C) anti-social behaviour at school measured using the ESYTC scale



Note: Error bars represent 95% Confidence Intervals. These interactions were estimates from regression models (coefficients presented in Table 3). The values of FSM 10% to FSM 70% were chosen as these values fall within the values observed in this sample. There are 5 schools with 10% or fewer pupils entitled to FSM. There are 2 schools with over 70% of pupils entitled to FSM, and an additional three school with ~65% entitled to FSM.

Appendix

Figure 1: Investigating the bivariate distribution between pupil level affluence (FAS) and school level socioeconomic composition (% school FSM).