

This is a repository copy of *Does private education make nicer people? The influence of school type on social–emotional development*.

White Rose Research Online URL for this paper:

<https://eprints.whiterose.ac.uk/id/eprint/167351/>

Version: Published Version

Article:

von Stumm, Sophie orcid.org/0000-0002-0447-5471 and Plomin, Robert (2020) Does private education make nicer people? The influence of school type on social–emotional development. *British journal of psychology*. ISSN: 0007-1269

<https://doi.org/10.1111/bjop.12462>

Reuse

This article is distributed under the terms of the Creative Commons Attribution (CC BY) licence. This licence allows you to distribute, remix, tweak, and build upon the work, even commercially, as long as you credit the authors for the original work. More information and the full terms of the licence here:

<https://creativecommons.org/licenses/>

Takedown

If you consider content in White Rose Research Online to be in breach of UK law, please notify us by emailing eprints@whiterose.ac.uk including the URL of the record and the reason for the withdrawal request.



Does private education make nicer people? The influence of school type on social–emotional development

Sophie von Stumm* and Robert Plomin

Department of Education, University of York, Heslington, York, UK

In a longitudinal sample from Britain, we tested if attending private, fee-charging schools rather than non-selective state schools benefitted children's social–emotional development. State ($N = 2,413$) and private school children ($N = 269$) showed no differences in well-being across adolescence, but private school children reported fewer behaviour problems and greater peer victimisation over time than state schoolers. These results were independent of schools' selection criteria, including family background, and prior academic and cognitive performance. At age 21, private and state school students differed marginally in social–emotional behaviours, such as self-control, volunteering, sexual conduct, and substance use. After considering schools' selection criteria, only risk taking and age at having the first alcoholic drink differed between private and state school children, with the privately educated ones being less risk averse and drinking at younger ages than those attending state school. Our results suggest that private education adds little positive value to children's social–emotional development.

In Britain, privately educated children achieve on average better school grades than children who attend state school (Smith-Woolley *et al.*, 2018). In turn, private school children are more likely to obtain higher degrees, study at more prestigious universities, and secure greater earnings and wealth in adulthood than state school children (Broughton, Ezeyi, Hupkau, Keohane, & Shorthouse, 2014; Green, Parsons, Sullivan, & Wiggins, 2017; Sullivan, Parsons, Wiggins, Heath, & Green, 2014). Overall, privately educated children are 94 times more likely to reach the British elite than children who were educated in state schools (Reeves, Friedman, Rahal, & Flemmen, 2017).

Key characteristics of private school education include a classical academic curriculum (they are exempted from the United Kingdom's national curricula), distinct extracurricular activities, and a boarding school structure (Reeves *et al.*, 2017). In addition, private schools expend greater educational resources than state schools for their pupils; for example, they afford better qualified teachers (Broughton *et al.*, 2014), and smaller classrooms with lower pupil–teacher ratios (1:9 in private vs. 1:18 in state schools; Independent Schools Council, 2019). The combination of these factors is thought to yield an educational experience that enriches children's academic achievement and social–emotional development to a greater extent than state education does. However, it is

This is an open access article under the terms of the Creative Commons Attribution License, which permits use, distribution and reproduction in any medium, provided the original work is properly cited.

*Correspondence should be addressed to Sophie von Stumm, Department of Education, University of York, Heslington, York YO10 5DD, UK (email: sophie.vonstumm@york.ac.uk).

unclear whether the benefits from attending private school are true in the sense that the private education adds value to children's development, or whether it is merely an instrument to transmit pupils' privileged socio-economic backgrounds. Two distinct, but not mutually exclusive theoretical perspectives apply here: One proposes that richer education environments will improve children's developmental outcomes, whereas the other argues that children, who develop more favourably, are selected into richer education environments without one causing the other.

In the United Kingdom, 7% of secondary school children are privately educated, and this proportion has remained stable over recent decades (Independent Schools Council, 2019). Private education is expensive, with the annual tuition costs in 2018 averaging £18,000 for day students (i.e., students who attend a private school for the day but live at home) and £35,000 for boarding students (i.e., students who live at school during term time; Independent Schools Council, 2019). In the same year, the median household income in the United Kingdom was £28,400 (Office for National Statistics, 2019). It follows that access to private education is extremely restricted and mostly available only to affluent families, who concentrate not only economic but also social and cultural capital in their hands (Bourdieu, 1986).

Previous studies suggested that any benefits of attending private school for academic achievement – that is, the grades that children achieve – reduce dramatically after considering the factors that private schools use to select students (e.g., Clark, 2010; Ndaji, Little, & Coe, 2016). In fact, a recent analysis of more than 4,000 children from England and Wales showed that school type explained less than 1% of the variance in national examination scores at age 16 (i.e., GCSEs), once school's selection criteria were included (Smith-Woolley *et al.*, 2018). This finding suggests that the privilege of family background, rather than the type of school, informs privately educated children's superior academic achievement.

Fewer studies have explored the extent to which attending private rather than state school may influence children's social-emotional development. This is a striking omission, because the benefits of high-quality education are thought to extend to the attainment of social-emotional behaviours, rather than being limited to academic success (Heckman, Stixrud, & Urzua, 2006; Jerrim & Sims, 2019). Social-emotional development involves children's experience, expression, and management of the full range of positive and negative emotions, and the ability to establish positive and rewarding relationships with others (Cohen, Onunaku, Clothier, & Poppe, 2005). Social-emotional development entails intra- and interpersonal processes that over time translate into the competence to identify and understand one's own feelings, to read and comprehend others' emotional states, to manage emotions and their expressions in a constructive manner, to regulate one's own behaviour, to develop empathy for others, and to establish and maintain relationships (National Scientific Council on the Developing Child, 2004). Similar to cognitive abilities, social-emotional behaviours are important drivers of success in post-secondary education and in professional contexts (Roberts & Robins, 2000; Rothmann & Coetzer, 2003; von Stumm, Gale, Batty, & Deary, 2009), suggesting that they may be an important pathway for the transmission of the advantages of private education for later status attainment (Green *et al.*, 2017).

We identified only one previous study of the influence of school type on social-emotional development in a well-powered sample. Analyses of approximately 4,000 children from the British Cohort Study 1970 showed that at age 10 and 16 privately educated children had greater self-esteem, locus of control (i.e., the tendency to feel in charge of one's life, decisions, and actions), professional aspirations, and access to high-valued

networks than state school children (Green *et al.*, 2017). However, these differences diminished after adjusting for the criteria that schools select for, although some remained significant (Green *et al.*, 2017). While no other study directly tested the influence of private compared to state education on social-emotional development, Green *et al.*'s (2017) findings align with research on differences in school quality, which shows little relation with children's social-emotional behaviours (e.g., Gibbons & Silva, 2011; von Stumm *et al.*, 2020).

So far, private and state school children's developmental differences have not been evaluated in those dimensions that are particularly relevant to the secondary school experience, including well-being, behaviour problems, and peer victimisation. Well-being refers to the frequent experience of positive affect and affirmative cognitive evaluations, such as self-esteem and life satisfaction (Diener, Lucas, & Oishi, 2005), while behaviour problems include conduct problems, hyperactivity and inattention, and difficulties with peer relationships (Goodman, 1997). Peer victimisation, in turn, refers to being at the receiving end of bullying behaviours (Rigby, 1999) and suffering experiences of social manipulation, attacks on property, and verbal and physical abuse (Mynard & Joseph, 2000). In addition to its associations with well-being, behaviour problems, and peer victimisation, school type may also exert long-term influence on social-emotional development beyond adolescence, so that adults who attended private versus state schools continue to differ systematically in their social-emotional behaviours.

To address these gaps, the current study capitalizes on the longitudinal nature of the Twins Early Development Study (TEDS). TEDS assessed a large sample of children three times between the ages of 12 and 21 years on well-being, behaviour problems, and peer victimisation. With these data, we explored three questions (preregistration: <https://osf.io/dgsj2>). First, we tested if well-being, behaviour problems, and peer victimisation differed systematically between state and private school children at age 12, when they had just started secondary school. Because Green *et al.* (2017) observed more positive social-emotional behaviours in private than state school children, we predicted that at the start of secondary school private schoolers would report higher well-being, fewer behaviour problems, and less peer victimisation than state school students. Furthermore, and in line with previous studies in this area (Green *et al.*, 2017; Smith-Woolley *et al.*, 2018), we expected that the differences between private and state school students in these domains could be attributed to the school selection criteria of family background, prior academic achievement, and prior cognitive ability.

Second, we tested if private and state school students differed in their developmental trajectories in well-being, behaviour problems, and peer victimisation over the course of adolescence into young adulthood. We predicted that private school students' development was overall more positive than that of state school students, but also that these differences diminished after adjusting for schools' selection criteria.

Finally, we explored private and state school students' differences at age 21 in self-control, risk taking, volunteering, sexual behaviours, substance use, and anti-social behaviour, including conflict with peers and the law. These behaviours are key dimensions of 'emerging adulthood', an age period during which individuals focus on exploring their identity, love, work, and worldviews (Arnett, 2000). As before, we predicted that private school students would show fewer maladaptive social-emotional behaviours than state school students, and that these differences could be largely attributed to schools' selection criteria rather than to their added value.

Methods

Sample

The TEDS sample included initially more than 10,000 families, who experienced a twin birth between 1994 and 1996 and were representative of the population in England and Wales (Rimfeld *et al.*, 2019). Ethical approval for this study was received from King's College London. TEDS participants were repeatedly assessed on a wide range of constructs. Relevant here are the assessments of well-being and behavioural problems at the ages 12, 16, and 21; of peer victimisation at the ages 12, 14, and 21; and of social-emotional behaviours at age 21 (details below). Information on secondary school type was available for 2,682 unrelated individuals, including 2,413 who attended state school and 269 who attended private school at age 16. A detailed discussion and analysis of the characteristics of TEDS and its representativeness of the population in England and Wales have been published elsewhere (Rimfeld *et al.*, 2019). Despite considerable attrition, TEDS remains largely representative of its original population (Rimfeld *et al.*, 2019). With regard to the subsample from TEDS included in the current analyses, we note that the proportion of private school students in TEDS is higher than that in the general population (i.e., 11% vs. 7%; Independent Schools Council, 2019). We also note that the family SES index score at first contact (*z*-scores; see details below) was on average slightly higher in our analysis sample (mean = 0.23, *SD* = 0.96) than in the overall TEDS sample (mean = 0, *SD* = 1).

Measures

Assessment of school type

When TEDS twins were 18, they were asked in a questionnaire what type of school they had attended at age 16, when they took their General Certificate of Secondary Education (GCSE), an academic qualification that pupils complete at the end of their compulsory schooling. Respondents were asked to indicate either 'Yes' or 'No' for different school types. For the current analyses, we classified all respondents who reported attending a state non-selective school as 'State non-selective', and all indicating that they went to a private school as 'Private'. We excluded from our analyses TEDS participants who attended 'grammar' schools, another type of selective school that admits students on the basis of their cognitive abilities but does not charge tuition fees. Previous comparisons between TEDS participants' self-reported school type and those available from the National Pupil Database (NPD) showed an accuracy of 98% (Smith-Woolley *et al.*, 2018).

Well-being

Well-being was assessed at ages 12, 16, and 21 with the short version of the Mood and Feelings Questionnaire (MFQ) developed by Angold *et al.* (1995). At each age, TEDS children completed the MFQ as part of a bigger survey that was administered without time limit. The 13-item MFQ measures depressive symptoms in children and young adults and consists of statements that describe feelings or behaviours that characterize low well-being. Participants indicate how much each statement applies to their recent experiences on a 3-point scale from 'not true' (0), to 'quite true' (1), to 'very true' (2). Example items read 'I didn't enjoy anything at all' and 'I felt lonely'. The MFQ is scored by summing together the responses for each item. Cronbach's alpha values were .91, .89, and .87 at age 12, 16, and 21. For the current analyses, we reversed the scale, so that higher values indicate greater well-being.

Behaviour problems

Behaviour problems were assessed at ages 12, 16, and 21 with the Strengths and Difficulties Questionnaire (SDQ) developed by Goodman (1997). At each age, TEDS children completed the SDQ as part of a bigger survey that was administered without time limit. The short form of the SDQ consists of 25 items that screen emotional and behavioural problems, including emotional symptoms, conduct problems, hyperactivity/inattention, peer relationships problems, and prosocial behaviour (reversed). Example items read 'I get very angry and often lose my temper' and 'I am constantly fidgeting or squirming'. Participants indicate how much each statement applies to their recent experiences on a 3-point scale from 'not true' (0), to 'quite true' (1), to 'very true' (2). An SDQ total score is created by summing ratings for the 25 items. Cronbach's alpha values were .85, .81, and .87 at age 12, 16, and 21 years, respectively.

Peer victimisation

Peer victimisation was assessed at ages 12, 14, and 21 with the Multidimensional Peer-Victimisation scale by Mynard and Joseph (2000). This scale consists of 16 items that assess four types of peer victimisation, including social manipulation, attacks on property, verbal victimisation, and physical victimisation. Participants report how often they have experienced types of peer victimisation with the responses 'not at all' (0), 'once' (1), and 'more than once' (2). To score the scale, responses are summed across all items. Cronbach's alpha values were .83, .81, and .87 at age 12, 14, and 21.

Self-control

Self-control was assessed with six items from the Brief Self-Control Survey (BSCS; Tangney, Baumeister, & Boone, 2004), when the TEDS twins were 21 years old. The BSCS is a unidimensional measure of trait self-control, with a focus on operational aspects (e.g., overriding distraction). Example items are 'I say inappropriate things' and 'I am good at resisting temptation'. Participants indicated how much each statement was true for them from 'not at all' (0), 'slightly' (1), 'moderately' (2), 'quite' (3), 'very much' (4). Responses were summed across items. Cronbach's alpha was .69.

Volunteering

Five items were adapted from the questionnaire for participants of from the Avon Longitudinal Study of Parents and Children (ALSPAC), including giving money to charity, sponsoring a friend, giving money to beggars, provide unpaid help to organizations, and provide unpaid help to individual. Answer options ranged from 'never' (0), 'once or twice' (1), '3–6 times' (2), '7–12 times' (3), to '13 times or more' (4). Responses were added across items.

Risk taking

Risk taking was assessed at age 21 by six items from the Risk Taking Index (Nicholson, Soane, Fenton-O'Creevy, & Willman, 2005). This index assesses overall risk propensity in terms of reported frequency of risk behaviours in six domains of recreation, health, career, finance, safety, and social relationships. An example item reads 'How often do you take safety risks (e.g., fast driving, cycling without a helmet, being in a car without a seat belt)?'. Participants indicated how often they engaged in risk taking from 'never' (0), 'rarely' (1),

'sometimes' (2), 'often' (3), 'very often' (4). Responses were summed across items. Cronbach's alpha was .63.

Anti-social behaviour

At age 21, participants indicated if and how often they engaged in 15 anti-social behaviours such as destroying property, injuring animals, and selling illegal drugs, from 'no' (0), 'once' (1), '2–5 times' (2), '6–10 times' (3), to 'more than 10 times' (4). Responses were summed across items.

Conflict with law

At age 21, participants answered yes (1) or no (0) to indicate if they had ever been cautioned by the police; if they had ever been arrested; and if they had ever been sentenced to prison. Responses were added across the three questions.

Sexual behaviours

At age 21, the TEDS twins reported (a) their age in years when they first had sexual intercourse, with answers ranging from '11 or younger' (1), '12 through 16' (2–6), and '17 or older' (7); (b) how many partners in total they have had sexual intercourse with; and (c) if they used a condom or (d) another mean of contraception when having sexual intercourse, with answer options ranging from 'never' (0), 'not very often' (1), 'quite often' (2), 'very often' (3), to 'always' (4). The latter two items were added to a single score capturing safe sex practices; the other items were considered individually.

Substance use

Participants reported (a) the age in years when they had their first alcoholic drink, with answers ranging from 'less than 10' (1), '10–12' (2), '13–15' (3), '16–18' (4), 'over 18' (5); (b) how often they had six or more alcoholic drinks at a single occasion, from 'never or almost never' (0), 'less than monthly' (1), 'monthly' (2), 'weekly' (3), and 'daily or almost daily' (4); (c) if they had tried cannabis (yes (1)/no (0)); (d) how old they were when they first tried cannabis, with answers ranging from '11 or younger' (1), '12' through to '16' (2–6), and '17 or older' (7); and (e) if they have had taken illicit drugs (yes/no). These items were considered individually in the analyses.

Family socio-economic background

Parental education and occupation (mother's and father's highest educational qualification and job status) were assessed at first contact with the families when the twins were 18 months old, and again when the twins were 7 years old. Mother's age on the birth of her first child (not necessarily the twins) was assessed at first contact. We built a summary SES index after standardizing (i.e., *z*-scores) each indicator and adding them together.

Prior school performance

At the twins' age of 7 years, teachers rated their achievement in English, including the categories 'speaking', 'reading', and 'writing', and Maths, including 'use and

applying', 'numbers', and 'shapes, spaces, and measures', relative to 'the national expected standard' for children of the same age on a 5-point scale that ranged from 0 = 'working to towards level 1' and 1 = 'level 1', indicating achievement below the national expected standard, to 2 = 'level 2' that represented achievement at the expected standard, to 3 = 'level 3' and 4 = 'level 4+' that marked achievement above the national expected standard. School performance is also available for a subsample of TEDS at the ages of 9 and 10 years, which is closer to their transition into secondary school. However, the type of school that twins attended was not recorded for this subsample.

Cognitive ability

The twins completed an online battery of cognitive tests administered as part of TEDS testing when they were 11 years old and still in primary school (mean age = 11.2, $SD = 0.69$). These tests include two verbal tests (the Wechsler Intelligence Scale for Children (WISC) Vocabulary Multiple-Choice and the WISC General Knowledge test; Kaplan, Fein, Kramer, Delis, & Morris, 1999) and two non-verbal tests (Raven's (2003) Progressive Matrices and the WISC Picture Completion task; Wechsler, 1949). All test scores were standardized, added, and averaged to derive a composite 'g' score that will be included in the analyses.

Analysis

We tested our models in samples of one twin, who was randomly selected from a pair. After excluding twins who suffered severe medical complications during the first 2 years of life, all measures of socio-emotional behaviours were regressed against gender. Standardized residuals were saved and used in the subsequent analyses. The analysis sample included twins for whom data were available for the type of secondary school that they attended. Data for the psychological variables in our analyses are incomplete (Table S1), because they were collected across multiple assessment waves. We compared the average SES (available for 87% of the sample for whom also school type at age 16 was known; Table S1) of the sample for whom data were available for (a) prior academic performance at age 7, (b) prior cognitive ability at age 11, and (c) behavioural problems at age 12, 16, and 21 to that of the sample for whom no data were available for these measures and assessment ages. The difference between both samples ranged from 0.06 SD in SES for prior academic performance at age 7 to 0.24 SD in SES for behaviour problems at age 21. These values reflect modest sampling biases due to attrition that is typical in longitudinal studies (Watson & Wooden, 2009). To handle missing data, we applied Full Information Maximum Likelihood estimation (FIML) in the latent growth curve models, which is recommended even if data are not missing at random (Graham, 2009), and listwise omission in the hierarchical regression models.

Influence of school type on developmental trajectories in well-being, behavioural problems, and peer victimisation. The longitudinal nature of the TEDS data enables differentiating children's differences in well-being, behaviour problems, and peer victimisation that are evident at age 12 and stable over time from developmental changes in these domains that children show relative to each other over time. We tested if private school students, as compared to children who attended state schools, experienced on

average fewer behavioural problems and peer victimisation but greater well-being at age 12, and if they show a further reduction in behavioural problems and peer victimisation and increase in well-being up to age 21.

We fitted multi-group latent growth curve models using the R package ‘lavaan’ (Rosseel, 2012). Latent growth curve models define an intercept factor (i.e., differences that are stable from the first to the last assessment age) and a change factor that captures developmental differences over time (i.e., slope). In line with latent growth curve modelling conventions, factor loadings for intercept were restricted to 1. The factor loadings of the slope reflected the distance between assessment times in years (i.e., 0, 4, and 9 for well-being and behaviour problems, and 0, 2, and 9 for peer victimisation). Latent growth curve models with three observed indicators are non-identified for specifying more than two growth factors (i.e., intercept and slope).

We added group equality constraints to test if the groups (i.e., students by school type) differed in the means of intercept and slope. We note that in latent growth curve models, factor loadings and the intercepts of observed variables are specified *a priori* as equal across groups. We evaluated model fit differences before and after adding group equality constraints using the models’ comparison of χ^2 values. Finding that the model fit is worsened after adding group equality constraints for the growth factors’ means suggests that state and private school students follow different developmental trajectories for well-being, behavioural problems, and peer victimisation.

We then added the school selection criteria of SES, prior school performance (age 7), and prior cognitive ability (age 11) to the model as predictors of the latent growth factors. We applied group equality constraints to the predictors’ regression weights; finding that these constraints worsen the model fit suggests that the differences in growth patterns between private and state school students can be attributed to their differences in the school selection criteria.

Influence of school type on social-emotional behaviours at age 21. We fitted hierarchical regression models to test if private and state school students differ in social-emotional behaviours at age 21, before and after adjusting for the school selection criteria of family background, prior school performance (age 7), and prior cognitive ability (age 11). In a first step, we tested the direct effect of school type on social-emotional behaviours. We then added the schools’ selection criteria to the models to test whether school type remained a significant predictor.

Results

Table S1 reports descriptive statistics for all study variables across private and state school students. The greatest mean differences emerged for the school selection criteria of SES, cognitive ability, and prior school performance in that order. By comparison, the differences in social-emotional behaviours were smaller. Table S2 shows correlations of SES, prior academic performance, and prior cognitive ability with all other study variables, separately for state and private school students. Table S3 shows the inter-correlations of the repeated assessments of well-being, behaviour problems, and peer victimisation, again separately for state and private school students.

Influence of school type on developmental trajectories in well-being, behavioural problems, and peer victimisation

Figure 1 summarizes the results of the latent growth curve analyses (see Table S4 for details on model fit). The estimates for intercepts and slopes reflect *z*-scores (i.e., mean = 0, *SD* = 1). Children who attended private school reported on average greater well-being (intercept (*i*) = .163), fewer behaviour problems (*i* = −.153), and less peer victimisation (*i* = −.444) than children who attended state schools (intercepts = .020, −.025, and −.001 for well-being, behaviour problems, and peer victimisation, respectively). Over time, private school children showed an increase in well-being (*s* = .026) and a decrease in behaviour problems (*s* = −.150) relative to children who attended state school (*s* = −.039 and .051, respectively). However, private school children increased in peer victimisation (*s* = .147), while state school students showed a reduction in peer victimisation over time (*s* = −.017).

After restricting the growth factors (i.e., intercept and slope) to be equal across groups, the fit of the models for behavioural problems and peer victimisation worsened significantly ($\chi^2_{diff}(2) = 12.96$, $p = .002$, and $\chi^2_{diff}(2) = 12.39$, $p = .002$). However, the model fit for well-being did not change ($\chi^2_{diff}(2) = 5.86$, $p = .053$), suggesting that developmental trajectories in well-being differ only marginally between private and state school children. We fitted additional models to individually constrain the intercept and slope to be equal across groups. For behavioural problems and well-being, individually constraining intercept or slope did not result in significantly worse model fit (behaviour problems: intercept: $\chi^2_{diff}(1) = 2.69$, $p = .101$; slope: $\chi^2_{diff}(1) = 1.99$, $p = .158$; well-being: intercept: $\chi^2_{diff}(1) = 2.21$, $p = 0.137$; slope: $\chi^2_{diff}(1) = 0.21$, $p = .645$). However for peer victimisation, individual constraints to intercept and slope resulted in significantly worse model fit (intercept: $\chi^2_{diff}(1) = 12.85$, $p < .001$; slope: $\chi^2_{diff}(1) = 5.13$, $p = .024$).

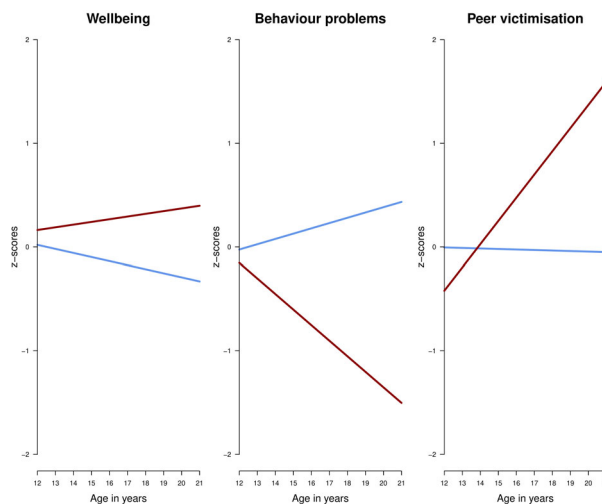


Figure 1. Developmental trajectories for state (blue/light) and private school students (red/dark) in well-being, behaviour problems, and peer victimisation from age 12 through 21 years. *Note.* Measures of well-being, behaviour problems, and peer victimisation were standardized as *z*-scores (mean = 0, *SD* = 1) at each assessment age.

For well-being, in private school students, family background, prior school performance, and prior cognitive ability together accounted for 3% and 2%, respectively, of the intercept and slope, while in state school students the corresponding values were 8% and 12%. This pattern suggests that school selection criteria accounted for more of the differences in well-being at the start of and throughout secondary school in state compared to private school students. However in both groups, relatively modest proportions of the differences in well-being could be overall attributed to the school selection criteria. For behaviour problems, in private school students, the school selection criteria accounted for 7% and 8% in the intercept and slope; in state school students, these values were 11% and 4%. Finally, for peer victimisation, in private school students, the school selection criteria explained 12% and 4% of the intercept and slope, but in state school students, they only accounted for 4% and 2%. Full model results with all regression coefficients for the schools' selection criteria are reported in Tables S5–S7.

Restricting the regression coefficients to be equal across groups, in addition to restricting the means of the latent factors, did not result in a significantly worsened model fit for behaviour problems and peer victimisation ($\chi^2_{diff-behaviour}(6) = 5.65, p = .464$; $\chi^2_{diff-peer}(6) = 10.20, p = .117$). (Well-being was not included in this analysis step, because the latent growth factors did not differ between private and state school students.) Restricting regression coefficients individually (i.e., applying equality constraints across groups one-by-one for the regression coefficients of SES, prior academic performance, and prior cognitive ability) did also not result in significant worse model fit for behaviour problems and peer victimisation. These findings suggest that the observed differences in the development of behaviour problems and peer victimisation could not be attributed to the influence of the school selection criteria family background, prior academic performance, and prior cognitive ability.

Influence of school type on socio-emotional behaviours at age 21

Figure 2 illustrates the mean differences between state and private school students in social-emotional behaviours at age 21. Private school students scored higher on risk taking and volunteering, and lower on anti-social behaviour and conflict with the law than state school students (Figure 2, top panel). With regard to sexual behaviours, private school students reported they were older at their first intercourse, had more sexual partners, and practised safe sex more often compared to state school students (Figure 2, middle panel). Private school children were younger when they had their first alcoholic drink and engaged more often in binge drinking (i.e., >6 alcoholic drinks at one occasion) than state school students (Figure 2, bottom panel). More private school children had tried cannabis, although they were older when they did, and illicit drugs compared to state school children.

Mean differences in social-emotional behaviours at age 21 between private and state school students were overall small and less than 0.50 *SD*, with the exception of age at first sex, with private school children being on average 0.70 *SD* older than state school children.

In the first step of our hierarchical regression models found no statistically significant effects of school type on (1) self-control, (2) anti-social behaviour, (3) the number of sex partners, (4) practising safe sex, (5) age when cannabis was first tried, and on (6) conflict with the law ($p > .05$ in all cases; see Table S8 for model coefficients). Significant differences between private and state school children were observed for (1) volunteering, (2) risk taking, (3) age at first sexual intercourse, (4) age when having first alcoholic drink,

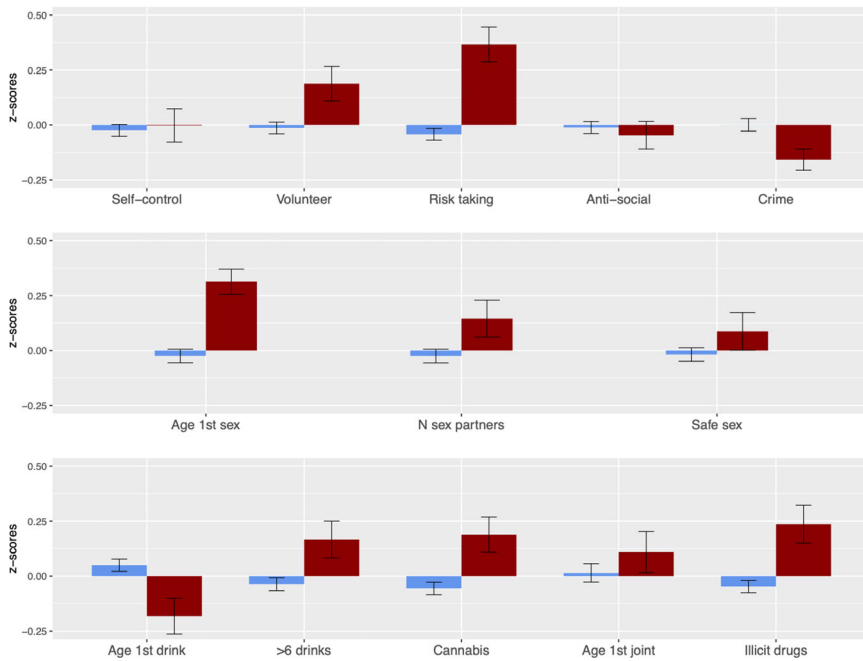


Figure 2. Means across socio-emotional behaviours at age 21 in state (blue/light) and private (red/dark) school students. *Note.* All scores are standardized z-scores (mean = 0, SD = 1). Crime = Conflict with the law.

(5) the frequency of having six or more drinks at a single occasion, (6) trying cannabis, and (7) trying illicit drugs (p range from $>.001$ to $.021$; Table S8). However, once school selection criteria of family background, prior school performance, and prior cognitive ability were considered, these differences became non-significant in all but two cases (Table S9). For risk taking and for the age when having the first alcoholic drink, the school type remained a significant predictor after including the schools' selection criteria in the model (risk taking: Est = $.24$, $SE = .12$, $t = 2.04$, $p = .042$; age first drink: Est = $-.30$, $SE = .13$, $t = -2.39$, $p = .017$), suggesting that private school children are less risk averse and younger when they start drinking alcohol than state school children. School type accounted independently for 1.6% and 0.4% of the variance in risk taking and age at first alcoholic drink, respectively.

Discussion

Private schools are understood to be pivotal for the transmission of privilege from parents to their children, because they regulate the access to elite positions in society, shape elite identities, and bring together members of different elites (Reeve *et al.*, 2017). As such, private education is assumed to add value to children's development that is independent of their families' societal pre-eminence. Importantly, this assumption serves to justify the investment in exorbitant school fees.

We show here for the first time that private and state school students do not differ in their well-being across adolescence. We also observed that private school students experienced fewer behaviour problems and greater peer victimisation over time than

state schoolers. These results provide only partial support for our preregistered hypotheses, in the sense that we predicted private school children to report overall greater social–emotional behaviours. Although we found that private education benefited children’s behavioural adjustment, our analyses also highlight that for some domains, private school students suffer worse outcomes than state school students.

Earlier studies suggested that private school children, who board (i.e., living in the school during term time), face greater social–emotional challenges than state school children (Lester & Mander, 2015). Boarders, by contrast to day students, leave their familiar home environment, requiring them to rapidly master functioning autonomously without their parents and within new social networks of peers, teachers, and housemasters (Lester & Mander, 2015). It is plausible that boarders greatly depend on peer relationships when settling into secondary school, which may make them more susceptible to peer victimisation. However, only 15% of all private schoolers in Britain are boarders (i.e., 1% of all school children; Independent Schools Council, 2019). It seems unlikely that this small subgroup of the sample drives the results, which is not possible to test in our study because boarding status was not recorded in TEDS. Future research will have to explore the reasons why private school children experience greater peer victimisation than state schoolers.

At age 21, we observed no systematic differences between private and state school students in six out of thirteen social–emotional behaviours. For the other seven, we found small differences, most of which diminished after considering schools’ selection criteria, including family background, prior academic performance, and prior cognitive ability. The only differences between private and state school students that remained significant, albeit with small effect sizes, were for risk taking and age of the first alcoholic drink. In both cases, private school students reported more negative outcomes: Compared to state school students, they were more likely to take risks and started drinking alcohol at a younger age. Risk taking in adolescence and young adulthood has been associated with brain development and adverse adult outcomes, including educational failure and poor health (Romer, 2010; Wright, Kipping, Hickman, Cambell, & Heron, 2018). Likewise, teenage alcohol users suffer poor long-term psychological and health outcomes (Hanson *et al.*, 2011). Although we can only speculate about the causes for these differences between private and state school students, our findings suggest that private education may actually have negative influences on some aspects of social–emotional development.

Overall, we observed only weak associations between the type of school that children attended and their social–emotional development, and these associations reduced even further after adjusting for school selection criteria. Our findings support the theoretical perspective that the benefits of private education are primarily due to selection effects, rather than that private education causes developmental differences. We caution that this conclusion is likely to hold true only for education environments that differ in their degree of ‘richness’ but are essentially adequate, as is the case for both state and private school in Britain. By contrast, children whose education provision is inadequate, for example, because of school closures (Tieken & Auldridge-Reveles, 2019) or a shortage of qualified teachers (McLeskey & Billingsley, 2008), are at greater risk for stunted academic and social–emotional development.

Limitations

Our study has many strengths, including the longitudinal assessment of a large, population representative sample on a wide range of social–emotional behaviours. But it also has

several weaknesses. First, TEDS recorded the type of secondary school that children attended when they were 16 years old but information about their earlier and primary education is not available. It is possible that some of the children in our sample changed type of secondary school prior to age 16, and thus, they may have experienced both state and private secondary education. Likewise, it is possible that the influence of attending private school on social-emotional development is only detectable in children who have enjoyed private education from an early age. Second, our data did not differentiate day students, who attend private school but live with their families, from boarders, who live at school during term time. It is possible that differences between state and private school students in social-emotional development were blurred, because private school students included both boarders and day students. Even larger sample sizes than available here would be needed to achieve sufficient statistical power for studying differences between day students, boarders, and state school students. Third, we considered the key schools' selection criteria in our analyses, including family background and prior cognitive and academic performance. However, these are somewhat coarse measures, which are likely to only account for some of the systematic differences between state and private school student populations.

Conclusions

Our study adds to a growing body of empirical evidence that questions the benefits of private over state education for children's outcomes. We found that school type exerts minimal influence on children's social-emotional development, in line with previous reports (Gibbons & Silva, 2011; Green *et al.*, 2017; Jerrim & Sims, 2019). In those cases where we observed systematic differences in development between state and private schoolers, private education was often associated with worse individual level outcomes, such as higher peer victimisation, greater readiness to assume risk, and earlier alcohol consumption. Our findings are particularly relevant for parents who are considering private education for their children: Being privately educated is unlikely to translate into benefits for social-emotional development. That said, private education may still be important for achieving other credentials that are pertinent to joining the elite.

Acknowledgements

We gratefully acknowledge the on-going contribution of the participants in the TEDS, which is supported by a program grant to RP from the UK Medical Research Council (MR/M021475/1 and previously G0901245), with additional support from the US National Institutes of Health (AG046938) and the European Commission (602768; 295366). RP is supported by a Medical Research Council Professorship award (G19/2). SvS is supported by a Jacobs Foundation Early Career Fellowship (2017–2019). This work was supported by an award to SvS from the European Foundation for Alcohol Research (ERAB; Ref EA 18 16). [Correction added on 05 July 2020, after first online publication: the acknowledgements section has been added.]

Conflicts of interest

All authors declare no conflict of interest.

Author contributions

Sophie von Stumm (Conceptualization; Formal analysis; Funding acquisition; Methodology; Writing – original draft; Writing – review & editing) Robert Plomin (Funding acquisition; Writing – review & editing).

References

- Angold, A., Costello, E. J., Messer, S. C., Pickles, A., Winder, F., & Silver, D. (1995). The development of a short questionnaire for use in epidemiological studies of depression in children and adolescents. *International Journal of Methods in Psychiatric Research*, 5, 1–12.
- Arnett, J. J. (2000). Emerging adulthood: A theory of development from the late teens through the twenties. *American Psychologist*, 55, 469–480. <https://doi.org/10.1037/0003-066X.55.5.469>
- Bourdieu, P. (1986). The forms of capital. In J. Richardson (Ed.), *Handbook of theory and research for the sociology of education* (pp. 241–258). Westport, CT: Greenwood.
- Broughton, N., Ezeyi, O., Hupkau, C., Keohane, N., & Shorthouse, R. (2014). *Open access: An independent evaluation*. London, UK: Social Market Foundation.
- Clark, D. (2010). Selective schools and academic achievement. *The BE Journal of Economic Analysis and Policy*, 10(1), 1–40. <https://doi.org/10.2202/1935-1682.1917>
- Cohen, C., Onunaku, N., Clothier, S., & Poppe, J. (2005). *Helping young children succeed: Strategies to promote early childhood social and emotional development*. Research and Policy Report. Washington, DC: National Conference of State Legislatures.
- Diener, E., Lucas, R. E., & Oishi, S. (2005). Subjective well-being: The science of happiness and life satisfaction. In C. R. Snyder & S. J. Lopez (Eds.), *Handbook of positive psychology* (2nd ed., pp. 63–73). New York, NY: Oxford University Press.
- Gibbons, S., & Silva, O. (2011). School quality, child wellbeing and parents' satisfaction. *Economics of Education Review*, 30(2), 312–331. <https://doi.org/10.1016/j.econedurev.2010.11.001>
- Goodman, R. (1997). The strengths and difficulties questionnaire: A research note. *Journal of Child Psychology and Psychiatry*, 38, 581–586. <https://doi.org/10.1111/j.1469-7610.1997.tb01545.x>
- Graham, J. W. (2009). Missing data analysis: Making it work in the real world. *Annual Review of Psychology*, 60, 549–576. <https://doi.org/10.1146/annurev.psych.58.110405.085530>
- Green, F., Parsons, S., Sullivan, A., & Wiggins, R. (2017). Dreaming big? Self-valuations, aspirations, networks and the private-school earnings premium. *Cambridge Journal of Economics*, 42, 757–758.
- Hanson, K. L., Medina, K. L., Padula, C. B., Tapert, S. F., & Brown, S. A. (2011). Impact of adolescent alcohol and drug use on neuropsychological functioning in young adulthood: 10-year outcomes. *Journal of Child and Adolescent Substance Abuse*, 20(2), 135–154. <https://doi.org/10.1080/1067828X.2011.555272>
- Heckman, J. J., Stixrud, J., & Urzua, S. (2006). The effects of cognitive and noncognitive abilities on labor market outcomes and social behavior. *Journal of Labor Economics*, 24, 411–482. <https://doi.org/10.1086/504455>
- Independent Schools Council (2019). *ISC Census and Annual Report 2019*. Retrieved from <https://www.isc.co.uk/research/annual-census/isc-annual-census-2019/>
- Jerrim, J., & Sims, S. (2019). How Do Academically selective school systems affect pupils' social-emotional competencies? New evidence from the millennium cohort study. *American Educational Research Journal*, 56, 1769–1799. <https://doi.org/10.3102/0002831219830965>
- Kaplan, E., Fein, D., Kramer, J., Delis, D., & Morris, R. (1999). *The WISC-III as a process instrument*. New York, NY: The Psychological Corporation.
- Lester, L., & Mander, D. (2015). The role of social, emotional and mental wellbeing on bullying victimisation and perpetration of secondary school boarders. *Journal of psychologists and Counsellors in Schools*, 25(2), 152–169. <https://doi.org/10.1017/jgc.2014.28>
- McLeskey, J., & Billingsley, B. S. (2008). How does the quality and stability of the teaching force influence the research-to-practice gap? A perspective on the teacher shortage in special

- education. *Remedial and Special Education*, 29, 293–305. <https://doi.org/10.1177/0741932507312010>
- Mynard, H., & Joseph, S. (2000). Development of the multidimensional peer-victimisation scale. *Aggressive Behavior*, 26, 169–178.
- National Scientific Council on the Developing Child (2004). *Children's emotional development is built into the architecture of their brains: Working Paper No. 2*. Retrieved from www.developingchild.harvard.edu
- Ndaji, F., Little, J., & Coe, R. (2016). *A comparison of academic achievement in independent and state schools*. Durham, UK: Centre for Evaluation and Monitoring, Durham University.
- Nicholson, N., Soane, E., Fenton-O'Creevy, M., & Willman, P. (2005). Personality and domain-specific risk taking. *Journal of Risk Research*, 8(2), 157–176. <https://doi.org/10.1080/1366987032000123856>
- Office for National Statistics (2019). *Average household income, UK: Financial year ending 2018*. Retrieved from <https://www.ons.gov.uk/peoplepopulationandcommunity/personalandhouseholdfinances/incomeandwealth/bulletins/householddisposableincomeandinequality/yearending2018>
- Raven, J. (2003). Raven progressive matrices. In R. S. McCallum (Ed.), *Handbook of nonverbal assessment* (pp. 223–237). Boston, MA: Springer.
- Reeves, A., Friedman, S., Rahal, C., & Flemmen, M. (2017). The decline and persistence of the old boy: Private schools and elite recruitment 1897 to 2016. *American Sociological Review*, 82, 1139–1166. <https://doi.org/10.1177/0003122417735742>
- Rigby, K. (1999). Peer victimisation at school and the health of secondary school students. *British Journal of Educational Psychology*, 69, 95–104. <https://doi.org/10.1348/000709999157590>
- Rimfeld, K., Malanchini, M., Spargo, T., Spickernell, G., Selzam, S., McMillan, A., Plomin, R. (2019). Twins Early Development Study: a genetically sensitive investigation into behavioural and cognitive development from infancy to emerging adulthood. *Twin Research and Human Genetics*, 22, 508–513. <https://doi.org/10.31234/osf.io/xqh52>
- Roberts, B. W., & Robins, R. W. (2000). Broad dispositions, broad aspirations: The intersection of personality traits and major life goals. *Personality and Social Psychology Bulletin*, 26, 1284–1296. <https://doi.org/10.1177/0146167200262009>
- Romer, D. (2010). Adolescent risk taking, impulsivity, and brain development: Implications for prevention. *Developmental Psychobiology: The Journal of the International Society for Developmental Psychobiology*, 52, 263–276. <https://doi.org/10.1002/dev.20442>
- Rosseel, Y. (2012). Lavaan: An R package for structural equation modeling and more. Version 0.5–12 (BETA). *Journal of Statistical Software*, 48(2), 1–36.
- Rothmann, S., & Coetzer, E. P. (2003). The big five personality dimensions and job performance. *S4 Journal of Industrial Psychology*, 29(1), 68–74. <https://doi.org/10.4102/sajip.v29i1.88>
- Smith-Woolley, E., Pingault, J. B., Selzam, S., Rimfeld, K., Krapohl, E., von Stumm, S., Asbury, K., Dale, P., Young, T., Allen, R., Kovas, Y., & Plomin, R. (2018). Differences in exam performance between pupils attending selective and non-selective schools mirror the genetic differences between them. *Nature Science of Learning*, 3. <https://doi.org/10.1038/s41539-018-0019-8>
- Sullivan, A., Parsons, S., Wiggins, R., Heath, A., & Green, F. (2014). Social origins, school type and higher education destinations. *Oxford Review of Education*, 40, 739–763. <https://doi.org/10.1080/03054985.2014.979015>
- Tangney, J. P., Baumeister, R. F., & Boone, A. L. (2004). High self-control predicts good adjustment, less pathology, better grades, and interpersonal success. *Journal of Personality*, 72(2), 271–324. <https://doi.org/10.1111/j.0022-3506.2004.00263.x>
- Tieken, M. C., & Auldridge-Reveles, T. R. (2019). Rethinking the school closure research: School closure as spatial injustice. *Review of Educational Research*, 89, 917–953. <https://doi.org/10.3102/0034654319877151>
- von Stumm, S., Gale, C. R., Batty, G. D., & Deary, I. J. (2009). Childhood intelligence, locus of control and behaviour disturbance as determinants of intergenerational social mobility: British Cohort Study 1970. *Intelligence*, 37, 329–340.

- von Stumm, S., Smith-Woolley, E., Cheesman, R., Pingault, J.-B., Asbury, K., Dale, P. S., ... Plomin, R. (2020). School quality ratings are weak predictors of students' achievement and well-being. *The Journal of Child Psychology and Psychiatry*. <https://doi.org/10.1111/jcpp.13276>
- Watson, N., & Wooden, M. (2009). Identifying factors affecting longitudinal survey response. In R. M. Groves, G. Kalton, J. N. K. Rao, N. Schwarz, C. Skinner, & P. Lynn (Eds.), *In Methodology of longitudinal surveys*. Paris, France: Montmatre. <https://doi.org/10.1002/9780470743874.ch10>
- Wechsler, D. (1949). *Wechsler intelligence scale for children. Third Edition UK (WISC-IIIUK) manual*. London, UK: Psychological Corporation.
- Wright, C., Kipping, R., Hickman, M., Campbell, R., & Heron, J. (2018). Effect of multiple risk behaviours in adolescence on educational attainment at age 16 years: A UK birth cohort study. *British Medical Journal Open*, 8, e020182. <https://doi.org/10.1136/bmjopen-2017-020182>

Received 12 November 2019; revised version received 23 May 2020

Supporting Information

The following supporting information may be found in the online edition of the article:

Table S1. Descriptive statistics for all study variables.

Table S2. Correlations of SES, prior school performance, and prior cognitive ability with the study's measures of socio-emotional behaviours across state and private school children.

Table S3. Inter-correlations of repeated measures for wellbeing, behavioural problems and peer victimisation across state and private school children.

Table S4. Fit indices in overall sample for latent growth curve models of wellbeing, behavioural problems and peer victimisation.

Table S5. Regression results for family background (SES), prior school performance at age 7, and cognitive ability at age 11, as predictors of the intercept and slope in wellbeing.

Table S6. Regression results for family background (SES), prior school performance at age 7, and cognitive ability at age 11, as predictors of the intercept and slope in behaviour problems.

Table S7. Regression results for family background (SES), prior school performance at age 7, and cognitive ability at age 11, as predictors of the intercept and slope in peer victimisation.

Table S8. Regression coefficients for school type in the prediction of social-emotional behaviours.

Table S9. Regression coefficients for school type and schools' selection criteria in the prediction of social-emotional behaviours.