Evaluation of Royal National Children's Springboard Foundation's Partner Referral Scheme on Key Stage 5 outcomes

2015/16 - 2019/20

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1 Executive summary

1.1 Methodology

- This report evaluates the effect of Royal National Children's Springboard Foundation's (RNCSF) Partner Referral Scheme on Key Stage 5 outcomes, as measured by the likelihood of achieving two or more A-Levels (or equivalent) and attainment at A-Level (or equivalent), on young people who had achieved A-Levels and equivalent qualifications by the end of 2019/20.
- Our analysis used pupil-level data from the National Pupil Database (NPD) to compare the performance of pupils who took part in the scheme to the performance of a group of comparison pupils.
- Regression models were fitted to the data, with an indicator to flag whether a pupil had taken part in the scheme.
- In the appendix, we also present results obtained using alternative matching criteria.

1.2 Main findings

- This report found evidence that programme participants are more likely to achieve two or more A-Levels (or equivalent) than comparison students. We would estimate the odds of a participant achieving this outcome are between 2.2 and 26.1 times higher than for comparison pupils, with a point estimate of 8.3 times higher. This is the equivalent of twelve months of progress.
- Similarly, we found evidence that participants are more likely to achieve two or more A-Levels (excluding equivalents). We would estimate that the odds of participants achieving this outcome are 1.4 and 4.9 times those for comparison pupils, with a point estimate of 2.8. This is the equivalent of seven months of progress.
- We found some evidence that participants were likely to achieve higher points scores in their best three A-Levels or equivalents. Here, ten points is the equivalent of one grade in one of the best three qualifications. We would estimate that participants would achieve a points score between 3.7 and 32.3 points higher than comparison pupils, with a point estimate of 17.4. This is the equivalent of four months of progress.
- We also found evidence that participants were likely to achieve higher points scores in their best three A-Levels (excluding equivalents). As above, ten points is the equivalent of one grade in one of the best three A-Levels. We would estimate that participants would achieve a points score between 15.3 and 49.5 points higher than comparison pupils, with a point estimate of 32.2. This is the equivalent of seven months of progress.
- We did not find conclusive evidence of impact on the likelihood of achieving AAB at A-Level.

1.3 Limitations

- The approach used for the impact evaluation relies on constructing a comparison group of pupils that are statistically similar to the pupils who took part in the scheme, using data from the NPD. Creating a comparison group in this way means that we were unable

to control for factors not observed or recorded in the NPD, such as pupils' motivation, social class or parental occupation.

- Pupils who joined the programme may have been particularly well-motivated to do well academically. As we are unable to determine the levels of motivation in our comparison group, this may have led us to overestimate the impact of the programme. On the other hand, we were also unable to determine the levels of some of the selection criteria, including housing, risk of being exposed to crime and access to positive role models, which may have led to bias in the opposite direction.
- The sample size for this evaluation was quite small - 135 students - so we are less able to detect small effects and more likely to produce inconclusive results and / or results with wider confidence intervals than with a larger sample.
- RNCSF begins identifying potential participants during the first few years of secondary school. Within the 2013-2018 period, which is the first 5 years of the scheme that this evaluation relates to, the majority of participants joined the programme at the start of Year 12, although a minority started their placements at boarding schools prior to Year 12.[1] . Even for those who do not join until Year 12, the fact that they were identified earlier in their school career means that the programme may have an impact on their GCSE grades. For this reason, we did not use Key Stage 4 attainment as one of the matching variables. As prior attainment is one of the strongest predictors of future attainment, this limits the accuracy of our predictions and contributes further to the wide confidence intervals seen in some results.
- The main results shown in this report include results from 2020; in that year, public examinations were cancelled due to the pandemic, and results were awarded based on Centre Assessed Grades (CAGs). This may have affected outcomes; results omitting 2020 are included in appendix 6.1.

[1] Since 2018 the scheme has broadened its entry criteria towards a shift that is more like 50:50 the ratio of those joining at Year 12 and before Year 12, but this shift post-dates the majority of participants within the sample used for this analysis.

2 Introduction

RNCSF works with pupils from vulnerable or disadvantaged backgrounds who would benefit from attending a boarding school. At the time of writing, they had three programmes: one focused on referrals of children in Local Authority Care, one for pupils with Children in Need status and/or other substantive supporting references from social care professionals that their circumstances could be characterized as being on the 'edge of' care, and one for disadvantaged young people in specific geographic areas facing high levels of deprivation as defined by the Indices of Multiple Deprivation. This latter programme is known as the "Social Mobility" or Partner Referral Programme, for which pupils are referred by 11-16yrs state schools and/or local community groups specifically focused on supporting young people facing risks in their immediate environments (e.g. from knife/drug crime, or poverty of aspiration from issues associated with generational unemployment).

This report evaluates the impact of the Social Mobility Partner Referral Programme on young people who had achieved A-Levels and equivalent qualifications by the end of 2019/20. Using data from the National Pupil Database (NPD), we compared the outcomes students who took part in the programme to those of a matched comparison group.

We looked at five key outcomes: the achievement of two A-Levels (or equivalents), the achievement of two A-Levels (excluding equivalents), score in best three A-Levels (or equivalents), the score in best three A-Levels (excluding equivalents), and the likelihood of achieving AAB at A-Level.

2.1 Methodology

This evaluation used what is known as a quasi-experimental design. This involves comparing the outcomes of pupils that took part in the programme to a matched comparison group of statistically similar pupils. This approach mimics what would be done in a formal experiment such as a randomised control trial.

We selected pupils who were similar with respect to:

Pupil characteristics:

- prior attainment at Key Stage 2 (where available) [2]
- measures of disadvantage (% of school terms from Reception to Year 11 in receipt of free school meals and IDACI score)
- % of school terms from Reception to Year 11 in which classified as having SEN
- ethnic group
- gender (male / female)

[2] Data on KS2 attainment was not available for any pupils who did not complete KS2 in a school in England. This affected 14 of the participants in our sample. These pupils were matched to other pupils who were also missing KS2 attainment data and were otherwise similar.

- attendance and exclusions history up to the end of Year 11

School characteristics:

- region
- mean GCSE grade

The above criteria apply to those pupils who joined the programme at the start of Year 12. A small group joined prior to Year 12. For these pupils, we matched on the same variables as listed above except those relating to Key Stage 4 attainment and school history after the point at which they joined the programme.

We used regression models to compare outcomes for the pupils who took part in the programme to pupils in the matched comparison group. Confidence intervals were obtained for our estimates by using bootstrapping. This involves repeatedly taking a random sample of treated pupils, matching them to a comparison group then fitting the models. Each time this process is carried out, a figure for the estimated impact of the programme on each outcome is generated. The confidence intervals are simply the range in which 95% of these estimates lie.

2.2 Data

RNCSF provided a dataset consisting of 140 students. This included student identifiers (name and date of birth, where available), the school in which they were placed, and the dates on which they began and finished their placement. This data was linked to corresponding records in the National Pupil Database (NPD), and to publicly available school-level data.

The NPD is an administrative data resource maintained by the Department for Education and provides a history of enrollments, attendance, exclusions and attainment in national tests and public examinations (e.g. GCSE and A-Level) for all pupils who have been in state-funded education since 2002. For this scheme, we used data on attainment at A-Level and equivalent, as well as prior attainment during Key Stage 2 and 4. We also used some additional demographic variables.

The original dataset supplied by RNCSF consisted of 140 participants who began their placements between 2013 and 2018. Most of these pupils began their placements after Key Stage 4, but a smaller group of 24 participants were placed earlier in their school career. We were able to match all of these pupils to the NPD and data on the relevant outcomes was available in most cases. A small group of pupils completed Key Stage 5 in schools in Scotland, and, as the NPD only covers England, we were unable to include these pupils in the evaluation. The final dataset used for analysis consisted of 135 pupils.

3 Mitigation of confounding effects

This section begins with an overview of how programme participants compared to other pupils before matching. We then go on to discuss the matching technique used and how successful it was in creating a matched comparison group.

3.1 Differences between treated and potential comparison pupils

In this section, we review how programme participants compared to other pupils before any matching was carried out.

We will begin by looking at the outcomes on which this evaluation is focused. These are: the achievement of two A-Levels (or equivalents), the achievement of two A-Levels (excluding equivalents), score in best three A-Levels (or equivalents), the score in best three A-Levels (excluding equivalents) and the likelihood of achieving AAB at A-Level.

As shown in table 1, participants were more likely to achieve two or more A-Levels or equivalent than other students who completed KS4 in the same years; 95.6% of participants did so compared to just 57.3% of others. Similarly, they were more likely to achieve two or more A-Levels excluding equivalents; 77% of participants did so compared to 35.7% of others.

Of those participants who entered A-Level equivalents, the vast majority chose either the International Baccalaureate or the Cambridge Pre-U. 25% of participants entered one of these alternative qualifications, in some cases combined with one or more A-Levels. A small minority were entered for vocational qualifications (BTECs).

Table 1: Comparison of participants and other pupils before matching, outcome measures

Variable	RS participants	Other pupils	Number of RS participants	Number of other pupils
Best three points score	101.5	62.1	135	3203633
Best three points score (excluding equivalents)	80.7	37.8	135	3203633
Achieved two or more A-Levels (excluding equivalents)	77%	35.7%	104	1144798
Achieved two or more A-Levels, or equivalent	95.6%	57.3%	129	1835029
Achieved AAB at A-Level, or equivalent	26.7%	16.4%	36	526575
Achieved AAB at A-Level (excluding equivalents)	20.7%	10.5%	28	337752

They also achieved higher scores in their best three A-Levels or equivalent. Here, ten points is the equivalent of one grade in one of the best three qualifications.[3]

On average, excluding those students who did not pass any KS5 qualifications, participants scored 103.0 compared with an average of 92.4 for others. However, there was little difference in points score in students' best three A-Levels (excluding equivalents). On average, excluding those students who did not pass any A-Levels, participants scored 94.7 compared to 94.3 for others; these scores are the equivalent of somewhere between BCC and CCC.

Participants were also more likely to achieve AAB at A-Level than other pupils. 20.0% did so, compared to 10.5% of all other pupils.

Programme participants differed from the overall population of students in a number of ways, as shown in table 2. As one might expect, given the nature of the scheme, participants were more likely to be disadvantaged than other pupils. On average, participants were eligible for free school meals for 31.8% of their school career before joining the programme, compared to 15.7% for other pupils. Participants also came from deprived areas, as measured by the Income Deprivation Affecting Children Index (IDACI) rank for their area - a higher rank indicates a more deprived area. The mean IDACI rank of participants' home areas was 4453 (out of 32,844 areas).

Table 2: Comparison of participants and other pupils before matching, other measures

Variable	RS participants	Other pupils	Number of RS participants	Number of other pupils
IDACI rank	4453.4	15568.2	135	3203633
% FSM	31.8%	15.7%	135	3203633
Absences	2.5%	5.9%	135	3203633
Exclusions	0	0.1	135	3203633
Region: North West	17.8%	13.8%	24	441679
Region: East Midlands	14.1%	8.8%	19	283450
Region: London	60%	14.1%	81	451602
EAL	36.3%	15.5%	49	495853
Ethnicity: Black African	31.9%	3.1%	43	99793
Ethnicity: White British	14.8%	73.3%	20	2349200
SEN	< 10%	14.9%	< 10	477246
Gender: F	46.7%	49.6%	63	1587574

[3] Grades for alternative qualifications have been weighted accordingly. For example, for a qualification that is the equivalent of half an A-Level, **five** points would be the equivalent of one grade.

Gender: M	53.3%	50.4%	72	1616059
KS2 maths attainment: Top third	> 50%	33.3%	> 10	959214
KS2 English attainment: Top third	> 66.7%	33.3%	> 15	973503
GCSE attainment: Top third	79.3%	33.3%	88	1067331

There were some other differences in pupil demographics. Very few participants had special educational needs - less than 10% of participants were recorded as having SEN at the end of KS4, compared to 14.9% of other pupils. Participants were also far more likely to have English as an additional language (36.3% compared to 15.5% of other pupils) and far less likely to be of white British origin (14.8% compared to 73.3%). More participants came from a black African background (31.9% of pupils who were placed in KS5) than from any other ethnic group.

The scheme works exclusively with pupils from specific deprived geographic areas. The scheme's scope has extended in recent years to include new partnerships in areas across the North East, West Midlands and the South West, but for participants starting prior to 2018 (the sample used for this analysis) the majority (60%) came from schools in London, with other substantial proportions from schools in the North West and East Midlands (17.8% and 14.1% respectively).

As well as the demographic differences, there were differences in attendance and exclusions records and in prior attainment. Participants tended to have high rates of attendance, missing 2.5% of sessions, on average, compared to 5.9% for all other pupils, and a low number of short term exclusions. No participants had been permanently exuded prior to joining the programme. They also tended to have high attainment before joining the programme; of those who joined at the start of Year 12, 78.4% were in the top third of attainment at GCSE. Of those who joined earlier in their school career, more than 50% were in the top third for KS2 English attainment, and more than two thirds for KS2 maths.

These differences between programme participants and other pupils mean that we can't assume that any differences in attainment at A-Level are caused by the programme. They may be caused by the other differences described. That is why creating a matched comparison group is worthwhile. By doing so, we can control for the differences and carry out a more robust evaluation of the effect of the programme on attainment.

3.2 Extent of success in creating matched comparisons

The matching process was carried out using the nearest neighbour method, pairing treated and comparison students based on propensity scores.

Before beginning the matching process, we removed potential comparison pupils from schools that were ineligible for the programme, including those located outside the geographical area covered. Pupils were matched on the variables described in section 2.1.

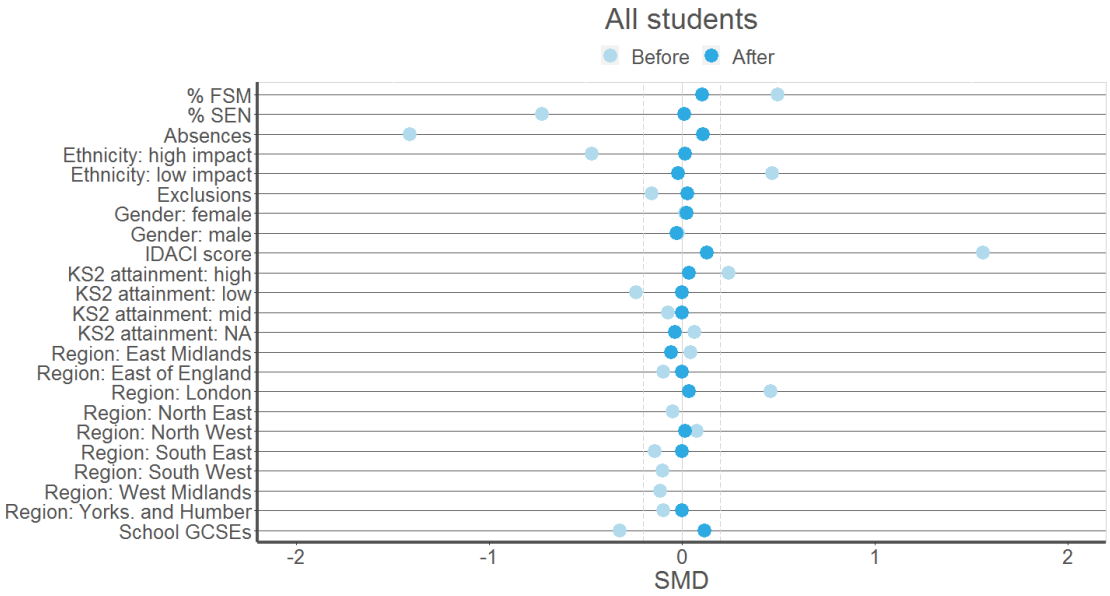
We created then created matched comparison groups based on all pupils who completed Key Stage 4, regardless of whether they started A-Level and equivalent qualifications in Year 12.

In appendix 6.2 and 6.3, we present results obtained from matching using alternative criteria and techniques. This includes matching based on an additional variable - KS4 attainment - and excluding those pupils who did not start a Level 3 qualification during Year 12, as well as matching using Mahalanobis distance as an alternative to propensity scores.

The graphs in figure 1, known as love plots,[4] show how similar the treated and comparison pupils were to one another, before and after matching, using a measure called the standardised mean difference. The mean difference is simply the difference between the average value of the variable for the treated students, and the average value for the comparison students. Standardising this measure means that we can compare balance across different variables. Generally, a standardised mean difference of 0.2 or below is considered to indicate good balance. This threshold is shown on the graphs as a dotted line.

As shown in figure 1, the matching process successfully created well-matched comparison groups.

Figure 1: Standardised mean differences between treated and comparison groups, before and after matching



[4] Loveplots are named for Professor Thomas E. Love, who first developed them along with colleagues (https://academic.oup.com/eurheartj/article/27/12/1431/647407)

4 Results

Results are given in four different forms: estimated impact, odds ratios, effect size, and months of progress.

In this report, there are five outcome measures: the achievement of two A-Levels (or equivalents), the achievement of two A-Levels (excluding equivalents), score in best three A-Levels (or equivalents), the score in best three A-Levels (excluding equivalents), and the likelihood of achieving AAB at A-Level.

The first two outcomes, and the fifth, are binary: either a student achieves two A-Levels (or equivalent) or they do not. We report the estimated effect on these two outcomes using odds ratios. These ratios tell us the relative odds of a pupil completing two A-Levels or equivalent, depending on whether they took part in the programme or not. An odds ratio of one would mean that a programme participant had exactly the same odds of completing them as a comparison pupil. An odds ratio above one means that a participant is more likely to complete them, and an odds ratio of below one means that they are less likely.

The estimated impact in the outcomes related to attainment are reported in the same units as the outcome measure. In this case, the outcome measure is points score in A-Levels or equivalent, in which ten points is generally the equivalent of one grade.[5] An estimated impact of ten on best three A-Level points score would mean that we'd expect a treated student to achieve one grade higher than a comparison student in one of their best three A-Levels.

When using estimated impact or odds ratios it is difficult to compare across different outcome measures. It is also difficult to compare the effect of this programme to the effect of another programme that focuses on a different outcome measure using estimated impact or odds ratios.

The effect size is used to get around this problem. It is a standardised version of the estimated impact. That is, it is the estimated impact divided by the standard deviation in the outcome measure. Because it is a standardised measure, it can be compared across different outcomes.[6]

However, effect sizes can be difficult to interpret; it is not immediately obvious whether an effect size of, for example, 0.5 is large or small. Months of progress are a measure used in education research to try and help with this. In this report, effect sizes were translated into equivalent months of progress using guidance developed by the Education Endowment

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[5] Grades for alternative qualifications have been weighted accordingly. For example, for a qualification that is the equivalent of half an A-Level, **five** points would be the equivalent of one grade.

[6] Odds ratios have been converted into effect sizes using the following formula: effect size = log(odds ratio) * ($\sqrt{3}/\pi$)

Foundation, as shown in table 3.[7] In our example, an effect size of 0.5 would be the equivalent of six months of additional progress; expressed using the months of progress measure, it is clear that this is a large effect.

Table 3: Effect sizes and equivalent months of progress

Effect size from	To	Months of progress
-0.04	0.04	0
0.05	0.09	1
0.10	0.18	2
0.19	0.26	3
0.27	0.35	4
0.36	0.44	5
0.45	0.52	6
0.53	0.61	7
0.62	0.69	8
0.70	0.78	9
0.79	0.87	10
0.88	0.95	11

[7] https://educationendowmentfoundation.org.uk/projects-and-evaluation/evaluation/evaluation-guidance-and-resources/reporting-templates, accessed September 2021

4.1 Achievement of two A-Levels (or equivalent)

Estimates of the impact of the programme on achieving two or more A-Levels (or equivalent) are shown in table 4, with 95% confidence intervals given in brackets. Effect size and equivalent months of progress are also included.

Results are also summarised in figure 2.

Table 4: Estimated effect of the programme on achievement of two or more A-Levels

Outcome	No. pupils	Odds ratio	Effect size	Months of progress
Two or more A-Levels, or equivalent	135	8.3 (2.2, 26.1)	1.1	12
Two or more A-Levels (excluding equivalents)	135	2.8 (1.4, 4.9)	0.5	7

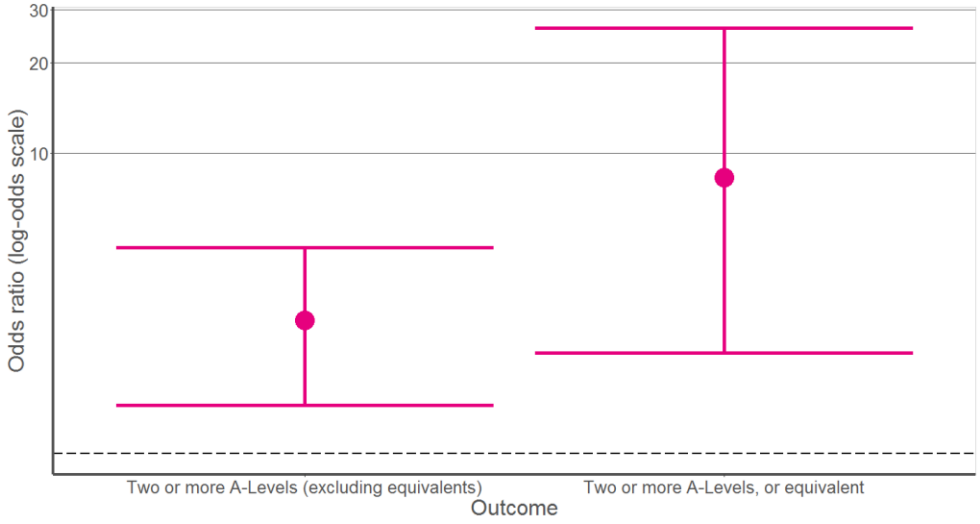
These results provide evidence that the programme has a positive effect on the likelihood of achieving two or more A-Levels or equivalent. We would estimate that the odds of a programme participant achieving this outcome would be between 2.2 and 26.1 times higher than those of a comparison student, with a point estimate of 8.3.

The point estimate is the equivalent of an effect size of 1.1, or 12 months of additional progress.

The results provide evidence that the programme has a positive effect on the likelihood of achieving two or more A-Levels, excluding equivalents. The effect on this outcome is smaller than that on the previous one; the confidence interval ranges from 1.4 to 4.9.

The point estimate for this outcome is the equivalent of an effect size of 0.5, or 7 months of additional progress.

Figure 2: Estimated effect of the programme on achievement of two or more A-Levels



4.2 Points score in best three A-Levels (or equivalent)

Estimates of the impact of the programme on attainment at A-Level are shown in table 5, with 95% confidence intervals given in brackets. Effect size and equivalent months of progress are also included.

Results are also summarised in figure 3. Attainment is measured by looking at students' total score in their best three A-Levels (or equivalent).

Grades are shown here as point scores ranging from 0-60 for each qualification. These relate to letter grades as follows: A* - 60, A - 50, B - 40, C - 30, D - 20, E - 10. Best three grades are simply the sum of a student's points score for their best three A-Levels (or equivalent).[8]

Table 5: Estimated effect of the programme on attainment at A-Level (or equivalent)

Outcome	No. pupils	Estimated impact	Effect size	Months of progress
Points score in best 3 A-Levels, or equivalent	135	17.4 (3.7, 32.3)	0.3	4
Points score in best 3 A-Levels (excluding equivalents)	131	32.2 (15.3, 49.5)	0.6	7

These results provide evidence that the programme has a positive effect on points score in best three A-Levels or equivalent. We would estimate that a programme participant would achieve a points score between 3.7 and 32.3 more than a comparison pupil, with a point estimate of 17.4.

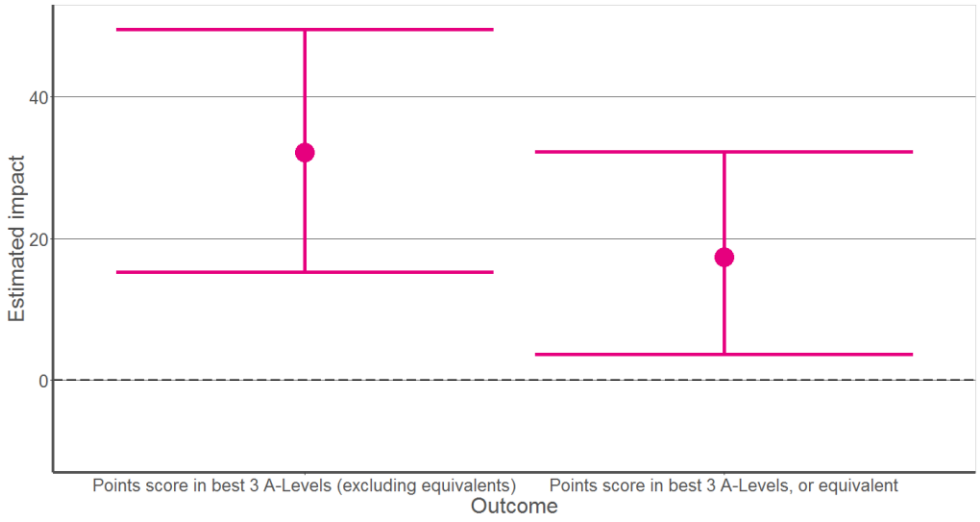
The point estimate for this outcome is the equivalent of an effect size of 0.3, or 4 months of additional progress, or roughly one and a half grades across the three qualifications.

These results also provide evidence that the programme has a positive effect on points score in best three A-Levels, excluding equivalents. We would estimate that a programme participant would achieve a points score between 15.3 and 49.5 more than a comparison pupil, with a point estimate of 32.2

The point estimate for this outcome is the equivalent of an effect size of 0.6, or 7 months of additional progress, or roughly three grades across the three qualifications.

[8] Grades for alternative qualifications have been weighted accordingly. For example, for a qualification that is the equivalent of half an A-Level, **five** points would be the equivalent of one grade.

Figure 3: Estimated effect of the programme on attainment at A-Level (or equivalent)



4.3 Achievement of AAB at A-Level (or equivalent)

Estimates of the impact of the programme on achieving AAB at A-Level (or equivalent) are shown in table 6, with 95% confidence intervals given in brackets. Effect size and equivalent months of progress are also included.

Results are also summarised in figure 4.

Table 6: Estimated effect of the programme on achievement of two or more A-Levels

Outcome	No. pupils	Odds ratio	Effect size	Months of progress
Achieved AAB at A-Level or equivalent	135	1.3 (0.6, 2.4)	0.1	1
Achieved AAB at A-Level (excl. equivalents)	131	1.4 (0.6, 2.9)	0.1	2

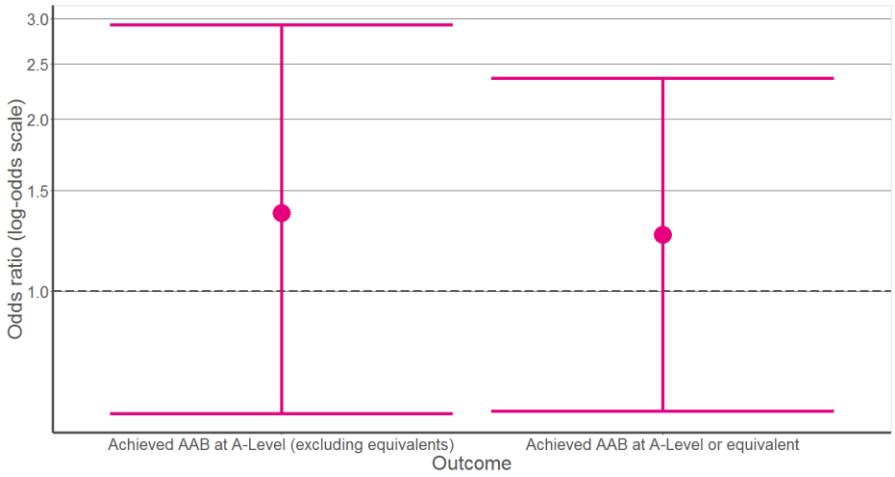
These results do not provide conclusive evidence that the programme has a positive effect on the likelihood of achieving AAB at A-Level or equivalent. We would estimate that the odds of a programme participant achieving this outcome would be between 0.6 and 2.4 times higher than those of a comparison student, with a point estimate of 1.3.

The point estimate is the equivalent of an effect size of 0.1, or 1 months of additional progress. However, because the confidence interval for this estimate contains one, it is not statistically significant; we cannot be confident that there is an impact on this outcome.

The results do not provide conclusive evidence that the programme has a positive effect on the likelihood of achieving AAB at A-Level, excluding equivalents. The odds of participants achieving this outcome are between 0.6 and 2.9. This means that we cannot be confident that the programme has any effect on this outcome; the result is not statistically significant.

The point estimate for this outcome is the equivalent of an effect size of 0.1, or 2 months of additional progress.

Figure 4: Estimated effect of the programme on achievement of two or more A-Levels



5 Conclusions

5.1 Discussion

This evaluation found evidence to show that the programme had a significant effect on all of the outcomes, with the exception of the likelihood of achieving AAB at A-Level.

We should note that we have omitted matching on Key Stage 4 attainment and on whether students began studying a Level 3 qualification at the start of Year 12. This is because we believe the programme may influence attainment and choices at this stage. Hence, this report evaluates the effect of the programme on KS5 attainment, including any differences that are due to improved KS4 attainment or different choices for KS5 study.

The estimated impact on the likelihood of participants achieving two or more A-Levels or equivalent his outcome was positive, suggesting that the odds of participants completing these qualifications are 8.3 times higher than for comparison students. This is the equivalent of twelve months of progress; a very strong effect. However, the confidence interval for this estimate was very wide, ranging from 2.2 to 26.1. We also found that this outcome was particularly sensitive to the inclusion of data from 2020, when exams were disrupted (see appendix 6.1), and to the use of an alternative matching method (see appendix 6.2).

Similarly, we found that the programme had a positive effect on the likelihood of achieving two or more A-Levels (excluding equivalents). The estimated impact was the equivalent of seven months of additional progress, still a strong effect but smaller than that on the outcome above, which includes equivalent qualifications. The confidence interval for this estimate was also rather wide, ranging from 1.4 to 4.9.

We also found evidence that the programme had an effect on points score in best three A-Levels or equivalent, and in best three A-Levels (excluding equivalents). We would estimate that a programme participant would achieve a points score between 3.7 and 32.3 more than a comparison pupil, in A-Levels or equivalents, with a point estimate of 17.4. This the equivalent of four months of additional progress, or roughly one and a half grades across the three qualifications.

We found a stronger effect on A-Levels, excluding equivalents. We would estimate that a programme participant would achieve a points score between 15.3 and 49.5 more than a comparison pupil, with a point estimate of 32.2. This is the equivalent of an effect size of seven months of additional progress, or roughly three grades across the three qualifications.

Interestingly, while we found a stronger effect on the likelihood of completing 2 or more A-Levels or equivalents than on completing 2 or more A-Levels, we found the opposite when looking at best three points score; with that outcome, the stronger effect was on A-Levels, excluding equivalents. This suggests that the participants who do take A-Levels, as opposed to equivalents, are perhaps slightly less likely to complete their qualifications successfully than other participants, but will tend to achieve better grades.

Finally, we did not find conclusive evidence that the programme had an effect on the likelihood of achieving AAB at A-Level. The point estimate for this outcome is the equivalent of two months of additional progress, but is not statistically significant. That is, we can't be confident that there is any effect on this outcome.

Some results in this evaluation are inconclusive, and others feature very wide confidence intervals. This lack of certainty may have been improved if the evaluation had been focused on a larger sample size. The fact that the prior attainment used in the matching process was from KS2, six years before the outcome measures at the end of KS5, will also have contributed to the uncertainty.

5.2 Limitations

This impact evaluation was subject to a number of limitations. Many of these arise from the fact that treated and comparison pupils were matched using observational data from the National Pupil Database (NPD). The NPD is, of course, limited in scope. For example, it does not include information about social class, parental occupations or school funding levels. Not accounting for these unobserved variables may introduce bias into our estimates.

It may be the case that pupils who joined the programme were particularly motivated to do well academically. If so, their motivation may have made them more likely than comparison students to achieve strong qualifications, regardless of the intervention. On the other hand, some of the selection criteria on which we were unable to match, including lack of role models and risk of exposure to crime, may have led to bias in the opposite direction.

A limited number of students took part in the programme - just 135 were included in this evaluation. A smaller sample size is generally more likely to produce inconclusive results and / or results with wider confidence intervals than with a larger sample. It is possible that a larger sample may have resulted in a clearer indication of the impact of the programme.

The Royal National Children's Springboard Foundation begins identifying potential participants during the first few years of secondary school. This may have an impact on the GCSE grades obtained by programme participants. For this reason, we did not use Key Stage 4 attainment as one of the matching variables. As prior attainment is one of the strongest predictors of future attainment, this limits the accuracy of our predictions and contributes further to the wide confidence intervals seen in some results.

Results obtained from an alternative matched comparison group, in which KS4 attainment was used as a matching variable and in which the comparison group was restricted to those students who began studying a Level 3 qualification in Year 12, are included in appendix 6.3. These results can be taken to represent an evaluation of the impact of the programme on participants' KS5 attainment alone - that is, unlike the main results shown in the body of this report, they do not take account of the effect that the programme may have had on GCSE results and opportunities or motivation to study at Level 3.

Finally, the main results shown in this report include results from 2020; in that year, public examinations were cancelled due to the pandemic, and results were awarded based on Centre

Assessed Grades (CAGs). This may have affected outcomes; results omitting 2020 are included in appendix 6.1.

6. Appendices

6.1 Excluding 2020 outcomes

The results shown in table 7 below were obtained using the same methodology as in the main body of the report, but omitting students who completed A-Levels in 2020. We also include a column showing the estimate impact obtained in the main body of the report, for ease of comparison.

Table 7: Estimated effect of the programme on all outcomes, omitting 2020

Outcome	No. pupils	Estimate (with 2020)	Estimate (without 2020)	Effect size	Months of progress
Two or more A-Levels, or equivalent	98	8.3 (2.2, 26.1)	5.5 (1.5, 15.4)	0.8	10
Two or more A-Levels (excluding equivalents)	98	2.8 (1.4, 4.9)	3 (1.3, 5.5)	0.6	7
Points score in best 3 A-Levels, or equivalent	98	17.4 (3.7, 32.3)	12.4 (-3.1, 28.2)	0.2	3
Points score in best 3 A-Levels (excluding equivalents)	94	32.2 (15.3, 49.5)	27.1 (8.7, 44.1)	0.5	6
Achieved AAB at A-Level or equivalent	98	1.3 (0.6, 2.4)	1 (0.4, 2.3)	-0.1	0
Achieved AAB at A-Level (excluding equivalents)	94	1.4 (0.6, 2.9)	1.2 (0.4, 3.2)	0.0	0

Broadly speaking, the estimates are similar, suggesting that the results are not overly sensitive to the inclusion of the 2020 data. Confidence intervals tend to be wider; this is likely due to the smaller sample size used when 2020 students are omitted.

The main difference seen is that the estimated impact is generally slightly higher when 2020 is included. This may be because all participants attended independent schools, in which grades increased more than in state schools between 2019 and 2020.[9].

In the case of the estimated impact on the likelihood of achieving two or more A-Levels or equivalent, the difference is bigger; when 2020 is included, the estimated effect is the equivalent of twelve months of progress, but when it is excluded, it drops to ten months. This

[9] https://ffteducationdatalab.org.uk/2021/08/whats-behind-the-increasing-attainment-gap-between-independent-and-state-schools/

suggests that the effect on this outcome may be somewhat lower than reported in the main body of the report in a typical year.

6.2 Alternative distance measure

In this section, we present results obtained using an alternative matching method. This is intended to be used as a robustness check to indicate whether the results are sensitive to the matching method used. In this instance, we used nearest neighbour matching as in the main body of the report, but based on Mahalanobis distance rather than on propensity scores.

The table below shows the estimated effects obtained using this method.

Table 8: Estimated effect of the programme on all outcomes, matching based on Mahalanobis distance

Outcome	No. pupils	Estimate (original)	Estimate (alternative)	Effect size	Months of progress
Two or more A-Levels, or equivalent	135	8.3 (2.2, 26.1)	5.5 (1.7, 16.6)	0.9	10
Two or more A-Levels (excluding equivalents)	135	2.8 (1.4, 4.9)	2.5 (1.4, 4.2)	0.5	6
Points score in best 3 A-Levels, or equivalent	135	17.4 (3.7, 32.3)	14.7 (4.9, 23.9)	0.3	4
Points score in best 3 A-Levels (excluding equivalents)	131	32.2 (15.3, 49.5)	32.2 (20.3, 44.3)	0.6	7
Achieved AAB at A-Level or equivalent	135	1.3 (0.6, 2.4)	1.3 (0.7, 2.2)	0.1	2
Achieved AAB at A-Level (excluding equivalents)	131	1.4 (0.6, 2.9)	1.3 (0.7, 2.3)	0.1	2

The estimated effects obtained using this alternative method are broadly similar, if slightly lower, than that obtained in the main analysis, with the exception of the effect on the likelihood of completing two or more A-Levels or equivalent. The point estimate given in the main report is 4.1, the equivalent of nine months of progress, while the estimate from this alternative analysis is 2.9, the equivalent of seven months of progress. While not a huge difference, this is larger than the differences for other point estimates, which are all within one month of progress of the estimates in the main report.

However, on balance we would not suggest that the results obtained using this alternative method suggest that the results in the main report are overly sensitive to the matching method used.

6.3 Matching with KS4 attainment

Finally, we present results obtained using some additional matching criteria, but otherwise the same methodology as used in the main body of the report.

The additional criteria are: the inclusion of attainment at KS4 in the matching variables, and, when creating matches for students who joined the programme in Year 12, the exclusion of any pupils who did not begin studying a Level 3 qualification at the start of Y12 from the comparison pool.

The table below shows the estimated effect of the programme on KS5 outcomes when pupils have been matched on KS4 attainment and intentions to study Level 3 qualifications at the start of Y12. We also include a column showing the estimate impact obtained in the main body of the report, for ease of comparison.

Table 9: Estimated effect of the programme on all outcomes, including matching on KS4 attainment

Outcome	No. pupils	Estimate (without KS4)	Estimate (with KS4)	Effect size	Months of progress
Two or more A-Levels, or equivalent	135	8.3 (2.2, 26.1)	4.1 (1.2, 11.6)	0.7	8
Two or more A-Levels (excluding equivalents)	135	2.8 (1.4, 4.9)	1.3 (0.6, 2.4)	0.1	2
Points score in best 3 A-Levels, or equivalent	135	17.4 (3.7, 32.3)	-2.4 (-14.1, 9.2)	0.0	0
Points score in best 3 A-Levels (excluding equivalents)	131	32.2 (15.3, 49.5)	6.3 (-9.1, 22.1)	0.1	2
Achieved AAB at A-Level or equivalent	135	1.3 (0.6, 2.4)	0.6 (0.3, 1)	-0.3	0
Achieved AAB at A-Level (excluding equivalents)	131	1.4 (0.6, 2.9)	0.6 (0.3, 1)	-0.3	0

Estimates of the effects every outcome are considerably lower when matching includes KS4 attainment and excludes pupils who did not begin studying a Level 3 qualification at the start of Year 12. This suggests that the programme may have an effect on both KS4 attainment and on the likelihood that pupils will choose to study Level 3 qualifications, whether A-Levels or equivalents.