Multi-intervention outreach and mentoring evaluation report:
A randomised controlled trial of the K+ programme

May 2023

Contents

1. Summary

This report summarises the interim findings of a pilot randomised controlled trial (RCT) conducted to evaluate King's College London K+ programme. The final results, based on students' progression to higher education (HE) will be due for publication in 2024, following the release of destination data from the Higher Education Statistics Agency (HESA).

1.1. Aim and description of the intervention

The primary aim of the K+ programme, King's College London's flagship widening participation (WP) programme, is to increase access to highly selective higher education providers (HEPs). The 18-month programme includes 13 separate events throughout Year 12 and 13 such as an induction session, a university experience day, careers advice, academic taster sessions, online mentoring, a summer school, personal statement workshops, study skills and a graduation event.

1.2. Target group

The target group is A-Level students from WP backgrounds in Greater London or Essex.

1.3. Number of students involved

There were around 2,300 applications to the programme in 2020-21. Once ineligible applicants had been filtered out, and 40 places on the K+ programme were randomly allocated to Priority Group students, a remaining 833 eligible applicants were randomly assigned to either the treatment or control group.

1.4. Implementation

The K+ programme is delivered by a dedicated K+ team. Prior to the COVID-19 pandemic, all K+ events were delivered in-person, predominantly on King's College London campuses. However, from March 2020 all events were delivered online. This was a drastic shift from how content had been previously delivered. The report is based on the experiences of K+ students that enrolled in December 2020 and who experienced the online version of K+.

1.5. Brief description of the IE

The impact evaluation (IE) is a two-armed randomised controlled trial (RCT) to investigate the impact of K+ on progression to highly selective universities. The trial compares average outcomes across the treatment (those receiving K+) and control (those not selected for K+) groups. The primary outcome measures whether an individual entered a highly selective university in the academic year 2022-23. As data

on HE entry is not available until 2024, this report uses a proxy measure – student responses to a post-UCAS deadline survey - to measure students' university choices, as listed in their UCAS application. A range of secondary outcome measures are also used to test whether participation on the K+ programme significantly increases:

- A sense of belonging to HE
- Academic self-efficacy
- Social capital

1.6.   Brief description of the IPE

The implementation and process evaluation (IPE) assesses whether the K+ programme was delivered as intended and identifies elements of successful delivery. It aims to help us understand more about students' own experiences on the K+ programme and the views of K+ staff members on their experiences delivering the programme.

1.7.   Key findings

The findings in this report are based on an interim analysis of survey data, a proxy measure while we wait for the long-term outcome data to become available in 2024. Of the 910 students included in the RCT, under 10% (n=78) responded to the post-UCAS deadline survey which measured students' five chosen universities listed in their UCAS application, as well as their levels of academic self-efficacy, social capital, and sense of belonging. Although the small sample size captured in the interim analysis limits the validity of the impact evaluation, the longer-term outcome data will remedy this.

This report finds that there was not a statistically significant difference in the rate of progression to highly selective universities (as measured by a self-report proxy) between those enrolled on the K+ programme (treatment students) and those who were not enrolled (control group students). Of the students that responded to the post-UCAS deadline survey to measure first-choice universities, 28 (93%) of control group students (n= 30) and 48 (94%) of treatment group students (n= 48) chose a highly selective university as their first choice.

Survey findings indicate that participation on K+ is positively associated with students' self-reported levels of academic self-efficacy. There was no effect on sense of belonging or levels of social capital. It is important to note that unvalidated scales were used to represent these constructs.

The report outlines several methodological limitations, particularly the challenges of using self-reported university choice as a proxy for eventual progression to HE. The possibility that students in the control have accessed multiple outreach activities with

other universities is also discussed. This is a common challenge in WP evaluation and will be addressed in the final analysis by matching baseline and outcome data to records which show whether students attended K+ activities. We will use this matched dataset to explore whether attendance at activities mediates any effect on their outcomes, to accompany our intention to treat analysis.

The implementation and process evaluation highlights that whilst each of the intended events happened and overall attendance was high, moving to online delivery due to the COVID-19 pandemic had a huge impact on how the programme was implemented. Well-established activities were rapidly redesigned at short notice. Essential parts of the programme such as coming to campus and interacting with peers and student ambassadors either didn't happen or happened with much less frequency. As such the programme was not delivered as initially intended. It is difficult to know the impact this shift had, although it is unlikely to be positive.

The focus groups, although with a small sample size of 10, suggest that K+ and outreach more generally, can positively impact students' attitudes toward highly selective universities, their self-efficacy and sense of belonging.

1.8. Key conclusions

Using a self-report proxy measure, there is no evidence that the K+ programme improves the likelihood of students progressing to a highly selective university. Of the students that responded to the post-UCAS deadline survey to measure first-choice universities, 28 (93%) of control group students (n= 30) and 48 (94%) of treatment group students (n= 48) chose a highly selective university as their first choice.

2. Introduction

2.1. Project team

This local evaluation of the K+ programme was a collaboration between The Centre for Transforming Access and Student Outcomes in Higher Education (TASO) and King's College London. The project team is outlined in Table 1 below.

Table 1: Project team, roles, and responsibilities

Organisation	Name	Roles and Responsibilities
King's College London	Michael Bennett	Associate Director of Widening Participation ● Principle Investigator from King's College London
King's College London	Jack Mollart-Solity	Head of What Works ● Oversight of trial coordination from King's College London
King's College London	Dr Tayler Meredith	Research and Evaluation Manager ● Oversight of trial coordination from King's College London
King's College London	Yasarah Qureshi	Senior Evaluation Adviser ● Lead on all aspects of the trial from the King's College London
King's College London	Luke Chapman	Head of Widening Participation ● Departmental lead for King's College London involvement with the project.
King's College London	Charlotte Mannix-Pole	Widening Participation Manager (Post-16 Programmes) ● Departmental lead for King's College London involvement with the project.
King's College London	Lilly-Rose Sharry	Widening Participation Senior Officer ● Planning and Delivery for K+
King's College London	Christine Browne	Widening Participation Senior Officer ● Planning and Delivery for K+
King's College London	Mary Finch	Widening Participation Officer ● Planning and Delivery for K+
TASO	Dr Eliza Kozman	Deputy Director of Research

TASO		● Oversight of design and implementation of trial from TASO
TASO	Rain Sherlock	Evaluation Manager ● Lead on the local impact evaluations
TASO	Helen Lawson	Research Programmes Manager ● Lead project management on the broader project.
TASO	Sarah Chappell	Senior Research Officer ● Support on design and implementation of trial from TASO side.

2.2. Background and rationale for the local evaluation

Multi-intervention outreach and mentoring is a popular form of widening participation (WP) activity offered by numerous higher education providers (HEPs) throughout the United Kingdom. Though the structure of this intervention differs between HEPs, a multi-intervention outreach and mentoring programme usually involves a combination of multiple outreach components, such as: mentoring, counselling, coaching and role models; information, advice, and guidance (IAG); summer schools, financial support, campus visits and subject tasters; and workshops. The series of interventions that form a multi-intervention outreach and mentoring programme are typically high-cost and large-scale, often working with hundreds of students through at least a year of activity. While prior evidence has suggested a link between multi-intervention outreach and positive outcomes for students, little causal evidence exists to directly prove the impact of multi-intervention outreach and mentoring programmes on disadvantaged students' likelihood of progressing to higher education (HE).

A recent literature review into the evidence base of UK WP interventions has identified multi-intervention outreach as one of the most common approaches used by HE providers (Robinson & Salvestrini, 2020). While the review found evidence that these programmes are associated with positive outcomes for participants (see also Chilosi et al, 2010; Emmerson et al, 2005), the literature has two key limitations. First, most of the existing evidence is focused on whether these programmes impact student aspirations and attitudes rather than long term behavioural outcomes such as HE attendance. Second, due to the methodologies used, the current literature, particularly in a UK context, provides correlational and contextual evidence on the efficacy of these programmes, rather than a causal link between intervention and outcomes for students.

Multi-intervention outreach is a resource-intensive activity and requires significant investment of time and effort from HE providers and students alike. Therefore, there is a need to establish clear causal evidence on the efficacy of this approach.

To address this TASO have commissioned and overseen a series of evaluations, partnering with three HEPs to explore the different ways in which multi-intervention outreach and mentoring programmes could be evaluated. In this local evaluation, a pilot randomised controlled trial (RCT) is used to evaluate the impact of the King's College London's flagship WP programme, K+. This report presents the interim findings of the K+ RCT by comparing both treatment and control students' survey responses to a survey which captured each participant's first-choice universities, as well as self-reported levels of belonging, social-capital, and self-efficacy. Additionally, the report reflects on whether the K+ programme was delivered as intended and whether participants reported changes in attitude, knowledge or awareness towards highly selective universities. Final findings based on students' progression to a highly selective UK HE provider will be due for publication in 2024, following the release of destination data from the Higher Education Statistics Agency (HESA).

2.3.   Detailed description of the intervention

This study evaluates the effectiveness of K+. First launched in 2011, ordinarily the 18-month programme includes 13 separate events throughout Year 12 and 13 such as an induction session, a university experience day, careers advice, academic taster sessions, online mentoring, a summer school, personal statement workshops, study skills and a graduation event. Prior to the COVID-19 pandemic, all K+ events were delivered in-person, predominantly on King's College London campuses. However, from March 2020 all events were delivered online. This was a drastic shift from how content had been previously delivered. The report is based on the experiences of K+ students that enrolled in December 2020 and who experienced the online version of K+.

K+ has eight separate subject streams. Students apply to the stream most relevant to the course they are interested in studying at university. The K+ subject streams are:

- Business & Economics
- Dentistry
- History & Politics
- Languages & Literature
- Law
- Maths & Computer Sciences
- Medicine and Healthcare

- Sciences

A full programme timetable for Year 12 and Year 13 is included in Appendix 1.

Whilst the K+ programme does not guarantee students a place at King's College London, those who successfully complete the programme receive special consideration during King's College London's admissions processes. This makes it more likely that they will receive an offer from the university. For students that do receive an offer, this is normally two grades lower than the standard entry tariff.[1]

2.4. Intervention aims and objectives

The primary aim of K+ is to increase access to highly selective universities. To operationalise the concept of 'highly selective', this study uses high tariff providers and aligns with the Higher Education Access Tracker's (HEAT) classification of high tariff.[2]

The secondary aims of the project are to increase:

- Aspirations to attend a highly selective university
- A sense of belonging to HE
- Academic self-efficacy
- General self-efficacy
- Social capital

2.5. Key research questions

This research explores the efficacy of multi-intervention outreach as a WP activity by measuring the efficacy of the K+ programme via an RCT.

The primary research question is whether participation in the K+ programme significantly increases subsequent enrolment at selective universities for its participants.

2.6. Theory of Change (TOC)

The TOC can be found in Appendix 2.

2.7. Ethics

Ethical approval for running an RCT of the K+ programme was given by the King's College Ethics committee (*ref: LRM-21-22-19862*). Eligible applicants were provided

---

[1]
https://www.kcl.ac.uk/study/undergraduate/how-to-apply/contextualised-admissions#:~:text=Contextual%20offers%20are%20made%20to,found%20on%20the%20course%20pages

[2] HEAT provided a list of high tariff universities. They stated that the high tariff list was based on a list published by OfS. Unfortunately, the original source has been removed from the OfS website

with the option to opt out of the study (i.e., the RCT) while still having access to the programme. The participant information sheet was included in the K+ application form.

Ethical approval to run focus groups as part of the implementation and process evaluation was included in the original ethics application form. All eligible applicants from the 2020-22 cohort were invited to take part in the focus groups.

3. Methodology

3.1. Impact Evaluation – RCT
3.1.1. Impact evaluation research questions

This research explores the efficacy of multi-intervention outreach as a WP activity by measuring the efficacy of the K+ programme via an RCT.

Primary research question: Does participation in the K+ programme significantly increase subsequent enrolment at selective universities for its participants.

Secondary research questions: Does participation in the K+ programme significantly increase:

- Aspirations to attend a highly selective university
- A sense of belonging to HE
- Academic self-efficacy
- General self-efficacy
- Social capital

We also tested whether overall aspiration and entry to HE increases as a result of participation in the K+ programme. We would not expect a significant difference between the control and treatment, as it's likely that HE progression will be high in both groups. However, the outcome is used to contextualise findings for the primary research question.

Study hypotheses

The hypotheses that this study will test are:

- H1: The K+ programme at King's College London increases progression to selective HEPs among participants.

- H2: The K+ programme at King's College London increases progression to HE among participants.

- H3: The K+ programme leads participants to strengthen their belief that they can 'belong' in a HE setting.

- H4: The K+ programme increases interest in attending selective HEPs among participants.
- H5: The K+ programme increases interest in attending HE among participants.
- H6: The K+ programme increases self-reported self-efficacy among participants.
- H7: The K+ programme increases self-reported social capital among participants.

3.1.2. Research methods

A pilot RCT was conducted to investigate the impact of K+ on progression to highly selective universities. The trial compares average outcomes across the treatment (those receiving K+) and control (those not selected for K+) groups. The aim is to generate causal evidence of the programme's effectiveness.

3.1.3. Primary outcome

The primary outcome measure is whether the individual enters a highly selective university in the academic year 2022-23.[3] The entrants of high tariff universities have higher mean UCAS tariff scores from their top three A level grades than the entrants of non-high tariff universities. The list of universities classified as high tariff is in Appendix 3. This deviates from the research protocol, in which highly selective was defined as a top-third university, as outlined by the Department for Education.[4] This decision was made because high tariff is a smaller group of institutions that better reflects the term 'highly selective'.

HE entry data is not obtainable via HESA until 2023-24, therefore, this report uses a proxy measure. Students were sent a survey in February 2022, after the UCAS application deadline closed. The survey asked which universities students had applied to and which was their first choice.

- First-Choice (binary) – this measure takes the students' responses to their first-choice university and matches against the high-tariff providers listed on HEAT. If students' first choice application was a high tariff provider, they are coded as 1. All others are coded as 0.

---

[3] For the purposes of this study, highly selective universities are classified as the universities identified as 'high tariff' by the Higher Education Access Tracker (HEAT).

[4] See Department for Education document:
https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/559907/SFR47_2016_Technical_Note.pdf

Table 2: Primary Outcome Measures

Outcome Measure	Data to be Collected	Point of Collection
Primary Analysis 1 (Application to university)	Please select your first-choice university from the list below. (Drop down list of all UK HE providers includes prefer not to say and Other option). Repeated for each five choices.	February 2022 After UCAS application deadline
Primary Analysis 2 (Application to university)	What is the name of the course you have chosen to study for your first-choice university? (Free text box) *Repeated for each five choices.*	February 2022 After UCAS application deadline

3.1.4. Secondary outcomes

A range of secondary outcomes measures were used. These test whether participation on the K+ programme significantly increases:

- A sense of belonging to HE
- Academic self-efficacy
- Social capital

The data for this was collected via the same survey sent to students in February 2022. Whilst there were still some K+ activities scheduled after that date, most events had already taken place. It is unlikely that any subsequent event would have changed the responses to survey questions, particularly as the later events predominantly focus on students' transition to HE.

Table 3: Secondary Outcome Measures

Outcome Measure	Data to Collected	Point of Collection
Secondary Analysis 1 Social Capital	1. There is someone I can turn to for advice about making very important decisions. 2. I feel that there is no one I can share my most private fears and worries with. 3. There are several people I trust to help solve my problems. 4. Interacting with other people makes me interested in things that happen outside of my local area. 5. Interacting with other people makes me want to try new things. 6. Interacting with other people makes me feel connected to the bigger picture.	February 2022

	7. I am willing to spend time to support my activities in my local community. 8. I come into contact with new people all the time. Likert 7-point scale "Strongly Agree to strongly disagree" Bonding/Bridging Social Capital: Williams, D. (2006). (wording adapted to make relevant to context of learners)	
Secondary Analysis Sense of Belonging (Pre-Entry)	1. I have a clear understanding of what to expect from life at a highly selective university. 2. I have a clear understanding of what to expect from my social life at a highly selective university. 3. I have a clear understanding of what to expect from studying at a highly selective university. 4. Highly selective universities are for people like me. 5. People like me fit in at highly selective universities. 6. People like me have the skills and experiences to actively participate in classroom settings at highly selective universities. 7. People like me can make contact with teaching staff at highly selective universities. Likert 7-point scale "Strongly Agree to strongly disagree"	February 2022
Secondary Analysis 1 Academic self-efficacy	If you applied to university, how likely do you think it is that you will get into your first-choice? Likert 7-point scale "Extremely likely to extremely unlikely"	February 2022

3.1.5. Other outcomes

Additional measures were also collected to identify whether K+ increases entrance to HE. Students were asked via a survey whether they had applied to HE. This created a binary outcome measure.

Table 4: Other Outcome Measures

Outcome Measure	Data to be Collected	Point of Collection
Other Analysis 1 (Application to university)	Have you applied to university (yes/no)	February 2022

		After UCAS application deadline

3.1.6. Data collection

There were several issues with data collection which caused a change from what was set out in the research protocol.

Timing of survey

Initially, it was planned that the survey would be sent prior to students applying to HE. The intention was to ask two questions based on their interest to attend a highly selective university. Students would be given a list of highly selective institutions and asked which of these universities they would consider applying to. A higher number of positive responses would represent increased aspiration to attend a highly selective university. Students would also be asked a more general question on how likely it is that they apply to a 'highly selective university'. These attempted to measure aspiration to study at a highly selective university. An extra question would also be asked which attempted to measure general aspiration to study in HE.

However, the decision was made to send the survey after students had completed their university applications. The hope was that delaying the survey would lead to a more accurate proxy for which HEP students progressed to and also ensured consistency with other parts of the TASO multi-intervention outreach and mentoring project. Due to the delayed survey date, it was no longer relevant to ask questions on which universities students would consider applying to. This means the study is unable to answer the hypotheses that K+ increases aspiration to study at highly selective institutions or universities in general.

Social Capital

One of the initial items ('interacting with other people makes me feel like a part of a larger community') included in the social capital scale was not asked of students. This item was dropped to reduce the overall number of questions asked and ensure consistency with the questions being asked in other scales being used as part of the TASO multi-intervention outreach and mentoring project.

General self-efficacy

The questions identified to measure general self-efficacy were not included in the survey sent to students. This means the study is unable to answer the hypothesis that K+ increases participants' general self-efficacy. These questions were dropped to reduce the overall number of questions asked and ensure consistency with the scales

being asked in other pilot trials being conducted as part of the TASO multi-intervention outreach and mentoring project.

3.1.7. Sample

Recruitment

At the point of application, students were notified that King's College London was conducting research to evaluate the impact of K+ on progression to highly selective universities, as well as other outcomes. Students were provided with an information sheet and asked whether they consented to participate in the research.

Randomisation

There were around 2,300 applications to the programme. King's College London staff filtered out ineligible applicants, leaving a total of 981 eligible applicants remaining. A list of the eligibility criteria is included in Appendix 4.

The 2020-21 academic year was the first time K+ had expanded to Essex, with it previously only recruiting students living in Greater London. To consolidate the programme in Essex, applications from Essex students were prioritised. As there were not enough applications from Essex students across each subject stream, these students were removed from the randomisation.

The random allocation of places for priority group students was also conducted separately.[5] A total of 40 places on the K+ programme were randomly allocated to Priority Group students. Table 5 below provides the final allocation of Priority Group students by subject stream.

Table 5: Sample breakdown by subject stream and priority group (PG)

Subject Stream	PG control	PG treatment
Business & Economics	9	5
Dentistry	3	5
History & Politics	2	5
Languages & Literature	0	5
Law	10	5
Maths & Computer Science	7	5
Medicine	29	5
Sciences	7	5
TOTAL	**67**	**40**

This left 833 eligible applicants that were randomly assigned to either treatment or control group. Table 6 below shows this allocation:

---

[5] Priority group students refers to those that meet the following criteria: care-experienced, estranged, forced migrants, homeless, or identifying as Gypsy, Roma, or Traveller.

Subject Stream	Control	Treatment
Business & Economics	85	40
Dentistry	15	30
History & Politics	25	30
Languages & Literature	13	31
Law	114	40
Maths & Computer Science	51	40
Medicine	174	40
Sciences	65	40
Total	**542**	**291**

This left 940 students within the final research sample. Table 7 below shows a breakdown of the final research sample.

Table 7: Sample breakdown by subject stream

Subject Stream	Control	Treatment	Sample
Business & Economics	94	45	139
Dentistry	18	35	53
History & Politics	27	35	62
Languages & Literature	13	36	49
Law	124	45	169
Maths & Computer Science	58	45	103
Medicine	203	45	248
Sciences	72	45	117
Total	**609**	**331**	**940**

3.1.8. Analytical approach

The interim analysis conducts a logistic regression model, following the same analytical approach that will be used to measure the final outcome data within this study. The first-choice university data was collected from students through the post-UCAS survey. It is a binary measure of whether a student stated that their first-choice university is highly selective.

For the primary analysis the multiple logistic regression model will be:

$$Y_i \sim bernoilli\left(p_i\right); \ logit(p_i) = \beta_0 + \ \beta_1 T_i + \beta_2 X_i$$

Where the function $logit$ is defined as the log-odds ratio

$$logit(p) = log(\frac{p}{1-p})$$

Where:

- Y_i is a binary outcome for participant i
- p_i is the probability of that outcome occurring
- T_i is a treatment indicator, set to 1 for participants in the treatment group and 0 for those in the control group
- X_i is a vector of demographic covariates (as listed in)

For continuous outcomes we use ordinary least squares (OLS) regression; our OLS regression our model is:

$$Y_i = \beta_0 + \beta_1 T_i + \beta_2 X_i + \epsilon_i$$

Where the terms have the same meaning as specified above but:

- Y_i is a continuous outcome for participant i
- ϵ_i is a robust error term

3.2. Implementation and process evaluation

3.2.1. Implementation and process evaluation research questions

The implementation and process evaluation is designed to assess whether the programme was delivered as intended and to identify elements of successful delivery. It will help us understand more about students' own experiences on the K+ programme. It also helped us understand the views of K+ staff members on their experiences delivering the programme. Three research questions guided the data collection and analysis for the implementation and process evaluation:

- Was the K+ programme delivered as intended?
- What were the successful elements of programme delivery?
- Was there evidence to support or refute the assumptions underpinning the programme's Theory of Change?

3.2.2. Research methods

To answer the research questions, qualitative and quantitative data were used.

Quantitative Data

Programme data was analysed to review attendance levels, attrition rates and completion rates. This helped to assess whether the programme was implemented as intended.

Qualitative data

Student focus groups

Two focus groups were conducted (one with students from the control group and one with students from the treatment group) to investigate if there were any differences between students' attitude, knowledge or awareness towards highly selective universities. Questions were designed in collaboration with members of the research team. The topic guide used is in Appendix 5. Both focus groups were conducted online with two members of the research team present: one as a primary interviewer, the other offering secondary support. Focus groups were professionally transcribed by a third-party agency.

Focus groups took place in September 2022, after the K+ programme had ended. Students were contacted after results day, meaning students would have known their final grades and whether they were progressing to university. The data generated helped to answer all three research questions.

K+ implementer paired interview

A paired interview was conducted with two K+ implementers. They both had oversight roles of the programme during delivery. The group interview with K+ implementers took place in February 2023. A topic guide to questions asked is in Appendix 6. The data generated helped to answer all three research questions.

3.2.3. Details of dosage and compliance, fidelity and usual practice

Dosage

At the outset of the programme, K+ implementers decided that a minimum of 60% attendance would be expected at each event. If the 60% figure wasn't achieved for any event, this would represent an issue in terms of how successfully the event has been delivered. For mentoring, K+ students are expected to message their mentor on the Brightside platform for the duration of the mentoring programme. Mentoring begins in January 2021 and ends in January 2022. The number of messages sent from mentees and mentors is monitored by the K+ team, however no formal action is taken if participants do not communicate with their mentor.

Compliance

To graduate from K+, participants must have attended 75% of all events, excluding Year 13 events which are optional. Students must have also attended a minimum of 50% of the summer school and achieved at least 2:2 grade in their academic assignments, which is marked at first year undergraduate level. If participants can demonstrate that mitigating circumstances affected their participation in the programme, they may still complete it without meeting all the criteria outlined. If students don't complete K+, they

are no longer eligible for additional consideration from the admissions team, but they may still be eligible for a two-grade reduced offer through the university's wider contextual admissions policy.

3.2.4. Analytical approach

Quantitative data

Attendance for each event is presented, alongside the final outcomes for the academic assignment, and the overall attrition and completion rate for K+.

Qualitative data

Data collected from the focus groups was explored using thematic analysis (Braun and Clarke, 2006). Data were coded and analysed using a four-step framework, this involved:

- Familiarisation with the data
- Coding
- Developing and applying a working analytical framework matrix
- Interpreting the data

Working independently, members of the research group identified a series of themes and sub-themes that emerged from the transcripts. After this initial review, researchers looked at thematic commonalities and contrasts which would inform the creation of a coding framework. Discussions around this coding framework resulted in certain themes and sub-themes being merged, and other themes excluded from the final analysis. Finalised themes were agreed on by reviewing this framework and drawing connections between focus group respondents and specified categories.

3.2.5. Sample

Quantitative data

Quantitative data for the implementation and process evaluation was based on the entire treatment group sample of 331 students. Details of this sample are outlined in section 3.1.7. However, due to attrition on the programme, the numbers in the sample reduced over time. For example, all 331 students were not invited to the summer school as some had not engaged with the programme prior to that. Details of programme attrition are outlined in section 4.2.2.

Qualitative data

Invitations to take part in the focus group were sent to both control and treatment participants via existing K+ communication channels. In the treatment group, the invitation was only sent to students that remained on the programme. In line with the

ethical approval for the project, students were offered a £20 voucher as reimbursement for their time.

[Table 8](#) below shows the breakdown of treatment and control group students within focus groups.

Table 8: Focus group sample

	Treatment focus group	Control focus group
No. students	5	5

Students in the control focus group had a STEM background with a strong focus on studying medicine at university, whilst there was more of a mixed subject background for students in the treatment group. All students in both control and treatment focus groups stated that they would be studying at a highly selective university, except for one control group student who was due to apply to university for the 2023-24 academic year.

4. Results

4.1. Summary of findings from the impact evaluation – RCT

The findings of the impact evaluation are based on an interim analysis of survey data, a proxy measure while we wait for the long-term outcome data to become available in 2024. Although the small sample size captured in the interim analysis limits the validity of the impact evaluation, the longer-term outcome data will remedy this.

4.1.1. Descriptive statistics

Sample

The sample used for this interim analysis is smaller than those initially randomised. This is due to low response rates from both treatment and control. In total 78 students responded to the post-UCAS survey, less than 10% of the total RCT sample. This is despite students being sent follow up emails to try and increase sample size. The small sample size means that a self-selection bias is likely to impact the findings. Students who have responded to the survey may be more motivated than the average student in both control and treatment groups. It is difficult to know the reasons for the small sample size. Perhaps it was due to students being in Year 13, a period where K+ typically has lower engagement. Likewise, there were no K+ events happening around that time in which programme implementers could have reminded students to complete the survey.

[Table 9](#) below shows the sample size for the initial RCT and the number who completed the post-UCAS survey. Students within the treatment group are over-represented within the post-UCAS survey sample.

Table 9: Sample breakdown by post-UCAS survey completion

	Control	Treatment	Total
Baseline initial randomisation (number and % of RCT sample)	610 (67%)	330 (33%)	910 (100%)
Post-UCAS survey (% of survey sample) (% of group within RCT)	30 (38%) (5%)	48 (62%) (15%)	78 (100%) (9%)

Primary outcome

Table 10 below shows the breakdown of responses to the primary outcome. The data shows that only five students stated that their first-choice university was not a highly selective institution, three of those from the treatment and one from the control. One student from the control group stated that they had not applied to university. A chi-square test of independence was performed to examine the relationship between K+ participation and application rates to highly selective universities. Results of the test showed that the association between these variables was not statistically significant, X^2 (1, N = 78) = 0.00, p = 1.

Table 10: Sample breakdown by highly selective university choice

First-choice (university) Outcome	Control	Treatment
Highly selective university	28 (93%)	45 (94%)
Non-highly selective university	1 (3%)	3 (6%)
No application to HE	1 (3%)	0 (0%)

The results show that both within the control and treatment, many students have a highly selective university as their first-choice and nearly all have applied to HE.

Secondary outcomes

Table 11 below shows the breakdown of responses to the secondary outcome. The figures provided are the mean score on each survey scale, for the control and treatment groups. The mean score was calculated by adding up the sum of the values (students' responses to the survey items) and dividing the sum by the total number of values in the dataset.

Table 11: Secondary outcome scores

Intermediate outcome	Control mean (SD)	Treatment mean (SD)
University efficacy	2.67 (0.82) n=24	2.51 (0.74) n=43
Social capital	34.93 (11.95) n=30	23.96 (15.06) n=48
Belonging	31.83 (11.45) n=30	31.98 (11.34) n=48

Given the small sample size to measure each intermediate outcome, it was important to determine the distribution of the dataset across these three variables to select the appropriate statistical test to examine the difference between control and treatment group responses. In each case, a Shapiro-Wilk test found evidence of non-normality for each variable: academic self-efficacy (W= 0.84, p <0.001), belonging (W= 0.94, p <0.001), and social capital (W= 0.95, p <0.01). Based on this outcome, as well as a visual examination of the distribution of each intermediate outcome on a histogram, the non-parametric Mann-Whitney U Test was used to examine the differences between control and treatment group responses. Results from these tests indicate that:

- There was not a statistically significant difference between control and treatment group students' levels of academic self-efficacy (W= 570, p= 0.09).
- There was not a statistically significant difference between control and treatment group students' levels of belonging (W= 697, p= 0.82).
- There was not a statistically significant difference between control and treatment group students' levels of social capital (W= 723, p= 0.98).

4.1.2. Regression analysis

To analyse the impact of K+ several logistic and linear regression models were built to investigate the impact of participation on both primary and secondary outcomes, while controlling for key variables of interest. Appendix 7 represents the final sample used in the regression analyses after removing 15 students with missing data in either one or more of the following fields: GCSE attainment, ethnicity, gender, Free School Meal (FSM) status, care-experience status, priority group status and disability. In total, the final sample used in the regression analyses amounted to 63 observations, 23 from the control group and 40 from the treatment group.

Key Variables

Appendix 7 shows the full sample breakdown across each variable. Table 12 below shows a summary of the variables used in the regression analysis.

Owing to time constraints and the lack of a Unique Reference Number (URN) to identify schools attended, the final regression models did not account for School Fixed Effects. For the analysis of final outcomes, this data should be readily available via the Higher Education Access Tracker for final analysis.

Table 12: summary of the variables included in the regression analysis.

Variable	Description
GCSE attainment	Created by calculating the total of students' 5s, 6s, 7s, 8s, and 9s at GCSE level. The final variable used in the model is a continuous measure, ranging from 0-12.
Ethnicity	Coded following the Office for Students' (OFS) approach, with students grouped into the following categories: Asian, Black, Mixed, Other and White students. Aggregated categories were used in the regression analysis - white and Black, Asian and minority ethnic (BAME) students.
Gender	Coded as a numeric binary variable of male and female, using female students' reference category as the largest gender group.
Free School Meal (FSM)	Coded as a numeric binary variable of FSM and no FSM based on students' self-reported data collected by the K+ recruitment team. At the point of applying for K+, students were asked whether they received FSM which was then validated by teachers.
Care-experience	Coded as a numeric binary variable of experiences of care and no experience of care based on students who reported experience in care in the application.
Disability	Coded as a numeric binary variable of disability and no disability based on students' self-reported measure included in the K+ application form.

Priority group	Coded as a numeric binary variable of priority (those students who were either a forced migrant, from a military family or from a Gypsy, Roma, or Traveller background) and non priority based on a question students were asked while applying to K+.
ACORN	Coded as a numeric binary variable of WP (ACRON quintiles 4 and 5) and non-WP (ACORN quintiles 1, 2, and 3).
POLAR	Coded as a numeric binary variable of WP (quintiles 1 and 2) and non-WP (quintiles 3, 4 and 5).

Primary outcome

First-choice (highly selective university - binary): A multiple logistic regression was used to analyse whether K+ participation was predictive of whether a student went on to apply to a highly selective university (as defined in section 3.1.3), when controlling for the covariates specified.

It was found that, holding all other predictor variables constant, the odds of students applying to a highly selective university decreased by 20% (OR= 0.8) among the treatment group, however this was not a statistically significant finding (p=0.54). For reasons specified in section 5.1, there are severe limitations to these findings, particularly due to the small unrepresentative sample size and use of self-declared applications to university as a proxy for eventual university progression. As shown in section 4.1.1, almost all students from both treatment and control groups listed a highly selective university as their first-choice.

Table 13: Multiple logistic regression results (primary outcome)[6]

Variable	Odds Ratio	Standard Error	P-value
RCT Assignment: treatment group	0.799901	1.294002	0.54
Gender: Male	17.85343	4268.52	1.00
First Generation: Yes	-1.36532	12242.92	1.00
FSM: Yes	0.54288	1.212594	0.65
Top GCSE grades (continuous: 0-12)	0.029378	0.27707	0.92
Good GCSE grades (continuous: 5-18)	-0.22832	0.297045	0.44
Disability: Yes	2.757069	12663.8	1.00
Ethnicity: BAME	2.047724	1.481458	0.17
Care-experience: Yes	17.06498	8050.176	1.00
ACORN: WP	-17.8389	5589.345	1.00
POLAR: WP	16.85217	5592.829	1.00
(Intercept)	20.50231	13458.45	1.00

Secondary outcomes

Academic self-efficacy: A multiple linear regression was used to analyse whether K+ participation was predictive of levels of academic self-efficacy when controlling for the covariates specified previously. K+ participation did significantly predict academic self-efficacy ($\beta = 0.94$, $p < 0.01$) meaning that treatment on K+ was associated with an increase in average self-efficacy scores by 0.94.

---

[6] This model is based on 63 observations.

Table 14: Multiple linear regression results (academic self-efficacy)[7]

Variable	Coefficients	Standard Error	P-value
RCT Assignment: treatment group	0.939	0.325	0.005**
Gender: Male	0.443	0.344	0.203
First Generation: Yes	0.818	1.087	0.455
FSM: Yes	0.051	0.075	0.502
Top GCSE grades (continuous: 0-12)	-0.116	0.096	0.233
Good GCSE grades (continuous: 5-18)	1.320	1.123	0.244
Disability: Yes	-0.554	0.587	0.349
Ethnicity: BAME	0.940	0.776	0.231
Care-experience: Yes	0.295	1.065	0.783
ACORN: WP	0.525	0.642	0.416
POLAR: WP	-0.600	0.534	0.265
(Intercept)	3.968	1.361	0.005**

Sense of belonging: A multiple linear regression was used to analyse whether K+ participation was predictive of levels of belongingness when controlling for the covariates specified previously. The overall regression was not statistically significant ($R^2 = 0.17$, $F(11, 61) = 1.117$, $p = 0.36$). It was found that K+ participation did not significantly predict a sense of belonging ($\beta = 1.087$, $p = 0.69$).

---

[7] This model is based on 63 observations.

Table 15: Multiple linear regression results (sense of belonging)[8]

Variable	Coefficients	Standard Error	P-value
RCT Assignment: treatment group	1.087	2.798	0.699
Gender: Male	-0.260	2.958	0.930
First Generation: Yes	2.049	9.350	0.827
FSM: Yes	0.724	0.648	0.269
Top GCSE grades (continuous: 0-12)	-1.431	0.829	0.089
Good GCSE grades (continuous: 5-18)	-7.597	9.659	0.435
Disability: Yes	-5.067	5.054	0.320
Ethnicity: BAME	2.087	6.676	0.756
Care-experience: Yes	4.189	9.163	0.649
ACORN: WP	-1.411	5.520	0.799
POLAR: WP	9.620	4.591	0.040*
(Intercept)	42.403	11.715	0.001**

Social capital: A multiple linear regression was used to analyse whether K+
participation was predictive of levels of social capital when controlling for the covariates
specified previously. The overall regression was not statistically significant (R^2 = 0.14,
$F_{(11, 61)}$ = 0.925, p = 0.52). It was found that K+ participation did not significantly
predict social capital (β = -4.730, p = 0.215).

---

[8] This model is based on 63 observations.

Table 16: Multiple linear regression results (social capital)[9]

Variable	Coefficients	Standard Error	P-value
RCT Assignment: treatment group	-4.730	3.779	0.215
Gender: Male	1.183	3.995	0.768
First Generation: Yes	13.838	12.628	0.277
FSM: Yes	-1.270	0.876	0.152
Top GCSE grades (continuous: 0-12)	1.986	1.119	0.081
Good GCSE grades (continuous: 5-18)	-28.133	13.045	0.035*
Disability: Yes	-8.381	6.825	0.224
Ethnicity: BAME	-6.214	9.016	0.493
Care-experience: Yes	2.740	12.375	0.826
ACORN: WP	-3.926	7.456	0.600
POLAR: WP	8.643	6.201	0.168
(Intercept)	25.565	15.822	0.111

4.2.   Summary of findings from the implementation and process evaluation

The implementation and process evaluation focuses on addressing questions linked to implementation, delivery and perceived impact of the intervention. A summary of its findings is below:

- Due to COVID-19 and the shift to online delivery, the programme was not delivered as initially intended. Events needed to be completely reworked often at short notice and overall contact time with students was reduced. Nearly all social aspects of the programme were removed and no compulsory events took place on campus. Despite the best efforts of the K+ team, it is likely that this reduced the quality of what was delivered and had a negative impact on how much the programme affected students' sense of belonging and social capital.

---

[9] This model is based on 63 observations.

- Students engaged with the programme at relatively high rates. Over 70% of participants successfully completed K+ despite the high demands of the programme and extra contextual difficulties due to COVID-19.
- Students were positive about many aspects of K+. They felt it supported them with their application to university and they enjoyed interactions with other participants. Completing an academic assignment helped give some students confidence to study at a highly selective university. Likewise, attending events helped some students increase their feelings of belonging.
- Students still spoke of difficulties with their own confidence levels and a sense of belonging, despite participating in outreach schemes. Some students did not feel prepared for the step up to university or still felt a sense of imposter syndrome about whether they deserved their place at university.
- In many instances, students' reflections indicated that the assumptions underpinning the Theory of Change could be true, although the evidence within the report is not strong enough to confirm it. K+ implementers have also reflected on the need to refine the Theory of Change, focussing the programme on fewer constructs. For example, it was highlighted that the aim to increase career readiness was unlikely to be achieved with just one careers event.

4.2.1. Context of programme delivery

COVID-19 and the move online

The programme predominantly took place in the academic year 2020-21, with the programme launch in January 2021. Throughout this period the UK was in the midst of the COVID-19 pandemic. In fact, just a couple of days after the programme launched, Sadiq Kahn, the Mayor of London described the spread of COVID-19 in London as 'out of control', declaring a 'major incident'.[10] COVID-19 had a huge impact on the implementation of the programme. Prior to COVID-19, the K+ programme had been delivered fully in person. However, all the Year 12 events for this cohort transitioned online. For many events, it was the first time they had been delivered online. K+ implementers had to adapt content that had been originally designed for in person activity, often at short notice.

Students were facing similar circumstances in their school education with in-person learning restricted for the majority of pupils for eight weeks in winter 2021. Even when schools reopened, there were challenges due to high levels of staff and student absence (EEF, 2022).

---

[10] 'Covid-19: "Major Incident" Declared by London Mayor Sadiq Khan', 8th January 2021 https://www.bbc.co.uk/news/uk-england-london-55588163

The context in which this programme took place was radically different to the conditions which the K+ programme was designed for. It is likely this changed how students experienced the programme and the effect it may have had.

Access to additional outreach

One of the threats to the validity of this study is the possibility that participants, particularly those in the control group, had accessed other outreach opportunities. The post-UCAS application survey results confirmed the likelihood of this. 27 (90%) of control group students (n= 30) and 48 (100%) of treatment group students (n= 48) had participated in other outreach initiatives. Other outreach opportunities were also discussed in the focus groups.

> "After I got rejected from K+ for me it wasn't that much of a big deal, because I knew there were so much different stuff out there." (Student, Control Group)

One student in the treatment group identified 18 potential interventions that were available to them, counting at least eight different outreach programmes they had participated in.

> "I remember I did make a list of all of the ones that I've done, and I remember that there were at least 18. With King's College London I did K+ and I did Elevate. Then I did it with a bunch of different universities. I did the Sutton Trust ones. I did it with Imperial. I did it with Oxford. I did it with Cambridge. I did it with UCL. And I did it with some independent charities as well." (Student, Treatment Group)

Evidence suggests, at least from this partial sample, that students are accessing multiple different outreach schemes, meaning that those in the control group may still have experienced activities similar to those in the treatment.

Another risk to the validity of the study was the potential for 'contamination'. That is, when students in the control group are exposed to aspects of the K+ intervention. There is evidence this took place. A student in the treatment group mentioned a peer had not gained a place on K+, so they established an internal school programme where they distributed materials to others.

> "I set up a medical and dental society in my school, where I was able to pass on the things that I was learning from resources like K+ to other students who were in my year. So it was definitely really helpful." (Student, Treatment Group)

Another student said that resources from outreach programmes were shared between students.

> "My friends and I would talk a lot about the programmes we were on, and we would share information. I told them things that I did, like essay structures that

they'd given us and personal statement things that they'd given us." (Student, Treatment Group)

While these instances might be two isolated cases, it is important to note the possibility that spillover could impact the integrity of the research design. Regardless, some aspects of K+ are difficult to replicate peer-to-peer. For example, completing an academic assignment with support from a PhD tutor, or attending lectures delivered by academics. For this reason, the risk of significant 'contamination' is reduced.

4.2.2. Implementation

Programme fidelity and online delivery

At a very basic level, all of the events that were planned did take place. However, as outlined above, a significant change was the move to online delivery for all compulsory Year 12 events. The structure of K+ had been long standing, with much experience in the team for in-person delivery. Moving this established programme online caused difficulties for theK+ implementers.

> "We had never planned to have an online K+. We had no Theory of Change for an online K+. At no point did we plan for that. The whole year was basically cobbling together events that we could have online because we were just having to react to what was going on with the pandemic." (K+ Implementer)

All of the activities that students completed were changed in some way.

> "The culture day before the pandemic was an opportunity for people to go and visit a cool cultural place of significance, like a museum or a gallery or something that was in some way connected to their subject stream. Obviously, we couldn't do that. So, it became more of a discussion about the place of culture at university, what it was like to be a WP student in a university like King's. It was a really successful session, but it wasn't anything that we have run before or since." (K+ Implementer)

> "For the careers days, ordinarily each stream would go to a place of work for half a day to a day, learn from professionals there and explore different career options. That wasn't going to happen during COVID-19. So what we ended up having to do is having two careers panels. We had a really broad arts and humanities careers panel and then a science, medicine and dentistry panel. So whereas they would normally have had a whole day specifically focused to that subject stream, that turned into essentially anyone we could find that could come and speak on a panel and answer some questions." (K+ Implementer)

> "On the academic days, they had lectures, but again they were online, so there was a limit to what we could do to prepare them for lectures and to reflect on

them. We couldn't have any seminar based learning or small group stuff which we would have done previously because we were trying to figure out the safeguarding implications for having students in smaller groups." (K+ Implementer)

"The summer school was totally different to how it would normally be. No cameras were on, so they didn't have any interaction with each other the whole time. And ordinarily, they'd have a social which was something iconic like a trip up the Shard, whereas for this group, we pulled together an online activity which we'd found to work well in one of our away days." (K+ Implementer)

"For the academic assignment, delivery of the sessions took place in the summer school. You'd have a PhD tutor with ten K+ students, who didn't speak to the tutor, or each other, or turn their camera on. So as an experience to go through for students, I can't imagine it was particularly enjoyable." (K+ Implementer)

These perspectives show how different every aspect of the programme was for participants. The overall change is summarised by one of the K+ implementers.

"In my mind, one of the biggest differences was that an in person compact scheme became more of a distance learning program. You could have been on the programme with anyone. At no point did the young people see each other or hear each other. They were all recipients of an intervention in a purely absorbing way. They didn't contribute anything beyond emojis in the chat." (K+ Implementer)

Much of the interactions between students was taken away and their time on K+ became more passive.

Students also had less contact time due to the programme being delivered online.

"All of the interventions we ran over that period were significantly shorter in length then they would normally be. We would never run a day of online events for students. The summer school was half a day at most each day. Partly because of the attention that was required on screen and that being challenging, but also devices having to be shared across the family. So the contact time that we had with those students would be far less than we would normally have." (K+ Implementer)

Whilst the exact effect is unclear, it is logical to assume that the reduced contact time could have reduced the potential benefits of K+ for this cohort.

Compliance

There were additional steps taken by K+ implementers to try and ensure the delivery of the programme was high quality.

"For our staff, we had working groups to understand the best platforms available from an engagement and safeguarding perspective. Training and resource manuals were provided to all staff who would be delivering on those platforms. That was how we prepared staff. There was also shadowing so our officers were invited to attend each other's events so we're sharing good practice. For student ambassadors we ran supplementary training session for online events. The Brilliant Club train all the PhD tutors for the summer school and then make sure they're fully ready to go in terms of how to deliver that teaching. We'd also have ambassadors in every PhD tutor session, which was helpful for us to get feedback on how the session was going and see if any changes were needed." (K+ Implementer)

So whilst delivery in an online format was new, steps were taken at every stage to try and ensure the material delivered was as good quality as possible, given the circumstances.

Steps were also made to support student engagement.

"We created a Digital Manifesto, which explained that our provision would be moving online and that any young person should have access to a stable connection, a physical place to participate, as well as a device. We sent a survey to participants which asked what equipment people had at home and if they had a Wi-Fi connection etc. Based on those responses, we sent out data dongles which we kept topped up for people, not just for the programme, but also to access other learning. To some of them we sent out tablets. We also made sure that everything could be accessed on a phone as well as a laptop, because lots of students used their phone. We also recorded everything and make it available at a later date so that people could access it whenever they had access to a device. So that it would be just as beneficial for somebody accessing it at 9:00 o'clock in the evening as is they were doing it live." (K+ Implementer)

This helps to show the length that the K+ team went through to try and ensure high quality delivery and that the materials were accessible.

Student perceptions of online delivery

Students had a mixed view on the effectiveness of online delivery. Students identified the greater degree of flexibility to concentrate on their A-Levels and other outreach commitments.

"During your A-Levels time is of the essence. You want to be spending most of your time revising and actually getting those high grades in the subjects you are studying." (Student, Treatment Group)

K+ students had mixed feelings around how online delivery impacted their ability to discuss academic content and to socialise more generally.

"I felt a lot more comfortable answering any questions in an online setting." (Student, Treatment Group)

"I think having online sessions allowed us a lot more individual, independent thinking compared to what we may have had if we were in-person. Of course, being in-person allows a lot more socialisation, which would have been great, but tough times." (Student, Treatment Group)

"I think I prefer in-person, because it's just so much easier to make connections and speak, and just communication with people in general is easier in-person. But it's not to say that I disliked the online." (Student, Treatment Group)

Evidence from the focus group does not indicate that students were unsatisfied or felt short changed due to online delivery. Students were able to see some benefits, particularly on time saved travelling and extra confidence it gave them to discuss their views on academic subjects. However, it's hard to come to a definitive conclusion. Students had not experienced previous versions of K+ to make comparisons and they cannot be expected to have an accurate judgement on whether online delivery of activities changed the programme's overall impact.

Student engagement with the programme

Attendance at compulsory events is high, as outlined in Table 17. All events met the 60% threshold that was set as the minimum dosage level that practitioners would be satisfied with. In fact, all but one event had higher than 75% attendance from the initial treatment sample. The one event which was lower was the second academic day. Lower attendance is expected as students have already attended one academic day and events take place close to their exam period when many schools had already started revision sessions. The events listed below are core K+ events, which contribute to whether participants meet the attendance requirements needed to pass the programme.

Event	Total attendance	Attendance total %
Unilife	272	82%
Academic Day 1	274	83%
Culture Day	257	78%
Careers Day	254	77%
Academic Day 2	217	66%
Spotlight 1 (only Business & Economics, Language & Literature, History & Politics, Law streams)	131	82%
Spotlight 2 (only Medicine, Dentistry, M&CS, Sciences streams)	138	81%

The academic assignment is a written piece of work that students complete. The assignment is related to their subject stream and linked to the academic sessions that students attend during the summer school. Table 18 below shows the academic assignment grades awarded to students. Assignments are marked to the standard of a first-year student. The scores below are numbers from the original treatment sample. Some of the no submissions will already have withdrawn from the programme or would not have attended the summer school, meaning submissions were not possible. Over 70% of students from the initial treatment group achieved at least a 2:2. This is above the 60% level that was initially set for an acceptable dosage per event. This is particularly impressive considering the demands on students to produce an academic assignment to this standard.

Table 18: Academic assignment grades by subject stream

Subject Stream	No Submission % per stream	Fail % per stream	3rd % per stream	2:2 % per stream	2:1 % per stream	1st % per stream	Total
Business & Economics	19 (42%)	0	0	7 (16%)	11 (24%)	8 (18%)	45
Dentistry	4 (11%)	0	1 (3%)	6 (17%)	12 (34%)	12 (34%)	35
History & Politics	12 (34%)	0	0	2 (6%)	5 (14%)	16 (46%)	35
Languages & Literature	7 (19%)	0	0	1(3%)	20 (56%)	8 (22%)	36
Law	11 (24%)	0	0	6 (13%)	12 (27%)	16 (36%)	45
Maths & Computer Science	14 (31%)	0	0	2 (4%)	11 (24%)	18 (40%)	45

Medicine	13 (29%)	1 (2%)	1 (2%)	4 (9%)	18 (40%)	8 (18%)	45
Sciences	12 (27%)	0	0	8 (18%)	20 (44%)	5 (11%)	45
Total	**92 (28%)**	**1 (0%)**	**2 (1%)**	**36 (11%)**	**109 (33%)**	**91 (27%)**	**331**

Table 19 below shows the attrition rates on the programme as described by how many students withdrew or were below the required attendance rate for Year 12.

Table 19: Attrition of K+ by subject stream

Subject Stream	Withdrawn students % per stream	Below minimum Year 12 attendance % per stream	Met minimum Year 12 attendance % per stream	Total
Business & Economics	1 (2%)	12 (27%)	32 (71%)	45
Dentistry	0	7 (20%)	28 (80%)	35
History & Politics	2 (6%)	8 (23%)	25 (71%)	35
Languages & Literature	1 (3%)	5 (14%)	30 (83%)	36
Law	1 (2%)	6 (13%)	38 (84%)	45
Maths & Computer Science	4 (9%)	6 (13%)	35 (78%)	45
Medicine	3 (7%)	17 (38%)	25 (56%)	45
Sciences	3 (7%)	18 (40%)	24 (53%)	45
Total	**15 (5%)**	**107 (32%)**	**204 (62%)**	**331**

Table 20 below shows the number of students that met all the requirements for completing K+. This includes attending the required number of events and completing the academic assignment at least a 2:2 level.

Table 20: K+ completion

Subject Stream	Number of completed students % per stream	Completed (mitigating circumstances) % per stream	Total % per stream
Business & Economics	26 (58%)	0	26 (58%)
Dentistry	29 (83%)	1 (3%)	30 (86%)
History & Politics	22 (63%)	1 (3%)	23 (66%)
Languages & Literature	28 (78%)	1 (3%)	29 (81%)
Law	34 (76%)	0	34 (76%)
Maths & Computer Science	30 (67%)	1 (2%)	31 (69%)
Medicine	29 (64%)	1 (2%)	30 (67%)
Sciences	32 (71%)	1 (2%)	33 (73%)
Total	**230 (69%)**	**6 (2%)**	**236 (71%)**

Whilst there is variation for different streams, considering the high demands of the programme, a completion rate of 70% is reasonable. Programme implementers highlight some of the factors why some students do not complete the programme.

"We get a number of students who fail to attend any sessions or drop off after one. That's not many students. For others, it means they didn't submit their academic project, or they didn't attend enough sessions to be eligible. It may be that through their postcode, they get a contextual offer anyway so don't feel the need to submit an assignment. We get some students with mitigating circumstances that don't attend enough events and then don't submit their academic project. And there's very little we can do after that stage. There's also students who decide they don't want to go to King's, and then they don't see a point in them completing an academic project. There's also quite a lot of students who only want to apply to King's for Medicine or Dentistry, and because they don't get a contextual offer, they don't necessarily see the point so don't submit." (K+ Implementer)

For those 30% of students that didn't complete, this doesn't always signify a lack of engagement with the programme. Many will have attended multiple events, but may have made the decision that completing an academic assignment does not give them enough benefits for the time it will take. Potentially because they already have a contextual offer for King's through their postcode, or because they've decided not to apply for King's.

4.2.3. Was the programme effective?

Focus groups were conducted to explore whether students who took part in K+ reported changes in attitudes, knowledge or awareness towards highly selective universities and, if so, which activities influenced that change. Students were asked a series of questions based on the focus group topic guide (Appendix 5) to understand the impact of the programme. Based on the analytical approach outlined in section 3.2.4, analysis examines three broad themes that emerged in the focus groups: reflections on K+ programme content, confidence and self-efficacy relating to study at a highly selective university and a sense of belonging to highly selective universities. Where possible, comparisons are made between responses from the control and treatment focus groups.

Programme content

Treatment group students were asked if there were any aspects of the K+ programme that they did not find useful, no specific events were identified, and all students acknowledged an overall positive experience.

Application Support

Students spoke positively about the academic content of K+ and the influence that the programme had on their personal statement. Students had access to a variety of resources which included general advice in addition to help with writing their personal

statement and preparing for subject specialist exams. Students also valued the opportunity to take part in a mock interview – particularly those students that were applying to Oxbridge.

> "I also had an opportunity to do an Oxford mock interview with K+, which was really helpful. I think it was my first Oxbridge mock, and I did so badly at that [Laughter]. But it was a good experience to have because being the ones who apply for Oxford…you're kind of seen in school as being the really smart one. So then I just thought, "Oh yes, I'm going to ace this. I'm going to be fine." Then I got my feedback, and they were like, "Oh, you didn't really do well." So it just put things into perspective for me, and it helped me have a different kind of mindset. That was, I think, really, really essential in me going forward with my Oxbridge application." (Student, Treatment Group)

Students spoke positively about the mentoring they received through K+.

> "They told us what the process will be like before it even started, which helped, at least me, to mentally prepare for the stress that will come with UCAS applications and filling out all the details." (Student, Treatment Group)

For the sample spoken to, application guidance was a valued part of K+.

Social skill development and interactions

All students mentioned the social element of K+ as an important, potentially 'overlooked', part of the programme, particularly the ability to 'meet like minded people' from similar backgrounds and 'have really cool discussions about the subject that I love' (Student, Treatment Group). One student identified the impact the programme had on their broader social skills.

> "It genuinely made me more sociable at my own school, but also the online events, again, everybody not knowing each other, and everyone being on the same field… Like I could be more open online with the K+ people than I could in my own school, because I didn't feel like I had to go against any new groups, or I wasn't the new person, the new kid, it was just everybody." (Student, Treatment Group)

Asked to reflect on their favourite elements of the K+ programme, all students chose the summer school, particularly the connection they gained to peers.

> "The summer school … was the first time we really got to interact with people from K+. Due to the nature of the pandemic, we weren't able to see each other a lot, and seeing those kids again during the graduation ceremony, it was really nice to see that these people are real, which sounds weird… But there was that community that you get with K+ that was really just exciting to see. Along with the

summer school, of course, giving us a schedule, and something to do during the summer holidays, during COVID-19, which felt like we really had nothing else to do. Even just getting work experience this year was so challenging, so having the summer school under our belt really helped that." (Student, Treatment Group)

The importance placed on social interactions by participants is interesting. Programme implementers of the programme reflected on how much this was missing due to delivery being online.

"[Being online] had a huge impact. In terms of social capital, they never met each other. They couldn't interact and use each other to reflect on their experiences. I'm not sure there would have been anything on the online programme which would help to improve their social capital." (K+ Implementer).

It seems likely that students missed out on experiences that they would have valued and that would have supported them to build social capital with their peers.

Confidence and self-efficacy to study at highly selective universities

In focus groups, students were asked to reflect on their confidence toward studying at a highly selective university. Students in both treatment and control groups reported mixed feelings about studying at university: a combination of anxiety and excitement. Sometimes, this anxiety was associated with moving from their childhood home.

"I'm a bit nervous, considering it's my first time moving out of London as well and away from my family. So, it's mainly about the part of living in a new place that's kind of freaking me out. But otherwise, hopefully, it'll be fine." (Student, Treatment Group)

Other times, anxieties were caused by the anticipated pressure of academic study at a highly selective university. One point that was discussed by students in the control group was the difference in environment between school and a highly selective university. Two students were concerned that highly selective universities will be much more competitive. One said they currently feel like a 'big fish in a small pond' at school, adding:

"When you are coming to places like this [King's College London], and when you are going to university it's kind of like these [students] are the top from all schools." (Student, Control Group).

Within the treatment group, many of the same anxieties were raised. In the case of one student who was due to start at a highly selective university in September 2022, they explained the overwhelming pressure of pre-reading material.

"I'll be honest, I don't feel prepared. They sent us a medicine reading list, and it was so lengthy. They gave us the books for first year and it was eight pages

worth of textbooks. So, I'm not feeling prepared, unfortunately, mostly just scared… there is a lot of pressure considering it's the home of the overachievers." (Student, Treatment Group).

Whilst students in the treatment group did reference anxieties, they also mentioned the benefit that K+ interventions, particularly the academic project and summer school, had in relation to feelings of academic efficacy in preparation for university. Specifically, students praised the academic content of K+ and appreciated the subject specific relevance of the program. Though students had yet to progress into HE, they anticipated that the skills and knowledge developed while producing their academic project would help in the long term:

> "The academic project, that just gave me experience on how we would be producing work at university, like doing my own research…It also helped me learn more about how to reference, because the subjects I was doing I didn't need to do referencing. So it was just giving me these little skills here and there, that I'd need when I'm going on to university. But because they did it in small chunks and bites, I learned a lot progressively and it was easier." (Student, Treatment Group)

> "The academic projects were extremely cool to do because we got a taste of what writing an essay in uni would be like." (Student, Treatment Group)

> "The summer school was my absolute favourite…I got to talk to people who liked doing the exact same thing and a professor who liked doing the exact same thing. So I absolutely adored it." (Student, Treatment Group)

Students within both treatment and control groups were apprehensive about studying at a highly selective university, though students in the treatment group did acknowledge the importance of the K+ programme in helping prepare for the pressures of academic study at a highly selective university. This shows that at least in students' own perceptions, K+ influenced their self-efficacy and confidence. This supports the finding in the impact evaluation, which also showed an increase in academic self-efficacy scores for K+ participants.

Belonging at highly selective universities

Within treatment and control group focus groups, the matter of 'belonging' at HE often dominated conversation – especially with reference to highly selective universities. Students in both groups were asked about their current views on highly selective universities and to consider how these compare to when they applied to K+. Students were candid about their feelings towards HE, reflecting on the various socio-cultural influences that shaped their preconceived ideas about university.

One student in the control group explained that 'back then going to university…was completely unattainable because it just seemed like it was so far away'. The student explained that 'I knew that I was academically gifted, but it just seemed so unattainable'. Their views of university changed by taking part in outreach programmes, particularly through speaking with current university students, because it 'becomes much more manageable and doesn't seem as scary as if you were to do it completely by yourself'.

A student in the treatment group was asked to explain how their perception of a highly selective university evolved throughout the last two years. They cited the role of their teachers as having the most impact on their decision to apply to a highly selective university.

> "I was not going to apply to highly selective unis at first, because people had gotten into my head, especially the kids that surrounded me. But my teachers for, I think, a whole year, specifically with Oxford, called me, called my older brothers to convince me." (Student, Treatment Group)

Another K+ student in the treatment group who had applied to a highly selective university and received an offer referenced the influence of their school. A notice board in their school showed pictures of students that had gotten into each university, there were one or two for Oxbridge, but a large group for King's College London and Queen Mary and that indicated to the student that they were more likely to get into those institutions.

However, the same student also commented on a sense of imposter syndrome:

> "I did get into Oxford, I still do have these thoughts, it's just for the diversity quota, … like I still don't deserve my spot there. … Even after I got the offer, I was still telling my friends and telling my teachers, "It's probably a mistake, maybe they mistyped my email or something. This is for someone else"." (Student, Treatment Group)

The same sentiment was echoed by a control group student:

> "Now that I'm in here [a highly selective university] I constantly find myself feeling like it's a fluke or something happened. I feel like the idea of belonging at uni is kind of daunting. I'm just not really excited for that change and having to face the fact that it's real now." (Student, Control Group)

One control group student also said:

> "I know this sounds so superficial and stupid, and I probably should be more concerned about how hard the work is going to be, but I was just concerned about, for example, standing out because of the clothes that I don't have." (Student, Control Group)

This feeling was shared with a treatment group student who had also shared a sense of imposter syndrome:

> "I very much had imposter syndrome, and I still feel I don't belong. I applied for Oxford, and we also have group chats and things. When I got in, I went, and I looked through people's profile pictures, and I was like, "Oh my gosh, (Laughter) they don't look like me. Why am I the only one? Why am I Brown? Why am I hijabi? I'm going to be so different." (Student, Treatment Group).

Despite the issues shared by treatment and control students, K+ students explained that their perception of highly selective universities changed by taking part in K+ and their exposure to the variety of outreach programmes across the sector:

> "Being on K+, as a whole, did change how I saw highly selective universities, because I saw that a lot of them actually were doing outreach programmes to increase diversity, or to ensure that people can actually get in more." (Student, Treatment Group)

> "My idea about highly selective universities changed from when I started, especially with K+, because I got to see the diversity of students from all sorts of backgrounds that were joining onto K+, who were definitely going to be applying to the same highly selective universities as me." (Student, Treatment Group)

Treatment students were asked if there were specific events within K+ that helped to change their views of highly selective university. Before enrolling on K+, one student spoke of feeling alienated by a university's public image, specifically commenting on architecture and the sense of place. However, participating in in-person events on King's College London's campus helped change this. The student said that:

> "A lot of the times, when you see highly selective universities on their websites, how grand the buildings look and things like that, you don't ever think it's going to be a place for me. But then when I walked into the events, I just saw a bunch of people that were kind of like me, so I was like, "Okay, this is good. I'm supposed to be here." It was affirming. It was great." (Student, Treatment Group).[11]

One student explained that seeing other students on the K+ programme helped to increase their sense of belonging to the institution, and highly selective universities more generally:

> "I saw loads of people's names or faces and I saw that people that looked like me or didn't look like the general type of people that you think will be going to highly selective universities. I saw the K+ community and I thought, "Oh, there's a lot of

---

[11] Students had some optional Year 13 events that took place on campus.

people like me. They're still striving for this. I felt like, yes, this is the place I'm supposed to be at." (Student, Treatment Group)

When asked to define what they meant when referring to 'people like me', the student explained:

> "Well, people in the BAME community, but not even just people in the BAME community. People that are actual South Londoners or Londoners that didn't grow up in the best environment. A lot of the people that I did meet during K+, maybe they weren't Black or Asian, but they were still South Londoners, they still understood what it was like growing up not privileged. So even them, they're still people like me, we have to go through similar struggles."

The shift to online delivery may have affected students' ability to increase their sense of belonging.

> "Stuff that we think is such an important part of K+ normally, they totally missed out on. They had really limited access to student ambassadors, so they didn't hear much from current King's students, or far less than they would during a normal year. The normal hallmarks of the K+ experience, like being on campus, meeting ambassadors and meeting each other, thinking about London student life, meeting our academics. They didn't do any of that. So yeah, I think it would hugely impact that [belonging]." (K+ Implementer)

Despite having fewer on campus in person activities, both control and treatment groups spoke about the impact that outreach can have on attitudes towards highly selective institutions, particularly their sense of belonging. The act of occupying space at a university – whether that be online or in a lecture theatre – had a powerful effect on their feelings of belonging. Having peers and mentors that look like them, and share similar aspirations, helped them believe they fitted in. But students still face challenges. People thought their offer was a mistake or just to fit a quota and were worried that there would be no one like them at their place of study.

4.2.4. Reviewing the assumptions underpinning the TOC

With the evidence included in this interim report, it is difficult to make a thorough assessment on whether the assumptions underpinning the TOC hold true. That is because there was a very small sample size that completed the post event survey and the focus groups. However, evidence from the focus groups in particular does suggests that some of the assumptions *could* be true. You can see this in a number of areas:

- Students spoke about how the sessions and activities helped them in their university application and gave them confidence to apply.

- Students appreciated the social side of K+ with indications that could lead to an increase in social capital.
- Indication that the academic side of K+ supported with academic self-efficacy. This was corroborated in the impact evaluation.
- Although not referenced in the TOC, evidence from focus groups also indicated that activities on K+ could lead to a higher sense of student belonging.

There were also assumptions in the TOC which there was little evidence to support. For example, students in focus groups did not reference the career day they had received. The hope was that the career days would give them more experience of possible careers and improve career readiness. Programme implementers reflected on this initial assumption.

> "I'm just conscious that in reality, we've got one intervention that leads to career readiness. I think for me [this evaluation] has made me question some of the claims we can really make about careers. My main reflection is that I think we are asking the program to focus on too many constructs. It would be more realistic to narrow down and be specific about which activities lead to which construct." (K+ Implementer)

Whilst not specifically about the Theory of Change, K+ implementers have reflected and made changes to other parts of the programme. They are increasingly aware of taking students out of school and make efforts to limit this.

> "We need to maximise the time that we have with them. If we're just pulling them out for stuff that doesn't quite fit, then we shouldn't do that anymore. I think that was something that we've reflected on." (K+ Implementer)

Due to this the second academic day has been removed from the K+ calendar for future cohorts as that was often poorly attended. They have also removed the culture day as it was viewed that this didn't align as well with what the programme was trying to achieve.

5. Discussion

The interim findings presented in this report provide limited evidence as to the effectiveness of multi-intervention outreach and mentoring programmes on students' likelihood of progressing to a highly selective university. Only with access to final outcome data (HEAT generated HE destination information) due in 2024 will it be possible to more accurately assess the impact of the K+ programme on the primary outcome. Whilst the impact evaluation findings indicate that participation on K+ is positively associated with students' self-reported levels of academic self-efficacy, no other effects were observed from the interim analysis. For the primary outcome of progression to highly selective universities, we cannot be confident that self-reported

first-choice university is an accurate proxy for eventual university progression, however, the final analysis of longer-term outcome data will remedy this. As only 10% of the sample completed the survey, this sample is likely to be unrepresentative and limits the generalisations that can be made from this interim report.

Even with the final HE destination data, the particular experience of this cohort will need to be taken into account. It is clear from the implementation and process evaluation that the programme delivery was impacted by the COVID-19 pandemic. The pandemic put huge pressure on implementers as they redesigned a well-established programme at short notice, using platforms in which they had limited experience. The shift to online and the emphasis on adequate safeguarding, took away opportunities for students that are seen as pivotal to the programme's success. They had far fewer interactions with peers and ambassadors and were unable to access King's College London's campuses throughout Year 12. Ultimately, this was not an evaluation of the standard K+ programme.

Regardless, there are some encouraging signs from the implementation and process evaluation. Although the small sample sizes made comparisons between control and treatment group challenging, data does suggest that students felt multi-intervention outreach and mentoring programmes were able to support them to increase knowledge, grow in confidence and boost their sense of belonging. Particularly important are aspects that replicated the experience of HE, such as speaking to university students or completing an academic assignment. The findings should still be treated with caution as it is unknown whether views expressed are representative of the sample as a whole.

Students have access to multiple outreach activities. At its most extreme, one student counted nearly 20 that they could have taken part in. Not only does this threaten the validity of the study's final results, but it also raises questions for HE providers about how effectively resources are being used. K+ is designed to give participants all the information and experiences they need in order to apply to a highly selective university. There's a risk that the more outreach someone participates in, the returns of each activity start to diminish. A recent study supports this theory (Burges et al., 2021). Furthermore, the time taken to participate in outreach activities could reduce the time available for their A-level studies, which could have a knock-on effect on their eventual grades. Multi-intervention outreach and mentoring programmes should ensure they inform participants of the risks of 'too much outreach' and make sure they can remain focused on their studies.

Lastly, the context of this cohort's final A-level examinations will affect the outcome of this trial. The cohort were the first to sit exams following the pandemic. In the pandemic,

grades were assessed by teachers and checked by centres. The average grades received by students increased during this period. For this cohort, Ofqual announced that they would aim for a midway point between 2021 grades and the pre-pandemic years. Grades would then go back to pre-pandemic levels for 2023.[12] For this reason, the grades received by students can still be seen as atypical and it is unknown how this will impact the final results of the trial. Despite these uncertainties, the final report will still help to build a much-needed evidence base around the effectiveness of multi-intervention outreach and mentoring programmes.

5.1.   Limitations of the research

There are several methodological limitations with the interim report conducted for the K+ RCT evaluation.

5.1.1. The use of non-behavioral outcome data as a proxy measure

The outcome data is not yet available and therefore students' self-reported first-choice university in their UCAS application has been used as a proxy for university progression. However, students may not actually progress to their self-declared first-choice. They may not receive an offer from that university or may not meet the offer terms. Their first-choice may have changed from when they responded to the survey to when they finalised their firm choice with UCAS.

The report relies on self-reported data for both primary and secondary outcomes in the impact evaluation. Self-reported data is more vulnerable to biases. Response biases occur when a respondent does not provide honest answers in a survey, typically because they are influenced by social biases. For example, a respondent may provide answers to come across as more socially desirable. In the context of this study, respondents could state that King's College London is their first-choice university because they believe that is the response the researchers want to hear, or they think it could make it more likely they will receive an offer. There is a greater risk of response biases for K+ students because they have received the intervention and are familiar with the K+ team.

Self-reported data also creates a selection bias. Students opt-in to participate in the survey and therefore responses are not necessarily collected from a representative

---

[12] 'Ofqual's Approach to Grading Exams and Assessments in Summer 2022 and Autumn 2021', 30th September 2021
https://www.gov.uk/government/speeches/ofquals-approach-to-grading-exams-and-assessments-in-summer-2022-and-autumn-2021

sample. It is reasonable to assume that engaged students are more likely to complete the survey and are also more likely to apply to highly selective universities. This means the response data is likely to be skewed towards students with higher university participation rates. Issues with a selection bias also affect the focus groups conducted as part of the implementation and process evaluation.

5.1.2. The use unvalidated survey scales

The measures used to capture secondary outcomes have limitations. The scales used for academic self-efficacy, sense of belonging and social capital are unvalidated, although the latter was adapted from a validated scale. Using unvalidated scales means we can't have confidence that the questions asked actually measure the intended outcome. For example, it could be that participants didn't understand the questions, or had different interpretations to the questions' meaning. Unvalidated scales were used because at that point in time, there were no validated scales available and these were the scales which had historically been used to evaluate K+, so they were adopted to be consistent with previous years' data.

5.1.3. Small sample sizes

The sample sizes for both impact evaluation (n=78) and implementation and process evaluation focus groups (n=10) are small. It is highly unlikely that the views captured were representative of the total trial population. For the impact evaluation, the smaller sample size also hindered the ability to find statistically significant results. Even if the intervention had a positive impact on students, it is much less likely that this would have been uncovered with under 10% of the sample responding to the survey.

5.1.4. Threats to the validity of the study

For the control group, it is assumed that students do not receive the same treatment as those who received the K+ intervention. However, it is not possible to isolate the control group from activities that occur outside the treatment intervention (for example, engagement with other outreach activities). Given that the trial participants actively applied to K+, it is reasonable to assume the control group will have applied to other multi-intervention outreach and mentoring schemes, particularly due to the high number of alternatives offered by other London HE providers. This is a risk to the internal validity of the study. Both control and treatment may achieve the same outcomes, not because the intervention is not effective, but because the control group participated in similar outreach activities elsewhere. To test participation in other interventions, control group students were contacted via a survey in February 2022. Out of the 30 students that responded, only three stated that they had not been involved with other types of

outreach intervention since applying to K+. The intensity of the alternative interventions, or whether this sample is representative of the control group, is not known.

The challenge of not being able to isolate the control group from other activities is common in WP outreach. To account for this, the final analysis of the longer-term outcome data will match baseline and outcome data to records which show whether students attended K+ activities. This matched dataset will then be used to explore whether attendance at activities mediates any effect on their outcomes. Furthermore, we are exploring to what extent it will be possible to also collect information on what other outreach activities individuals have taken part in (aside from the K+ programme) using the HEAT data records. If it is possible to collect such data, we will also seek to take this into account in the final analysis.

The John Henry effect (Adair, 1984), a bias that occurs when control group participants change their behaviour because they have not received the intervention, is another potential risk. For example, control group students may have had extra motivation to attend a highly selective university to prove they should have been selected. The bias may also have the inverse effect and students become less motivated to progress to a highly selective university. It is difficult to assess whether either scenario occurred within this study.

There is also the potential risk of contamination between control and treatment group, which can occur when students from both groups attend the same school or know each other through different means. K+ students may share materials from the programme with members of the control group. If significant numbers of control group students have been exposed to K+ in some form, it would have limitations on the findings of this study. This issue is explored in more detail in the Implementation and Process Evaluation section.

5.2. Reflections

Both K+ programme staff and evaluators have reflected on what they have learnt through completing the evaluation. K+ programme staff found the project to be an interesting experience and one that has encouraged them to think more deeply about the evaluation strategy for their programme. Whilst there were challenges in balancing their targeting strategy with randomisation, the survey fatigue of participants and the usefulness of unvalidated measures, overall, the trial has improved the K+ programme and equipped them with the evidence needed for decision making and allowed them to reallocate resources based on what does and does not work. The key evaluators involved stressed the need for causal evidence, but also highlighted some of the

challenges faced when using RCTs. This includes the time lag between the completion of K+ and when the final outcome data is received and the difficulty in accounting for whether control group students have accessed other interventions. In the future, having a reliable way of tracking whether the control group participants access additional interventions is of primary importance. Currently, King's College London is running a second RCT with the subsequent cohort. This will enable a better assessment of the effectiveness of K+ in a more standard year where students have attended more events on campus. Results from the subsequent trial are expected in Spring 2025.

References

Adair, J.G. (1984). The Hawthorne Effect: A Reconsideration of the Methodological Artifact. *Journal of Applied Psychology,* 69(2), 334-345.

Braun, V. & Clarke, V. (2006). Using Thematic Analysis in Psychology. *Qualitative Research in Psychology,* 3(2), 77-101.

Burges, A.P., Horton, M.S. & Moores, E. (2021). Optimising the Impact of a Multi-Intervention Outreach Programme on Progression to Higher Education: Recommendations for Future Practice and Research. *Heylion,* 7(7), e07518

Chilosi, D., Noble, M., Broadhead, P., & Wilkingson, M. (2010). Measuring the Effect of Aimhigher on Schooling Attainment and Higher Education Applications and Entries. *Journal of Further and Higher Education, 34*(1), 1-10.

EEF (2020). *The Impact of Covid-19 on Learning: A Review of the Evidence.* https://d2tic4wvo1iusb.cloudfront.net/documents/guidance-for-teachers/covid-19/Impact_of_Covid_on_Learning.pdf?v=1677587066

Emmerson, C., Frayne, C., McNally, S., Silva, O. (2005). *Evaluation of Aimhigher: Excellence Challenge. The early impact of Aimhigher: Excellence Challenge on pre-16 Outcomes: An Economic Evaluation.* DfES Publications.

Robinson, D. & Salvestrini, V. (2020). *The Impact of Interventions for Widening Access to Higher Education: A Review of Evidence.* https://s33320.pcdn.co/wp-content/uploads/Widening_participation-review_EPI-TASO_2020.pdf

Williams, D. (2006). On and Off the 'Net: Scales for Social Capital in an Online Era. *Journal of Computer-Mediated Communication,* 11(2), 593-628.
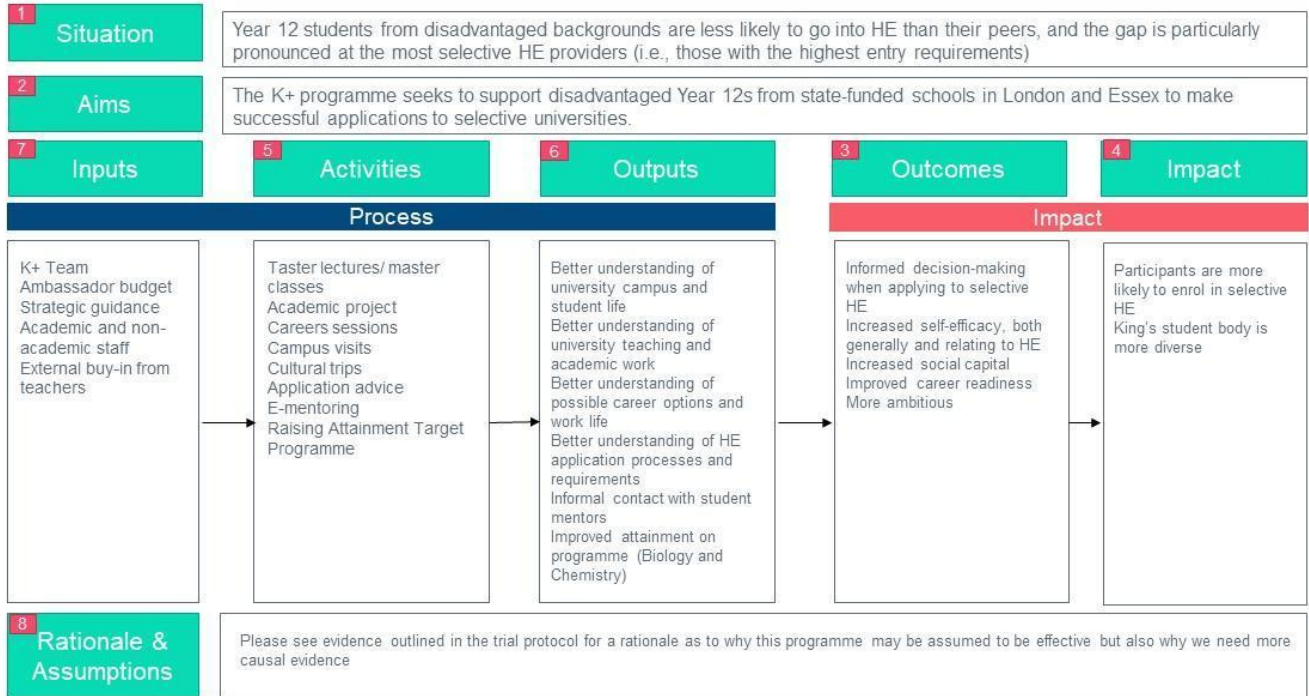
6. Appendices

Appendix 1: K+ programme outline

Delivery	Date	Theme	Notes	Outcomes
Online	January 5th 2021	Year 12 Induction	• Introduction to K+ • Icebreakers • Student Welcome Talks • Getting the most out of K+ • Reflections from Year 13 students	• Likelihood of applying to a highly selective university
Online	January 27th-29th 2021	Year 12 K+ UniLife	• Introduction to E-mentoring - Setting up Brightside. • Study Skills • KCL Student Union session • Student Life Q&A	• Likelihood of applying to a highly selective university
Online	January 2021-January 2022	Mentoring	• Monthly messaging between mentor and mentee	• Sense of Belonging • Social Capital • Likelihood of applying to a highly selective university
Online	February 26th 2021	Year 12 Academic Day 1	• Subject taster class delivered by academic teaching staff. • Student Q&A	• Self-Efficacy • Likelihood of applying to a highly selective university
Online	Mid-March 2021	Year 12 Culture Day	• Introduction • Presentation on Cultural Capital in HE • Presentation - Updating Cultural Capital • External Speaker -	• Sense of Belonging • Likelihood of applying to a highly selective university
Online	Mid-April 2021	Year 12 Careers Day	• Each subject stream is hosted by a relevant organisation within that field • Company overview • Group activities led by company employees • Panel discussion • Careers Day in the life	• Career readiness • Likelihood of applying to a highly selective university

Delivery	Date	Theme	Notes	Outcomes
Online	22-24th June 2021	Year 12 Academic Day 2	- Introduction to E-mentoring - Setting up Brightside. - Study Skills - KCL Student Union session - Student Life Q&A	- Self-Efficacy - Likelihood of applying to a highly selective university
Online	26th -30th July & 9th - 13th August 2021	Year 12 Spotlight Summer School	- PhD Tutoring (Graded) Academic Project	- Likelihood of applying to a highly selective university - Sense of Belonging - Social Capital - Self-Efficacy
Online	28th September 2021	Year 13 Relaunch Event	Introduction to Year 13 timetable	Likelihood of applying to a highly selective university
Online	13th October 2021	Year 13 Personal Statements Workshop	- Personal statements - Successful University applications	- Likelihood of applying to a highly selective university - Self-Efficacy
Online	15th-19th November 2021	Year 13 Oxbridge Mock Interviews	Interview practice	- Likelihood of applying to a highly selective university - Self-Efficacy
Online	11th December 2021	Year 13 A-level Study Skills	- Managing exam stress - Revision strategies - Study timetables	Likelihood of applying to a highly selective university
In Person	12th March 2022	Year 13 University Wellbeing and Transition Skills	- Money & Budgeting - Mental Health - Nutrition & Food - Study Skills	Likelihood of applying to a highly selective university
In Person	30th June 2022	Year 13 K+ Graduation		Likelihood of applying to a highly selective university

Delivery	Date	Theme	Notes	Outcomes
				● Sense of Belonging

Appendix 2: K+ Theory of Change

TASO — Transforming Access and Student Outcomes in Higher Education

1 Situation: Year 12 students from disadvantaged backgrounds are less likely to go into HE than their peers, and the gap is particularly pronounced at the most selective HE providers (i.e., those with the highest entry requirements)

2 Aims: The K+ programme seeks to support disadvantaged Year 12s from state-funded schools in London and Essex to make successful applications to selective universities.

7 Inputs	5 Activities	6 Outputs	3 Outcomes	4 Impact
Process	Process	Process	Impact	Impact
K+ Team Ambassador budget Strategic guidance Academic and non-academic staff External buy-in from teachers	Taster lectures/ master classes Academic project Careers sessions Campus visits Cultural trips Application advice E-mentoring Raising Attainment Target Programme	Better understanding of university campus and student life Better understanding of university teaching and academic work Better understanding of possible career options and work life Better understanding of HE application processes and requirements Informal contact with student mentors Improved attainment on programme (Biology and Chemistry)	Informed decision-making when applying to selective HE Increased self-efficacy, both generally and relating to HE Increased social capital Improved career readiness More ambitious	Participants are more likely to enrol in selective HE King's student body is more diverse

8 Rationale & Assumptions: Please see evidence outlined in the trial protocol for a rationale as to why this programme may be assumed to be effective but also why we need more causal evidence

Appendix 3: Table of high tariff universities used for analyses

Table of high tariff universities
Aston University
Imperial College of Science, Technology and Medicine
King's College London
London School of Economics and Political Science
Loughborough University
Queen Mary University of London
Royal Holloway and Bedford New College
SOAS University of London
The University of Bath
The University of Birmingham
The University of Bristol
The University of Cambridge
The University of East Anglia
The University of Exeter
The University of Lancaster
The University of Leeds
The University of Leicester
The University of Liverpool
The University of Manchester
The University of Oxford
The University of Reading
The University of Sheffield
The University of Southampton
The University of Surrey
The University of Sussex
The University of Warwick
The University of York
University College London
University of Durham
University of Nottingham

Appendix 4: K+ eligibility criteria

The target group are A-level students from WP backgrounds, the K+ team uses the following criteria to determine eligibility for the programme; students must:

- Be in Year 12
- Be attending a non-selective state school in Greater London or Essex
- Not have parent(s) or carer(s) who have studied at university in the UK or abroad
- Be from the bottom two least advantaged quintiles on at least two of the following metrics: ACORN, POLAR and IMD
- Meet the GCSE requirements (5 x grade 6 and grade 4 in English and Maths)
- Meet the A-level subject requirements:
    - o Dentistry: Students must be studying both Chemistry and Biology.
    - o Medicine: Students must be studying both Chemistry and Biology.
    - o Maths & Computer Science: Students must be studying Maths.
    - o Sciences: Students must be studying one of Biology or Chemistry.

Appendix 5: Year 13 Implementation and process evaluation focus groups topic guide

Year 13 Control Group (K+ 2020-2022 RCT)

Implementation and process evaluation focus groups (Topic Guide)

Time	Topic	Question
2-3 mins	Prerecording	• Introduce myself and second speaker • Confirm receipt of consent forms • Explain purpose of the research • What will happen to the data and next steps • Any questions • Give students the opportunity to opt-out • Consent from students to participate and agree to recording
5 mins	*Icebreaker*	Start recording Please introduce yourself
10mins	*Introduction* The purpose of this section is to capture background information of the students, their current plans for HE/post KS5 and any other programmes/activities they have been exposed to.	What subjects did you study at A-level? If you are going to university this year, where are you going? How are you feeling about this?
10 mins	Research Question 1: Was the K+ programme delivered as it was intended?	Have you been involved in any other outreach programmes since you applied? *-Which programmes?* *-What did they involve?* *-How many times did you attend? For how long?* Were these programmes useful to you? *Why? Focusing on specific interventions (IAG, Mentoring, Careers, Attainment)*

		What aspects of these programmes were not useful to you?
		-Focusing on specific interventions (IAG, Mentoring, Careers, Attainment)
10 mins	Research Question 2: Has K+ achieved its outcomes?	Why did you apply to K+?
		What support did you receive with your UCAS application?
		What do you think influenced your decision to apply to a *highly selective* university?
		Have your feelings about studying at a highly selective university changed since you applied to K+? *If yes, how, and why?*
	Research Question 3: Are the assumptions on how change will happen correct?	How do you feel about studying at a highly selective university?
		-Prompts: HE Knowledge, Sense of Belonging, Social Capital, Academic Attainment, Self-Efficacy, Careers
		-Why do you think this?
		-Where did you get this from?
		Do you feel prepared to study at a highly selective university? *Why?*
		Are there any aspects of studying (at a highly selective) university that you are not looking forward to?
		HE Knowledge, Sense of Belonging, Social Capital, Academic Attainment, Self-Efficacy, Careers
		Are there any aspects of university that you feel unprepared for?

5 Mins	*Wrap Up*	-Stop recording
		-What will happen to the data now.
		-Students can opt out of research.
		-How will students receive vouchers.

Appendix 6: Group interview with K+ Implementers (Topic Guide)

- Did the intervention run as intended?
- Other than moving the programme online was anything not delivered as expected?
- What steps were taken to ensure compliance (things being delivered to a high standard)?
- What attrition rate of the programme normal?
- Was the programme effective in changing attitudes, knowledge or awareness towards highly selective universities?
- Has the evaluation helped to inform you about whether the assumptions underpinning the TOC are correct?

GCSE attainment: This GCSE variable has been created by calculating the total of students' 5s, 6s, 7s, 8s, and 9s at GCSE level.

The Table below shows the average no. of top GCSE grades (7s, 8s, 9s) within both the treatment and control group. The final variable used in the model is a continuous measure, ranging from 0-12.

Sample breakdown by average number of top GCSE grades

RCT Assignment	No. students	Average no. of top GCSE grades
Control	23	7.1
Treatment	40	6.2

In addition, a variable was created to control for 'good' GCSE grades (5s, 6s, 7s, 8s, and 9s) among the treatment and control group. The Table below shows the average number in both groups.

Sample breakdown by average number of good GCSE grades

RCT Assignment	No. students	Average no. of good GCSE grades
Control	23	9.3
Treatment	40	9.2

Ethnicity: The ethnicity category is coded following the Office for Students' (OFS) approach, with students grouped into the following categories: Asian, Black, Mixed, Other and White students. The total sample was heavily skewed toward Asian students, with relatively few observations for Black, Mixed, and Other students. For this reason, White students are coded as the reference group against all Black, Asian and minority ethnic (BAME) students. The table below shows the sample used in the regression aggregated by ethnicity.

Sample breakdown by ethnicity

Ethnicity	Control	Treatment
White	3 (13%)	5 (13%)
BAME	20 (97%)	35 (97%)
Total	23 (100%)	40 (100%)

Gender: The gender variable is coded as a numeric binary variable of male and female, using female students' reference category as the largest gender group. The Table shows the gender breakdown of the final regression sample.

Sample breakdown by gender

Gender	Control	Treatment
Female	16 (70%)	31 (78%)

Male	7 (30%)	9 (22%)
Total	23 (100%)	40 (100%)

Free School Meal (FSM) status: this variable is based on students' self-reported data collected by the K+ recruitment team, using no Free School Meals as the reference category. At the point of applying for K+, students were asked whether they received Free School Meals which was then validated by teachers. The Table below shows the sample breakdown based on Free School Meal recipients.

Sample breakdown by free school meal eligibility

Free School Meal status	Control	Treatment
No Free School Meals	8 (35%)	25 (61%)
Free School Meals	15 (65%)	15 (39%)
Total	23 (100%)	40 (100%)

Care-experience: to control for the impact of having a care-experience background, a binary variable was created based on students who reported experience in care in the application. The Table below shows the number of students in control and treatment groups that have a history of care-experience.

Sample breakdown by care-experienced status

Care-experience	Control	Treatment
No	21 (91%)	37 (93%)
Yes	2 (9%)	3 (7%)
Total	23 (100%)	40 (100%)

Disability: the disability variable was based on a self-reported measure included in the K+ application form. The Table below shows the number of students with a declared disability across treatment and control groups.

Sample breakdown by disability status

Disability status	Control	Treatment
Non-disabled	21 (91%)	40 (100%)
Disabled	2 (9%)	0 (0%)
Total	23 (100%)	40 (100%)

Priority group: as per the trial protocol, a further binary variable was created to capture those students who were either a forced migrant, from a military family or from a Gypsy, Roma, or Traveller background. As with covariates above, this was based on a question students were asked while applying to K+. The Table below shows the number and proportion of students that were within one of these groups.

Sample breakdown by priority group

Priority group	Control	Treatment

No	23 (100%)	38 (95%)
Yes	0 (0%)	2 (5%)
Total	23 (100%)	40 (100%)

ACORN categorisation: while Free School Meal status is often used as a proxy for socio-economic status, the final regression model also accounted for these differences using the ACORN postcode categorisation. Those categorised as belonging in quintiles 4 and 5 were identified as WP students and those who were in quintile 1, 2, and 3 were marked as non-WP. The Table below shows the number and proportion of WP students within the control and treatment group according to this metric.

Sample breakdown by ACORN

ACORN categorisation	Control	Treatment
Not WP student	4 (17%)	4 (10%)
WP student	19 (83%)	36 (90%)
Total	23 (100%)	40 (100%)

POLAR categorisation: in addition to ACORN categorisation, students' postcodes were converted into POLAR categorisations based on areas of low participation in HE. Those within quintiles 1 and 2 were marked as WP, while categories 3, 4, and 5 are non-WP. The Table below shows the distribution of WP students according to the POLAR metric across the control and treatment group. Notably, the POLAR metric identifies very few WP students compared to the ACORN categorisation. This is likely the result of the high levels of participation in HE in London compared to the majority of the United Kingdom.

Sample breakdown by POLAR

POLAR categorisation	Control	Treatment
Not WP student	22 (96%)	34 (85%)
WP student	1 (4%)	6 (15%)
Total	23 (100%)	40 (100%)