

Final analysis report Institutional Data Use: Lancaster University – Lancaster Success Programme (LSP)

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The study was pre-registered on OSF registries: <https://osf.io/puebn>

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1. Summary

Background:

Staffordshire University was commissioned by the Centre for Transforming Access and Student Outcomes in Higher Education (TASO) to act as an independent evaluator of four post-entry interventions to address inequalities in student outcomes using institutional data and quasi-experimental designs. This report corresponds to the evaluation conducted for Lancaster University's Lancaster Success Programme (LSP).

Aims:

The aim of this study is to explore whether participation in the LSP increases continuation rates and good degree outcomes for target student groups.

Intervention:

LSP offers a range of activities inspired by coaching models of support and development for eligible students. LSP provides dedicated 1:1 personal development coaching sessions at regular intervals across the entire academic year and for a participant's entire duration of study. The programme has been running since the 2019-20 academic year for eligible students from widening participation backgrounds. Initially students with non-traditional entry qualifications (i.e. BTEC+) were eligible. Eligibility criteria was revised in 2021 to contextual offer holders, who are primarily students with a home postcode associated with POLAR4 Quintile 1.

Design:

This study will use a post-hoc quasi-experimental evaluation design to test the research questions articulated. One treatment and two non-treatment groups were identified in the data to explore the effect of LSP. This includes the 'Eligible' group, who were eligible to take part in the program but chose not to, and the 'Control' group, who would have been eligible to take part in the program if they were provided the opportunity under the other criterion. Regression models controlled for covarying factors to increase the likelihood that observed effects could be attributed to the LSP programme.

Outcome measures:

There were three primary outcome measures in this study: continuation from level 4 to level 5, degree programme completion and final degree classification.

Analyses:

A combination of logistic, ordinal and multiple linear regression models, survival analyses, and chi-square tests were used to test the hypotheses related to the research questions.

Results:

LSP had a modest effect on continuation, with findings indicating that higher LSP engagement is positively associated with continuing from Level 5 to Level 6 of study. While overall analysis suggests a minimal difference in continuation rates compared to the control and eligible groups, we observed that increased participation in LSP, particularly through more coaching sessions, is linked to better degree outcomes. Although the control group had a higher likelihood of achieving top degrees, LSP students who engaged more deeply with the program tended to earn higher final grades.

Conclusions:

While the evidence of LSP engagement positively impacting continuation is limited, there are promising indications that higher engagement in the program may lead to better degree outcomes. This relationship merits further exploration to fully understand its causes. Overall, this evaluation highlights the opportunity to enhance data collection and expand sample sizes to refine our findings. The current results offer Lancaster University valuable preliminary insights into the impact of LSP on student degree outcomes, continuation, and its interaction with various demographic characteristics.

2. Introduction

2.1. Background

This project was a collaboration between the Centre for Transforming Access and Student Outcomes in Higher Education (TASO), Lancaster University (LU) and Staffordshire University to support the use of institutional data to implement an evaluation which delivers Type 3 evidence. Between November 2023 and March 2024:

- workshops were held to develop an enhanced theory of change
- ethical clearance was agreed
- a prespecified trial protocol was developed and quality assured
- data were cleaned and analyses undertaken
- the final report was completed.

The team from Lancaster University was responsible for

- hosting and participating in the enhanced theory of change workshop
- achieving ethical clearance
- the provision of anonymised data

The team from Staffordshire University was responsible for

- designing and facilitating the enhanced theory of change workshop
- completing the trial protocol
- data cleaning and analyses
- completing the final impact evaluation report.

Table 1 details the project team and their roles and responsibilities.

Table 1. Project team

Organisation	Name	Role and responsibilities
TASO	Dr Rob Summers	Project/Contract Manager
TASO	Luke Arundel	Project Assistant

Staffordshire University	Dr Sally Andrews	Project Lead. Responsible for day-to-day management of the project.
Staffordshire University	Vanessa Dodd	Project Co-Lead. Supporting the project lead on day-to-day management.
Staffordshire University	Reagon Alford	Research Assistant. Responsible for data cleaning, analysis, and reporting.
Staffordshire University	Sehrish Ghayas	Research Assistant. Responsible for data cleaning, analysis, and reporting.
Lancaster University	Dr Matthew Pawelski	Project Lead at Lancaster University. Responsible for data curation and distribution

2.2. Aims

This evaluation was designed to examine the relationship between LSP participation on two primary outcome variables: continuation (i.e. continuing to next academic year) and end of stage academic attainment (i.e. end of stage grades). As secondary outcomes, we propose to explore the relationship between LSP participation on graduate outcomes and final degree classification. The evaluation will meet these aims via robust, inferential statistical techniques so the evaluators can infer causation. Four research questions and testable hypotheses were developed below:

RQ1: Does the LSP participation affect continuation to the next level of study?

H₀: There is no relationship between LSP participation and student continuation to Level 5.

H₁: Greater engagement with LSP has a significant effect on continuation to Level 5 in comparison to those who participated less.

RQ2: Does LSP attendance affect grade attainment?

H₀: LSP participation has no relationship to final grade attainment.

H₁: Greater engagement with LSP results in significantly different final grades compared to those who participated less.

RQ3: What effect does the LSP have on future employment prospects?

H₀: LSP participation has no relationship with graduate outcomes.

H₁: Greater engagement with LSP results in significantly different graduate outcomes than those who participated less.

RQ4: Does LSP participation vary by demographic characteristics?

H₀: There is no relationship between participant demographic characteristics and participation in the LSP.

H₁: There are significant differences between participation in the LSP and student demographic characteristics.

2.2.1. Changes to prespecified research questions

This study was unable to test the hypotheses for RQ3 due to data availability for individual-level graduate outcomes.

2.3. Intervention

LSP is a targeted, coaching-informed offer for eligible students throughout the academic year across all years of study on their degree programme. LSP offers a range of support activities for students alongside the core offer of dedicated 1:1 personal development coaching sessions.

The LSP is marketed to students who meet its eligibility criteria prior to enrolment into the first term of study using a comprehensive schedule of recruitment. This includes online information events, presentations at FE colleges and targeted advertisement through academic departments where take-up is low. Online information events are held multiple times to ensure that there are plenty of opportunities for contextual offer holders to engage. Through these sessions, offer holders will find out more about the LSP and be able to sign up to the programme.

LSP's wider offer includes a variety of interventions including Prepare for Lancaster, Action Learning Sets, themed peer support as well as a variety of informal networking and student voice events at dedicated times within the academic year. The key LSP interventions are summarised below:

1:1 personal development coaching: Approximately six 1-to-1 coaching sessions throughout Level 4 (approximately two per term). However, the specific number of sessions attended up to the student and as a result may vary with some attending more appointments and others attending fewer.

Prepare for Lancaster: Prepare for Lancaster is a bespoke prearrival intervention designed to familiarise students with the LSP and LU more broadly, share information about what activities will be part of the programme and to get to know other students opting in to the LSP. Prepare for Lancaster can be attended either online or face to face and is scheduled approximately two weeks before the start of the academic year. By holding the event face to face, students get an early opportunity to experience campus

as a student and get introduced to the various support structures that are available to them throughout their studies. An online option ensures the activity is accessible to students who may not be able to attend in person.

Action Learning Sets: This small group activity consists of 18 sessions per year with approximately four to seven students in attendance. At these sessions one student raises a challenge or issue they are facing related to their studies at LU, and the other students apply coaching techniques to support the student to think about how to resolve their challenge.

Themed peer mentoring: This activity consists of six sessions throughout the academic year (two per term). Peer mentoring was introduced as a forum where students connect (approximately 20-30) and is an informal alternative to Action Learning Sets.

Social and networking events: These informal events are spread throughout the academic year to give LSP participants a chance to network and connect with other LSP participants at LU. Indicative events include Welcome to Lancaster social (at the beginning of term 1), mature student social events, LSP social events, summer BBQ.

Student voice & community events: LSP-specific student voice opportunities are available to students, including a staff-student committee and LSP advocates to feed back about the programme.

An underlying principle of the LSP is that students can engage in the way that is best for them. For example, some students may not feel like they need the coaching sessions but find the social and networking events invaluable for providing a sense of community so are able to 'pick and mix' their participation.

3. Methods

3.1. Design

This evaluation study will apply a post-hoc evaluation design to test the relationship between LSP and the outcome measures identified within this trial protocol. This study will use matched administrative data with localised LSP engagement data from the Student Success team from academic years 2019-20 to 2022-23.

3.2. Identification strategy

Eligible students who participate in an intervention are likely qualitatively different from eligible students who choose not to participate in an intervention. Here, a change in eligibility criteria during the scope of evaluation design can mediate some of this confounding effect. For the LSP, eligibility criteria changed two years after initial intervention implementation. The eligibility criteria and changes are presented in Table 2 below.

Table 2. Eligibility criteria changes to LSP by academic year

Eligibility criterion	Academic year valid	Eligibility criteria
1	2019-20	Students applying with BTEC or a non-standard qualification (such as Cambridge Tech or Access Programme qualifications) and who also met Widening Participation criteria. ¹
2	2021-22 onwards	Students in receipt of a contextual offer including students from a POLAR4 Q1 neighbourhood, care experienced students, students with prior participation in the Lancaster Access Programme and Realising Opportunities Programme, Mature students. Ad-hoc exceptions to eligibility also included recipients of need-based scholarships.

Three primary groups of students were identified and created within the data to address this. These groups were created based on students' eligibility for the selection criteria, accounting for the change of criteria in 2021. In 2019 and 2020 students with BTEC+ entry qualification was eligible to participate in the LSP. In 2021, the LSP made changes to the eligibility criteria so that POLAR4 Quintile 1 and those in receipt of a contextual offer were eligible to access the programme. For some of our research questions we subclassify further into secondary subclassifications. These subclassifications are detailed within the analytical strategy. Table 3 presents the three primary groups which include the treatment variable and the two comparator groups.

Table 3. LSP treatment and comparator primary subclassifications

LSP predictor variable	Definition
LSP participant	These students were eligible and chose to opt into the Lancaster Support Programme. These students represent the 'treatment' group.
Eligible	These students were eligible to participate under the eligibility criteria at the time they entered HE but did not opt in.

¹ A tailored approach was taken to student recruitment to LSP. This meant that the overarching criterion for eligibility during 2019-20 to 2020-21 was BTEC+, however some additional under-represented students were recruitment to the programme on a case-by-case basis.

Control	<p>These students were not eligible to participate in LSP using the eligibility criteria at the time they entered higher education but would have been eligible under the other eligibility rule. The group comprises</p> <ul style="list-style-type: none"> • POLAR4 Q1 students who entered HE in 2019-20 and 2020-21 but <i>were not</i> BTEC+ students. • BTEC+ students who entered HE during 2021-22 and 2022-23 but <i>were not</i> POLAR4 Q1
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The two comparator groups defined above were identified to mitigate challenges with self-selection bias and endogeneity. LSP effects can be isolated between students who are demographically similar (the LSP participant group vs the Eligible group) in addition to any LSP effects with students who may be theoretical be similar in interest and motivation but were ineligible to participate (the LSP group vs the Control group).

Regression analyses used to test hypotheses related to the effect of LSP on articulated outcomes controlled for variables that may influence the outcome variables besides participation in LSP. By controlling for covariates, the analyses can use all cases as comparators and improve the robustness of the model's casual inference in attributing observed effects to variables of interest. These covariates were chosen based on a primary analysis to explore relationships with LSP participation.

3.3. Outcome measures

We have identified two primary outcome measures and four secondary outcome measures (see Table 4) to test the hypotheses detailed in Section 2.

Primary outcome measures were identified due to their direct alignment with the aims of LSP which include retention and skills development as part of the coaching approach embedded in LSP. Secondary outcome measures identified provide a fuller picture of long-term outcomes articulated in the theory of change that may occur because of participation in LSP.

Table 4. Primary and secondary outcome measures

Outcome measure	Type	Level	Changes to outcome measure
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Primary: Continuation	Categorical	Continued, Withdrawn	No change
Primary: Stage marks	Continuous	Numeric grade at the end of the first year of study	Removed due to data availability
Secondary: Completion	Categorical	Completed, Withdrawn	No change
Secondary: Degree classification	Categorical	Higher degree classification, lower degree classification	Data received at the level of classification outcome.
Secondary: Graduate outcome	Categorical	Progressed to graduate outcome ² as defined by the Graduate Outcomes Survey, Did not progress to a graduate outcome as defined by the Graduate Outcomes Survey	Removed due to data availability
Secondary: LSP participation	Continuous	Count of attendance	Data were received for the number of 1:1 coaching sessions attended.

3.4. Sample selection

The LSP is a yearlong targeted, opt-in programme for eligible students. Table 5 estimates the count of participants in LSP by academic year.

Table 5. Estimated LSP participant counts

Academic year	LSP participant count
2019 - 20	54
2020 - 21	141
2021 - 22	215
2022 - 23	260
Total	700

² A graduate outcome is achieved if a student articulates they are in skilled employment or further study as part of a census taken 15 months after graduation.

4. Analytical strategy

4.1. Does LSP participation affect continuation to the next level of study?

The first research question will primarily be addressed through the application of a logistic regression model, with the equation:

$$P(Y = 1) = \frac{1}{1 + e^{-(\beta_0 + \beta_1 X_1 + \beta_2 X_C)}}$$

Where, $P(Y = 1)$ is the probability of the participant continuing to Level 5 of their programme, β_0 is the intercept, β_1 is the coefficient, X_1 is LSP participation (LSP, Eligible or Control), β_2 is a vector of coefficients and X_C is a vector of covariates from Table 9 that were found to be significant predictors of session attendance in the exploratory analysis (see Exploratory Analysis, below). This model will be used to infer the effect of attendance at the LSP on continuation in the LSP students' respective courses.

In this model, LSP attendance is operationalised via 1:1 coaching attendance. This has theoretical and practical reasoning. Firstly, this is considered a primary mechanism of change for the programme, and secondly, the other activities were not consistent across the years of programme, nor was attendance consistently recorded.

This research question will be further explored using a survival analysis model, with the Cox Proportional Hazards Model expressed as:

$$h(X) = h_0(t) \cdot \exp (\beta_1 \cdot LSP\ E1 + \beta_2 \cdot Eligible\ E1 + \beta_3 \cdot Control\ E1 + \beta_4 \cdot LSP\ E2 + \beta_5 \cdot Eligible\ E2 + \beta_6 \cdot Control\ E2 + \beta_7 \cdot Tariff\ Points)$$

Where $h(t/X)$ is the hazard function at time t given the covariate vector X , $h_0(t)$ is the baseline hazard function, and $\beta_1 \dots \beta_7$ are the coefficients associated with the respective covariates.

Due to the change in eligibility criteria in 2021-22, students in the first two cohorts are qualitatively different from those in the other two cohorts. To explore whether LSP works differentially depending on student characteristics, each of the three groups (LSP, Eligible and Control) was split into two further sub-groups based on the eligibility criteria:

- LSP

- LSP E1: Students who were eligible and took part under the eligibility criteria during 2019-20 and 2020-21.
- LSP E2 – Students who were eligible and took part under the eligibility criteria during 2021-22 and 2022-23.
- Eligible
 - Eligible E1: Students who were eligible but did not take part under the eligibility criteria during 2019-20 and 2020-21.
 - Eligible E2: Students who were eligible but did not take part under the eligibility criteria during 2021-22 and 2022-23.
- Control
 - Control E1: Students who were not eligible under the eligibility criteria during 2019-21 but would have been had they entered HE between 2021-23.
 - Control E2: Students who were not eligible under the eligibility criteria during 2021-23 but would have been had they entered HE between 2019-21.

This model will compare the proportional likelihood of departure at specified time points within a student’s possible undergraduate degree life cycle (Level 4, Level 5 & Level 6). Log-rank test will be employed to understand whether the LSP group differs significantly. Amount of UCAS points on entry will be controlled for within the model. Indicators for the ‘event’ will be based on official HESA categories, with the statuses of ‘finished’, ‘failed’, and ‘withdrawn’ indicating occurrence of the event.

4.2. Does LSP attendance affect grade attainment?

The second research question will be investigated by utilising two ordinal regression models. The first model will be used to infer whether opting into the intervention affects student grade attainment at large. This model will include the covariate of UCAS points, as this may be a predictor of later academic attainment. This model can be expressed algebraically as:

$$\text{logit}(P(Y \leq j)) = \alpha_j + \beta_1 \text{Intervention} + \beta_2 \text{Tariff} + \beta_3 X_C$$

Where $P(Y \leq j)$ is the cumulative probability of the ordinal outcome variable being less than or equal to level j , α_j is the threshold parameter for level j of the ordinal outcome variable, *Intervention* denotes whether the participant underwent the LSP or did not opt-in (Eligible). β_1 is the covariate associated with the *Intervention*. β_2 is the coefficient of

Tariff (UCAS points), and β_3 is a matrix of coefficients for X_C , which represents the vector of covariates identified as significant predictors of in the exploratory analysis.

The second ordinal regression will specifically investigate whether attendance at LSP affects LSP students' grade outcomes. This model can be expressed through the equations:

$$P(Y \leq 1) = \frac{1}{1 + e^{-(\alpha_1 + \beta X)}}$$

$$P(Y \leq 2) = \frac{1}{1 + e^{-(\alpha_2 + \beta X)}}$$

$$P(Y \leq 3) = \frac{1}{1 + e^{-(\alpha_3 + \beta X)}}$$

$$P(Y \leq 4) = \frac{1}{1 + e^{-(\alpha_4 + \beta X)}}$$

Where the values of Y and $\alpha_1, \alpha_2, \dots, \alpha_5$ correspond to the levels of the outcome variable 'final grade attained' and $P(Y \leq 1, 2, \dots, 4)$ is the cumulative probability for each respective category (1 = First, 2 = Upper Second, 3 = Lower Second Class, 4 = Third). The threshold parameters of each level are presented by α , and β is the coefficient of X .

4.3. Does LSP participation vary by demographic characteristics?

This research question will be addressed through a series of Chi-Square tests, to investigate whether the decision to opt-in to LSP differs across demographic groups. The larger model can be algebraically expressed as:

$$\chi^2 = \frac{(N \times \text{Observed}_{1,1} - \text{Expected}_{1,1})^2}{\text{Expected}_{1,1}} + \dots + \frac{(N \times \text{Observed}_{2,2} - \text{Expected}_{2,2})^2}{\text{Expected}_{2,2}}$$

Where χ^2 represents the test statistic and N is the total sample size. Chi-Square Contingency values can be found in Tables 6, 7, and 8.

Table 6. Chi-Square Test (Opt-In vs Mature Student Status)

	Mature Student: YES	Mature Student: NO
Opt-In: YES	Observed _{1,1}	Observed _{1,2}
Opt-In: NO	Observed _{2,1}	Observed _{2,2}

Table 7. Chi-Square Test (Opt-In vs Care Leaver Status)

	Care Leaver: YES	Care Leaver: NO
Opt-In: YES	Observed _{1,1}	Observed _{1,2}
Opt-In: NO	Observed _{2,1}	Observed _{2,2}

Table 8. Chi-Square Test (Opt-In vs Commuter Status)

	Commuter: YES	Commuter: NO
Opt-In: YES	Observed _{1,1}	Observed _{1,2}
Opt-In: NO	Observed _{2,1}	Observed _{2,2}

4.4. Determining Covariates

To determine which covariates should be included in the modelling an exploratory multiple linear regression was conducted with 875 students to explore the relationship between different demographics and participation in the LSP. Students were included in the sample based on whether they were eligible to take part in the LSP using the original or adapted criteria. This model can be seen here:

$$Intervention = \beta_0 + \beta_{Mat} + \beta_{Gen} + \beta_{CLStatus} + \beta_{ComStatus} + \beta_{CSPop} + \beta_{ClearStatus} + \epsilon$$

Where *Intervention* is the outcome variable, β_0 is the intercept, β_{Mat} is the mature student status variable, β_{Gen} is the gender variable, $\beta_{CLStatus}$ is the care leaver status variable, $\beta_{ComStatus}$ is the commuter status variable, β_{CSPop} is the course population variable, $\beta_{ClearStatus}$ is the clearing status variable, and ϵ is the error term.

Based on this analysis, and except where stated below, we included the covariates of mature student status and commuter status in the analyses. It was also decided to include tariff points as a covariate due to it serving as a pseudo-indicator for academic ability. See Table 9 for all variables used within the proposed analyses.

4.5. Deviations from Trial Protocol

Not all specified hypotheses were tested due to limitations in available data for end of stage grades and graduate outcomes. As such, the third research question was unable to be investigated entirely. There were data quality issues across activities within the wider LSP offer and as a result LSP engagement was operationalised as attendance at 1-to-1 coaching sessions. Finally, deviations from the protocol were made because care leaver status, clearing status and course populations were not available. These changes will be discussed further in their relevant analytical strategy sections.

Table 9. List of Variables Included in Analyses

Variables	Type	Levels	Description	Changes to variable
Intervention	Categorical	Eligible non-participant (No Opt-In), LSP participant (Opt-In)	Student LSP status, with levels denoting whether eligible students chose to Opt-In.	No change
1:1 coaching attendance	Continuous	Count of sessions attended	The total amount of 1:1 coaching sessions attended by each student.	No change
UCAS points	Continuous	Total UCAS points	The total amount of UCAS points on entry to university.	No change
Mature status	Categorical	Mature, Young	Status as a mature student.	No change
Commuter status	Categorical	Commuter, Non-commuter	Status as a commuter. <i>Note: this was calculated by whether a student's home postcode is the same as their term time postcode, and therefore is a proxy measure</i>	No change
Gender	Categorical	Female, Male, Non-binary, Other	Self-reported gender of student.	Changed to male, female, removed, and other due to provider classification
Ethnicity	Categorical	Asian/Asian British, Black/Black British, Mixed Ethnicities, White/White British	Self-reported ethnicity of student.	Data received at the level of Asian, Black, Mixed, Other, White, and Unknown
Clearing status	Categorical	No, Yes	Whether a student has entered their course through clearing.	Removed due to data availability
Care leaver status	Categorical	Care leaver, not a care leaver	Denoting whether a student is a care leaver.	Removed due to data availability
Employment Status	Categorical	High-skilled, Other	Whether a student is, by the institution's	Removed due to data availability

Variables	Type	Levels	Description	Changes to variable
			measure, in high skilled employment.	

5. Results

5.1. Participant flow

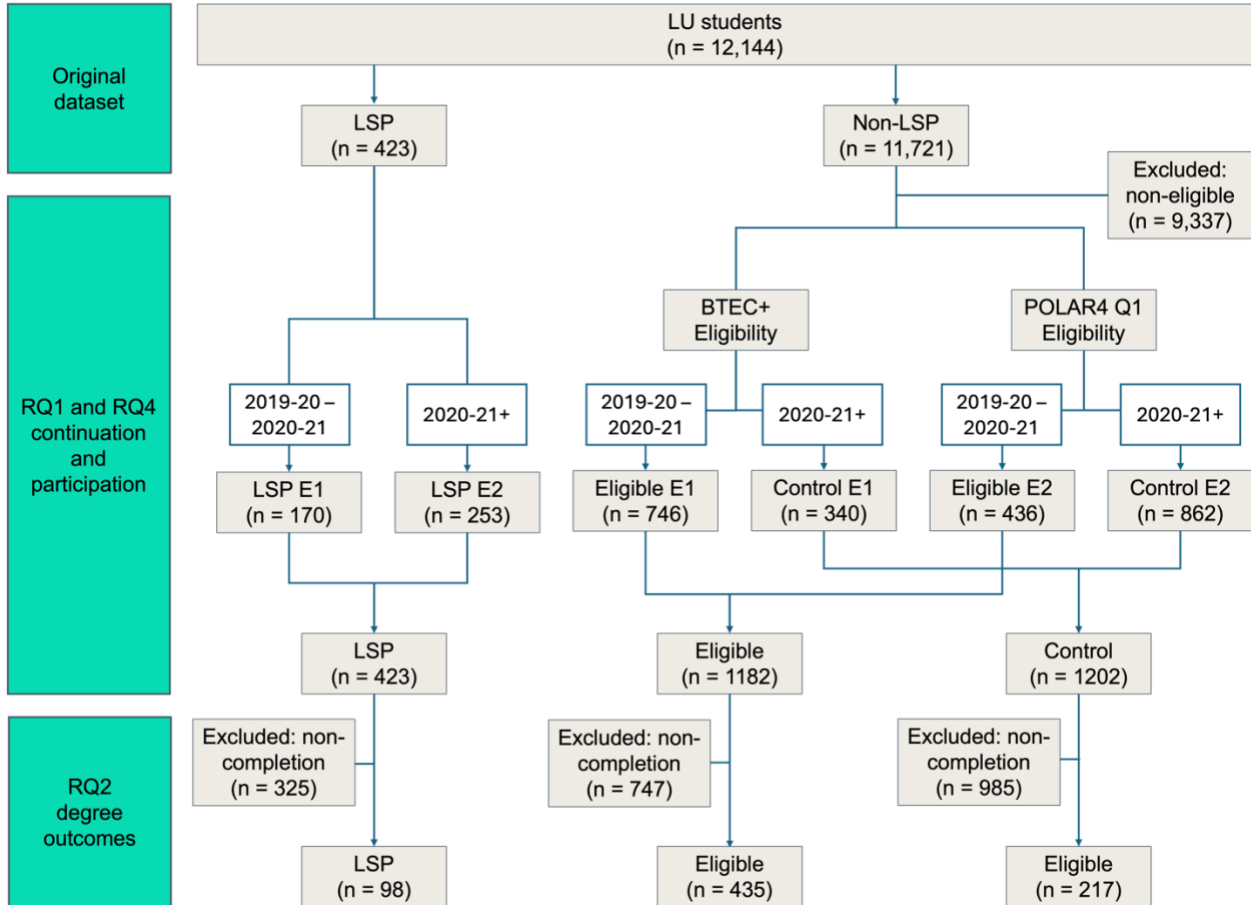


Figure 1. Participant flow diagram

5.2. Description of data

The data comprises 12,144 Lancaster University students who had complete and usable data. This includes 423 students who participated in the LSP. Table 10 contains a breakdown of demographic characteristics for the overall student population, and then proportion within the LSP group.

Table 10. Demographic breakdown by overall student population and LSP participant population

Demographic Category		Overall (%)	LSP (%)		
			Total	2019 – 2021 (BTEC+)	2021 – 2023 (POLAR4 Q1)
Sex	Female	5893 (48.50)	243 (57.45)	76 (44.71)	215 (61.25)
	Male	6203 (51.10)	177 (41.84)	94 (55.29)	133 (37.89)
	Information removed	31 (0.255)	2 (0.473)	0 (0.00)	2 (0.57)
	Other	17 (0.140)	1 (0.236)	0 (0.00)	1 (0.28)
Ethnicity	Asian	1366 (11.20)	61 (14.42)	28 (16.47)	50 (14.25)
	Black	458 (3.77)	24 (5.67)	11 (6.47)	16 (4.56)
	Mixed	598 (4.92)	23 (5.44)	7 (4.12)	20 (5.70)
	Other	194 (1.60)	12 (2.84)	4 (2.35)	11 (3.13)
	Unknown	123 (1.01)	6 (1.42)	5 (2.94)	4 (1.14)
	White	9405 (77.40)	297 (70.21)	115 (67.64)	250 (71.23)
Mature Status	Yes	396 (3.26)	95 (22.46)	34 (20.00)	83 (23.65)
	No	11748 (96.70)	328 (77.54)	136 (80.00)	268 (76.35)
Commuter Status	Yes	874 (7.20)	67 (15.84)	33 (19.41)	57 (16.24)
	No	11270 (92.80)	356 (84.16)	137 (80.59)	294 (83.76)
Disability Status	Yes	2759 (22.70)	149 (35.22)	60 (35.29)	117 (33.33)
	No	9385 (77.30)	274 (64.78)	110 (64.71)	234 (66.67)

POLAR4 Quintile	1	1012 (8.33)	151 (35.70)	23 (13.53)	142 (40.46)
	2	1697 (14.00)	70 (16.55)	41 (24.12)	50 (14.25)
	3	2145 (17.70)	58 (13.71)	32 (18.82)	48 (13.68)
	4	3027 (24.90)	80 (18.91)	40 (23.53)	61 (17.38)
	5	4231 (34.80)	64 (15.13)	34 (20.00)	50 (14.25)
	Unknown	4 (0.033)	0 (0.00)	0 (0.00)	0 (0.00)
	“R”	3 (0.026)	0 (0.00)	0 (0.00)	0 (0.00)
	Other	31 (0.265)	0 (0.00)	0 (0.00)	0 (0.00)

LSP participants had disproportionately more students that

- were mature,
- commuted to LU and
- had a declared disability

than the overall LU student population. This is expected due to the targeted nature of the intervention.

We examined LSP participants under each criterion. Under LSP criterion 2: POLAR4 Q1 females participated at a higher rate than males compared to the first criterion and were also overrepresented when compared to the general student population. Differences also emerged between the proportions of students in each POLAR4 quintile across each criterion and the student population due to the LSP criterion 2 change specifically targeting students in POLAR4 Quintile 1.

The data contained the degree outcomes of 3587 students (see Table 11), of which 98 were students who took part in LSP. Overall, a similar proportion of LSP students achieved a 2:1 compared to non-LSP students but a much larger proportion of non-LSP students achieved a first compared to the LSP group, whilst a larger proportion of the LSP group finished their degree with a lower second class or third-class degree compared to their non-LSP counterparts.

Table 11. Degree classification for overall student population and LSP population

Degree Classification	Overall (%)	LSP (%)
First Class	1453 (40.50)	33 (33.70)
Upper Second Class	1826 (50.95)	48 (49.00)
Lower Second Class	305 (8.500)	16 (16.30)
Third Class	3 (0.084)	1 (1.02)

5.3. Outcome of analysis

Table 12 summarises the outcomes of our hypothesis testing. These are reported in more depth below.

Table 12. Summary of research outcomes

Outcome	Mean for non-LSP	Estimated Effect	SE	Low CI	High CI	p-value	Interpretation
Logistic Regression Results							
RQ1: Continuation (L4 - L5)	91.47%	0.101	0.056	-0.008	0.211	.070	Engagement in LSP does not predict student continuation to Level 5 of study.
RQ1: Continuation (L5 - L6)	83.04%	0.143	0.034	0.078	0.210	<.001	Engagement in LSP significantly predicts student continuation from Level 5 to Level 6 of study.
Cox Proportional Hazards Regression Results							
RQ1: Survival	92.10% (Eligible)	-0.045	0.106	-0.254	0.164	.671	Overall, there is no statistically significant

Rates (Overall)	92.30% (Control)	-0.075	0.11 2	-0.294	0.144	.502	difference in continuation rates between the LSP and Eligible groups, or the LSP and Control groups.
RQ1: Survival Rates (Criterion 1: BTEC+)	92.60% (Eligible E1)	-0.018	0.11 4	-0.241	0.204	.872	During the first eligibility period (2019-2021), there is no difference in continuation rates between LSP and Eligible or Control groups.
	94.60% (Control E1)	-0.083	0.12 3	-0.324	0.158	.500	
RQ1: Survival Rates (Criterion 2: POLAR4 Q1)	N/A ³ (Eligible E2)	-0.203	0.30 7	-0.803	0.398	.509	During the second eligibility period (2021-2023), there is no difference in continuation rates between LSP and Eligible or Control groups.
	N/A ⁴ (Control E2)	-0.160	0.27 9	-0.706	0.386	.565	
Ordinal Regression Results							
RQ2: Degree outcome (status predictor)	83.00%	-0.117	0.23 4	-0.577	0.344	.619	Students who took part in the LSP were not significantly more like to achieve a 'good' degree outcome.
RQ2: Degree outcome (attendance predictor)	N/A ⁴	0.088	0.04 0	0.009	0.168	.029	Within the LSP group, increased attendance indicated increased likelihood of achieving a better degree outcome.
Chi Square Results							
RQ3: Age	17.73% (young)		3.57%	$\chi^2 = 1.05$.306	Eligible mature students were no more likely to participate than younger students.

³ No students in this group completed their degree by time of data collection, therefore accurate 'survival' rates cannot be provided

⁴ Analysis was conducted 'within' the intervention group, and therefore there were no non-LSP participants included in analysis

RQ3: Commuter	17.89% (non-commuting)	2.23%	$\chi^2 =$ 0.36	.549	Commuting students were not more likely to participate in LSP than non-commuting students.
RQ3: Disability	16.36% (no disability)	6.96%	$\chi^2 =$ 8.59	.003	Students reporting a disability were more likely to participate in LSP than students not reporting a disability.
RQ3: Sex	16.29% (male)	3.85%	$\chi^2 =$ 3.35	.067	Female students were no more likely to participate than male students.

To determine which covariates should be included in the modelling an exploratory multiple linear regression was conducted with 875 students to explore the relationship between different demographics and participation in the LSP. Students were included in the sample based on whether they were eligible to take part in the LSP using both eligibility criteria. The overall model was statistically significant and accounted for approximately 11% percent of the variance.

Mature students and commuters were significantly associated with participation in LSP. However, neither Male, Female, or Other sex categories significantly predicted LSP participation. The effect of the “Information Removed” sex category was not estimable due to singularities in the data.

Based on this analysis, and except were stated below, we included the covariates of mature student status and commuter status in the analyses. We included UCAS points as a covariate to provide a proxy indicator for prior academic attainment.

5.3.1. Does LSP participation affect continuation into the next level of study?

The extent to which LSP students engaged in the programme did not significantly predict continuation from Level 4 to Level 5, however it did improve the likelihood of continuation from Level 5 to Level 6 compared to the comparator groups (see Table A1 for model statistics). The covariates of mature student status and commuter status were not included in this model due to singularities in the data.

Survival analysis was used to explore whether being on the LSP programme reduced students’ likelihood of continuing their studies. Survival analysis in this context explores the time until students end their degree programme, whether that was through successful completion or withdrawal prior to completion. In Figure 2, the sharp drop in

continuation at level 6 represents students completing their degree programme (see Table A2 for model statistics).

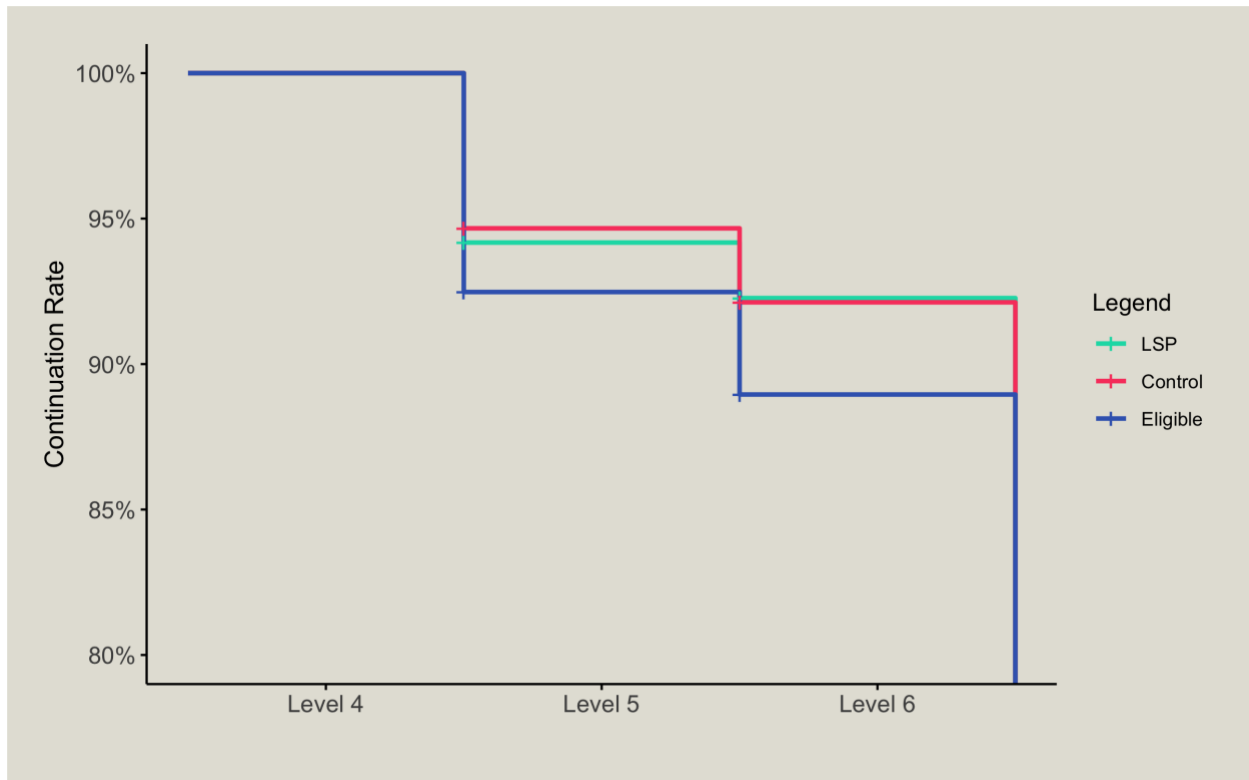


Figure 2. Continuation rates across the academic journey for LSP and comparators

Continuation rates were comparable across LSP and comparator groups, with similar patterns of dropping out at level 4 and level 5 observed for all students. Notably, UCAS points did not account for any variance in attrition among these groups.

Due to the change in eligibility criteria, each student group (LSP, Eligible, Control) contains two possibly distinct subgroups; eligibility criterion 1: BTEC+, and eligibility criterion 2: POLAR4 Q1. As such, further subclassification was conducted related to the relevant criterion. This granular model, looking at the six groups (e.g. LSP E1: BTEC+, LSP E2: POLAR4 Q1, Eligible E1: BTEC+, etc.), similarly found no differences between the groups, and no association with time-to-event.

The change in criterion did not alter the pattern of continuation; for both criteria, there was no difference in continuation for LSP students relative to comparator groups. UCAS points again did not affect students' likelihood of continuation. This implies that neither LSP participation nor the UCAS points is significantly associated with the probability of continuation across their all levels of their degree programme.

5.3.2. Does LSP participation affect degree outcomes?

An ordinal regression was conducted to evaluate the relationship between taking part in the LSP and final degree outcome (see Appendix B). No significant difference was found between LSP participation and degree outcome compared with the comparator groups. Figure 3 shows the differences in degree outcomes for each group.

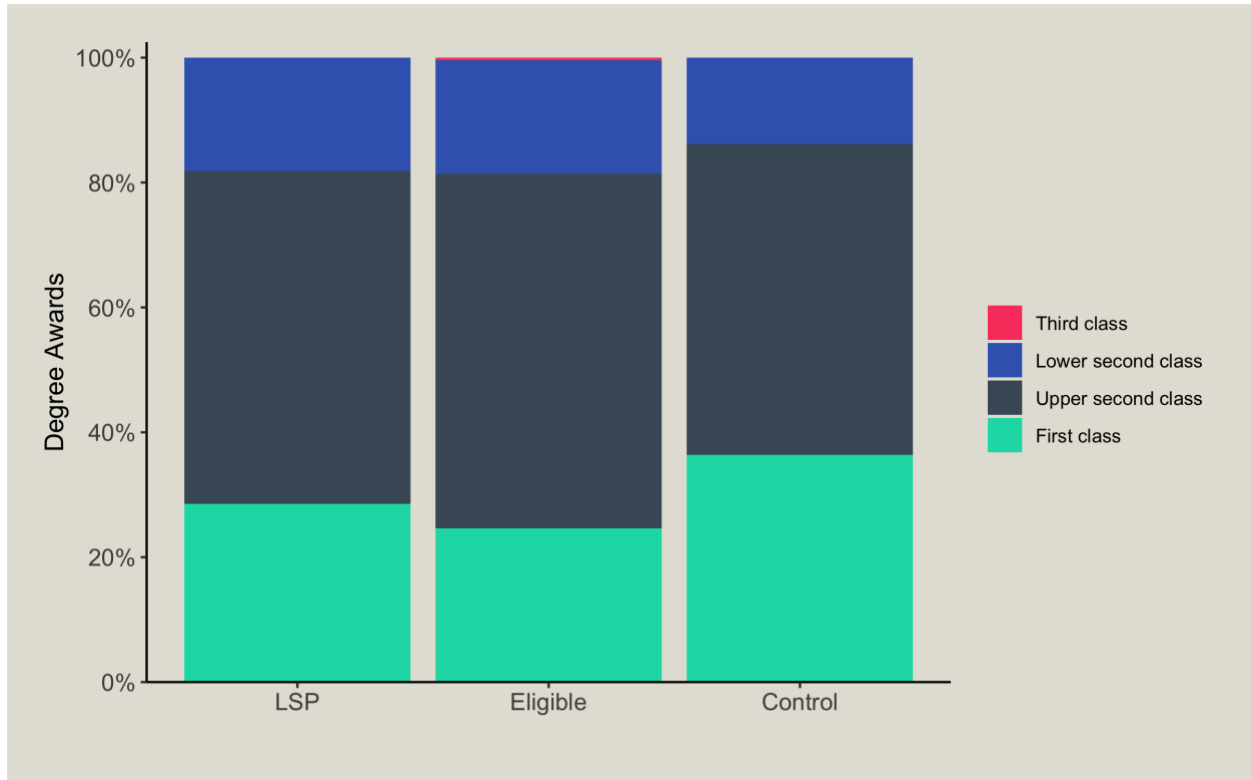


Figure 3. proportion of degree outcomes by LSP participation and eligibility groups

This analysis compares LSP participants against all other non-LSP students, rather than against either comparator group specifically (Eligible, Control). As such, further subclassification analyses were conducted to give a more nuanced understanding of the relationship between LSP participation and degree outcomes across comparator groups than the primary model allowed. The specific subgroup analyses conducted are explained in table 13 below.

Table 13. Specified groups for each subgroup analysis

Subgroup analysis	LSP participant	Eligible	Control
1	X	X	

2	X		X
3	X		

The first subgroup analysis explored whether there were significant differences in the likelihood of higher degree classification between LSP participants and the eligible comparator group. We found no significant differences between LSP participation and the likelihood of achieving a higher degree classification when compared to the eligible comparator.

The second subgroup analysis explored whether there were significant differences in the likelihood of higher degree classification between LSP participants and the control comparator group. LSP participants were significantly less likely to achieve a higher degree classification than the control group. Figure 3 shows the proportions of each group in each degree outcome category.

A second ordinal regression was conducted to investigate the effect of engagement within the LSP group on grade attainment. This analysis showed evidence of a ‘dosage’ effect, with total engagement being a significant positive predictor of higher degree outcomes. This roughly translates to a 9.20 percentage point increase in likelihood of a good degree outcome associated with increased attendance.

5.3.3. Does LSP participation vary by demographic characteristics?

Chi-square analyses were conducted to explore whether students who made the decision to opt-in to LSP were more likely to be from particular sub-populations. These included mature students, commuting students, disabled students, and female students.

Results from these analyses suggest that of those students meeting the criteria for LSP, disabled students were more likely to opt-in than non-disabled students, but opt-in rates were comparable for mature students and young students, commuting students and non-commuting students, and female students and male students. Table 12 summarises these results.

6. Discussion

6.1. Interpretation

The LSP is a targeted coaching-informed holistic intervention for eligible students at Lancaster University. This study tested the relationship between LSP participation and continuation, completion and grade outcomes.

The analyses show improved Level 5 to Level 6 continuation rates associated with engagement with LSP. However, there was no evidence that LSP engagement influences continuation from Level 4 to Level 5. This could suggest that the effects of LSP are more long-term; developing skills in level 4 that facilitate students continuing with their studies may be more advantageous for later challenges. We would encourage future evaluations to explore this potentiality more in-depth, to understand the skills developed through LSP and how these are used by students across the academic journey.

However, survival analysis suggests that LSP participation did not predict improved overall continuation rates when compared to the two comparator groups (Eligible and Control). Further subclassification accounted for the change in eligibility criteria, yet once again found no significant effects. This may suggest that LSP is effective at improving long term continuation for those who opt-in, but this improvement is broadly insignificant when compared with the comparator groups.

Evaluation suggests that while LSP's overall impact on degree outcomes is modest, students who engaged more deeply with the program achieved higher degree classifications. Although LSP students as a whole did not surpass their non-LSP peers in degree outcomes, those who actively participated in LSP demonstrated improved academic success. Qualitative data from the LSP team suggest that students who participated more with LSP were not those who were academically most capable (e.g the 'worried well'), which would be the obvious interpretation of this finding. Instead, we posit that those students who are able to take their challenges to the structured setting of LSP may develop the academic and personal skills to overcome some of the challenges faced by the target student group; leading to greater continuation likelihood and ultimately higher degree classifications.

Subgroup analyses used group membership as a predictor to understand whether LSP had a significant effect on grade outcomes compared to specific comparator groups. Whilst there was no significant relationship found between group membership in the LSP and Eligible analysis, it was found that group membership was a significant predictor of degree outcomes in the LSP and Control analysis. This analysis suggests that the Control group were significantly more likely than the LSP group to achieve higher degree outcomes.

Through this evaluation, it was notable that of the students from under-represented sub-populations within the eligibility criteria, only students reporting a disability were more likely to opt-in to LSP than students not reporting a disability. This is contrary to

expectations from discussing the LSP with the LSP team, and may reflect that the appeal of the programme reaches all different student groups.

6.2. Generalisability

These findings are based on data from one higher education provider during the period of 2019-2023. The findings suggest that the amount that students engage with LSP may impact their continuation and degree outcomes, but this is a small effect that may also be attributed to other factors. However, as providers differ extensively in their institutional contexts and infrastructure, it is unclear from these findings whether another provider would observe comparable effects of LSP, even if the programme were implemented in the same way.

The generalisability of the current evaluation may also be limited due to the COVID-19 pandemic. The students, and in particular those in criterion 1, would have had their studies interrupted by the national lockdowns. Future students would also have been indirectly impacted through prior educational impacts as well as wider personal and societal contributors. Due to these exceptional circumstances, students would have been studying in conditions which do not reflect how students pre- or post-pandemic experience their studies. Future evaluations should seek to use samples drawn after the immediate impacts of the pandemic have been resolved, in order to better generalise to current – and potentially future student populations.

6.3. Limitations and Considerations

The current study has several data limitations. There were relatively small sample sizes across the analyses conducted. Limited sample sizes compromise the statistical power of the tests employed. Limited sample sizes reduce the robustness and generalisability of our findings and have increased the risk of Type 1 and Type 2 errors in our interpretation. Consequently, interpretations of results should be approached with caution.

Data quality and availability were also limitations. Much of the data used in the analyses were categorical or binary, which constrain the depth and precision of interpretation. Binary and non-granular categorical data can obscure the nuance provided by continuous measurement. Missing data posed significant challenges and as a result we were unable to test a research question. Imperfect proxies, such as LSP engagement being solely represented by attendance at 1:1 sessions were used due to incomplete data related to the wider LSP offer. This is common amongst many interventions across the sector. However, due to new regulatory guidance requiring external publication of evaluations related to access and participation plan interventions, it is becoming increasingly essential for the sector to enhance the monitoring of programmes designed to improve student outcomes. This will enable better evidence regarding higher education post entry interventions to be generated.

The use of comparator groups in our analyses presents notable limitations. While regression analyses incorporated data from eligible students across different groups (LSP, eligible non-participants, and controls), there remains a limitation in that students opting into the LSP may differ qualitatively from other ‘similar’ groups in unobservable ways. This could affect their outcomes and continuation in ways unrelated to whether they participated in the intervention and limiting the validity of our findings. The evaluation team attempted to negate this using changes in eligibility criteria and by controlling for variables available in the data (i.e. Mature student status), but this may have limited efficacy due to COVID-19, the aforementioned data constraints and the possible extent of unobserved confounding variables.

Future evaluations should aim for a more comprehensive evaluation by incorporating a broader range of psychosocial measures alongside academic outcomes. While academic achievements like degree outcomes and continuation are critical, the LSP's broader objectives encompass developing confidence, social capital, and a sense of belonging. Thus, future assessments should adopt a mixed measures approach with a range of outcomes to better evaluate the program's intended impacts, both academically and psychosocially.

7. Appendices

7.1. Appendix A. RQ1: Does the LSP participation affect continuation to the next level of study? Statistical outputs

Table A1. Logistic Regression Outputs

Independent Variables	Analysis 1: Continuation to Level 5			Analysis 2: Continuation to Level 6		
	Estimate (SE)	p-value	z-value	Estimate (SE)	p-value	z-value
Intercept	0.087 (0.414)	.834	0.210	-1.90 (0.456)	< .001	-4.15
Level 4 LSP engagement	0.101 (0.056)	.070	1.81	-	-	-
Level 4 and 5 LSP engagement	-	-	-	0.143 (0.034)	< .001	4.24
UCAS points	0.001 (0.003)	.634	0.476	0.002 (0.003)	.516	0.649
Model statistics						
Observations	423			423		
Null Deviance	553.62 on 422 df			510.01 on 422 df		
Residual Deviance	549.95 on 420 df			490.43 on 420 df		
AIC	555.95			496.43		

Table A2. Survival Analysis Results Table (Overall)

Variable	Coef (SE)	p-value	z-value
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Control (Status)	-0.075 (0.112)	.502	-0.671
Eligible (Status)	-0.045 (0.105)	.671	-0.424
UCAS Points	< 0.001 (< 0.001)	.286	1.068
Test	χ^2	p-value	df
Score (logrank) Test	1.64	.60	3
Observations	2702		
Concordance	0.526 (SE = 0.02)		

Table A3. Survival Analysis Results Table (Eligibility Criterion 1)

Cox Proportional Hazards analysis			
Variable	Coef (SE)	p-value	z-value
Control (Status)	-0.083 (0.123)	.500	-0.674
Eligible (Status)	-0.018 (0.114)	.872	-0.161
UCAS Points	0.001 (0.001)	.343	0.947
Tests of Group Difference			
Test	χ^2	p-value	df
Score (logrank) Test	1.56	.70	3
Model statistics			
Observations	1230		
Concordance	0.525 (SE = 0.02)		

Table A4. Survival Analysis Results Table (Eligibility Criterion 2)

Cox Proportional Hazards analysis			
Variable	Coef (SE)	p-value	z-value
Control (Status)	-0.160 (0.279)	.565	-0.576

Eligible (Status)	-0.203 (0.307)	.509	-0.661
UCAS Points	0.001 (0.002)	.406	0.831
Tests of Group Difference			
Test	χ^2	p-value	df
Score (logrank) Test	1.14	.80	3
Model statistics			
Observations	1472		
Concordance	0.526 (SE = 0.027)		

7.2. Appendix B. RQ2: Does LSP attendance affect grade attainment? Statistical outputs

Table B1. Ordinal Regression Results Table

Independent Variables	Analysis 1			Analysis 2		
	Estimate (SE)	p-value	z-value	Estimate (SE)	p-value	z-value
LSP Status	-0.117 (0.234)	.619	-0.498	-	-	-
Total Engagement	-	-	-	0.008 (0.040)	.029	2.18

Mature Status	0.889 (0.246)	< .001	3.61	1.64 (0.533)	.002	3.08
Commuter Status	-0.682 (0.236)	.004	-2.89	-0.672 (0.560)	.231	-1.20
UCAS points	0.001 (0.001)	.542	0.610	0.006 (0.005)	.260	1.13
Thresholds	Estimate (SE)		z-value		Estimate (SE)	z-value
Third class Lower 2:1	-5.81 (0.74)		-7.85		-3.09 (1.29)	-2.40
Lower 2:1 Upper 2:1	-1.47 (0.24)		-6.21		-0.005 (0.862)	-0.006
Upper 2:1 1 st Class	1.07 (0.23)		4.63		2.55 (0.904)	2.22
Model statistics						
Observations	729		98			
Log Likelihood	-724.12		-95.14			
AIC	1462.23		204.28			

7.3. Appendix C. Impact table

Outcome	Sample size	P Value	Effect	Estimated 'real world' effect	Evaluation security (1 = not at all secure 5 = very secure)	Type of evidence
<i>What is the outcome measure? (include primary and secondary outcomes)</i>	<i>How many participants were included in the study relating to this outcome?</i>	<i>Report the p-value derived from the statistical tests</i>	<i>Report the size of the effect - confidence intervals/Cohen's d / Cohen's h</i>	<i>Where possible, please translate the effect size into a tangible example of the size of the effect - e.g., 13 more students apply to HE</i>	<i>See evaluation security note⁵</i>	<i>Is it Type 1,2 or 3 evidence - according to the <u>OfS standard of evidence</u>?</i>
Primary: Continuation (L4 - L5)	2807	.070	0.09	-	2.5	2
Primary: Continuation (L5 - L6)	2807	<.001	0.20	-	2.3	2
Secondary: Degree classification	750	.619	-0.05	-	2.3	2
Secondary: LSP participation	98	.029	0.22	-	2.1	2

⁵ Based on the decisions made around the evaluation, you will be able to assess the security of your evaluation – that is, how confident you can be when making claims about the findings. The most robust evaluations with large samples, low attrition levels and no threats to validity will receive the highest score of 5/5.