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# Outcomes of a mentoring scheme to improve career engagement in academia among students from minority ethnic groups

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**Introduction:** Student mentorship in higher education institutions is often advocated as a way to improve opportunities for students from minority ethnic groups.

**Methods:** This study examines this further by applying a linear regression model to explore the relationship between a 6-month pilot mentoring scheme at King's College London and career engagement in academia for students from minority ethnic groups, by investigating whether there were differential impacts by ethnic group, and by degree of exposure to mentoring, measured by the number and mode of mentoring sessions i.e., online, in-person or bimodal (a combination of online and in-person).

**Results:** The results reveal that while there were no significant differences in career engagement between Asian and Black students, there were significant differences in career engagement between Black students and students who identified as Mixed or Other. Surprisingly, the number of sessions was negatively related to career engagement. However, the positive, significant interaction effect between the number and mode of sessions suggests that this relationship varies based on the mode of the sessions, with bimodal sessions leading to an increase in career engagement, in contrast to solely in-person sessions which led to a decrease in career engagement in academia.

**Conclusion:** The results from this study point to some differential effects of mentoring by ethnic group, with Black students experiencing less gains in terms of career engagement in academia, relative to students who identified as Mixed or Other ethnic groups. This suggests that Black students may need more tailored support, in-depth mentoring or better-matched role models for improved outcomes.

## KEYWORDS

higher education, mentoring, race equality, equality diversity and inclusion, BAME ethnicity

## 1 Introduction

Mentoring is broadly defined as the process of providing guidance, support, feedback, information and advocacy from a senior colleague (mentor) to a junior, likely less experienced colleague (mentee) (Kram, 1988; Thomas et al., 2007). Mentees may benefit from mentoring by receiving individualized information directly from their mentors which may be otherwise unavailable to them, building their confidence due to the counsel and direction offered by their mentor about relevant processes and shortcuts (Kirk and Olinger, 2003). There are two general types of mentorship common in higher education institutions;

informal relationships, and more formal relationships organized by a third party (Haywood and Darko, 2021). Curtin et al. (2016) further distinguished mentorship into three types; career or instrumental mentoring which focuses on the dissemination of skills and practical knowledge, sponsorship mentoring which has elements of advocacy (e.g., in terms of providing recommendations, and access to professional networks), and expressive and psychosocial mentoring which is characterized by providing encouragement and support to positively influence the mind and behavior of the mentee.

Research on the effectiveness of mentoring schemes on student outcomes has produced varying results due to issues arising from a lack of external validity given that mentoring relationships tend to be context-specific. Additionally, differences in the purpose of mentoring or outcome being measured, as well as the variation in the depth and kind of mentoring i.e., formal vs. informal and in-person vs. online, have also contributed to the lack of consensus on the impact of mentoring on student outcomes (Lyden, 2021). For instance, while some studies (Ensher et al., 2003; Owen, 2015; Junn et al., 2023) have shown that online mentoring can be just as effective and beneficial as in-person mentoring, with the former offering additional advantages such as flexibility regarding hours and venues, the ability to record interactions, as well as providing a more comfortable environment for mentees and mentors, there are also some drawbacks. For example, given that a large proportion of communication is non-verbal, the absence of personal contact during online mentoring may result in some degree of miscommunication. Additionally, there is a risk of breaching confidentiality due to the ability to record interactions which may discourage some participants (Kirk and Olinger, 2003). Effective online mentoring may require technical competency, and mentor/mentee relationships may also be slower to form when sessions are held online (Ensher et al., 2003). Mentoring programmes that offer the choice between in-person and online sessions are beneficial to mentees by allowing for in-person sessions where possible and adjusting for convenience in instances where in-person sessions might be difficult due to geographical distance (Rockinson-Szapkiw et al., 2021). A combination of in-person and online mentoring sessions may also encourage more rapidly developing relationships between mentors and mentees, relative to solely online sessions (Ensher et al., 2003).

Mentorship schemes may be beneficial in addressing existing racial disparities in higher education outcomes between White students and students from minority ethnic groups. However, complexities may arise when attempting to match students with mentors from similar backgrounds and cultures. A study by Cropper (2000) reports that demographic characteristics such as race and gender are influential in the forming of close relationships between mentors and mentees which is crucial for effective mentorship. For instance, for Black students, having good connections with their lecturers is influential in their sense of belonging to an institution (Mimirinis et al., 2024). They also tend to view Black lecturers as role models given that they are likely to share similar experiences and can offer culturally relevant guidance and support. However, while students from minority ethnic groups are now well represented in UK higher education institutions, the representation of academic staff from minority ethnic groups has unfortunately not followed the same trajectory

with staff from minority ethnic groups still under-represented in many universities, particularly at the senior academic levels and other higher level contracts (Baltaru, 2024). The Race Equality Charter (REC) was launched in 2015 by the Equality Challenge Unit (ECU) in an attempt to address these issues. REC member institutions are required to adhere to its five guiding principles which emphasize the importance of working toward institutional and culture change. Beginning with a pilot of 21 institutions, there are now currently 100 Race Equality Charter members. However, despite the Higher Education sector's uptake of REC membership, a study by Nwosu (2024) finds no significant difference in the outcomes for staff from minority ethnic groups at Race Equality Charter (REC) and non-REC member institutions.

Data from the Higher Education Statistics Agency (HESA) in the 2021/22 academic year shows that, among staff with known ethnicities, the share of academic staff from Black, Asian, and minority ethnic backgrounds was roughly 20% which was almost four times less than the share of White staff (79.6%). While several reforms have been adopted to tackle issues of race equality among academic staff in UK universities such as the REC, the funding competition by UK Research and Innovation (UKRI) to improve ethnic minority participation in postgraduate research funded by UKRI,<sup>1</sup> and the "100 Black Women Professors NOW,"<sup>2</sup> such efforts are yet to produce sustainable outcomes (Lynam et al., 2024). This has far-reaching consequences for students from minority ethnic groups, signaling a major barrier to entry into academia for a significant share of the student population (Arday, 2021). This notion is supported by findings from Rana et al. (2022) who reported that students from minority ethnic groups studying at institutions with low minority ethnic staff representation experienced difficulties envisioning a career in academia. In addition, they often felt that their issues may not be properly understood by White academic faculty due to a cultural mismatch.

Postgraduate research may be described as the earliest stage of an academic career which marks the point where students make the decision to pursue an academic or non-academic career (Curtin et al., 2016). However, there are several barriers to postgraduate research for students from minority ethnic backgrounds highlighted by Badrie et al. (2023) with the most common being the ethnicity awarding gap, difficulties in the application and recruitment process including finding an appropriate supervisor or relevant research topic, lack of representation of academic staff from minority ethnic groups, and the financial burden of postgraduate research. Their study further identified that a significant proportion of students from minority ethnic groups indicated that mentorship and having role models from minority ethnic groups would be a significant factor in potentially pursuing postgraduate research leading to an academic career.

This study aims to further build on this by exploring whether a mentoring scheme targeting undergraduate students from minority ethnic groups will lead to an improvement in career engagement

1 <https://www.ukri.org/news/new-fund-to-improve-postgraduate-research-participation-and-access/>

2 <https://www.whenequality.org/100>

in academia. [Hirschi et al. \(2014\)](#) define career engagement as “a measure of the degree to which somebody is proactively developing his or her career as expressed by diverse career behaviors.” This study uses King’s College London (KCL) as a case study and investigates whether any differential effects exist by ethnic group and by differences in the degree of exposure i.e., the number and mode of sessions. It also investigates whether there were differential outcomes by the duration of sessions, as well as by mentor ethnicity. Therefore, the two main hypotheses of this study are:

- Are there differential effects of mentoring on career engagement by ethnic group?
- Are there differential effects of mentoring on career engagement by degree of exposure?

## 2 The study

The Into Academia mentoring scheme is a pilot mentoring scheme which launched at KCL in January 2024. The scheme was delivered over 6 months and targeted undergraduate (UG) students from Black, Asian, and minority ethnic groups who were considering a career in academia, offering them an opportunity to forge a one-to-one connection with an academic or researcher within the university in order to gain support and experience and benefit from their expertise.

The three main objectives of the scheme were:

- To instill confidence in students from minoritised ethnic groups that academia is a place for them
- To help mitigate against the disadvantage that those without sector connections can face
- To serve as a positive action at the beginning of the pipeline to ultimately increase the number of academics from minoritised ethnic backgrounds

Prior to the launch of the scheme, the Equality, Diversity and Inclusion team at KCL conducted an online focus group with UG, postgraduate-taught (PGT), and postgraduate research (PGR) students, as well as a general survey also including academic staff to register interest and gain feedback used in the development of the scheme. Each mentee (i.e., a student from a minority ethnic background) was matched with a mentor (a member of academic staff at KCL from any ethnic group). Each mentor was assigned to a singular mentee, and all mentors were required to attend a mandatory training session before the scheme was launched. Furthermore, all mentors and mentees committed to meeting for an hour each month for up to 6 months.

At the start of the evaluation and prior to the launch of the scheme, a logic model workshop was conducted with the delivery team to determine the causal pathway between each activity and its intended outcomes in order to accurately map all activities to specific outputs and outcomes, both shorter and longer term.<sup>3</sup>

<sup>3</sup> A copy of logic model is shown in [Appendix Figure A1](#).

## 3 Data

A total of 87 students registered for the mentoring scheme. However, only 34 (39%) mentees consented to be part of this study and completed the baseline questionnaire. This response rate, while low, is not unusual for studies involving students who tend to have multiple competing commitments ([TASO et al., 2022](#)). Those students who chose not to opt into the study were still able to participate in the mentoring scheme but were not included at the baseline or endline data collection or at any time while this research was conducted. Following consent to take part in the study, questionnaires were administered directly to the mentees prior to the launch of the scheme, and then again 6 months later, one week after the close of the scheme. A total of 23 students (68%) completed the endline survey at the close of the scheme.

The baseline questionnaire included information on student demographic characteristics such as age, gender, and ethnic group, as well as questions asking them to identify their faculty, year of study (first, second or third) and mode of study i.e., full-time or part-time. The questionnaire also included questions on the primary outcome; career engagement which was measured using eight questions on a 5-point Likert scale, adapted from the Career Engagement scale developed by [Hirschi et al. \(2014\)](#). This measure defines career engagement as the extent to which a person is actively developing their career as expressed by a variety of behaviors. Given that UG students were the focus of this scheme, this measure was chosen as a short-term outcome that gauges whether students feel more confident in aiming for a possible career in academia and have started taking active steps toward this goal.

For each question shown in [Table 1](#), students could choose from options 1 to 5 coded as 1 for “almost never,” 2 for “occasionally,” 3 for “moderately,” 4 for “quite often,” and 5 for “very often.” The mean score for each mentee was then computed at baseline and endline.

The endline questionnaire repeated the questions from the academic engagement scale, and also included questions on students’ experience with the mentoring scheme such as the number of sessions attended, the mode of sessions i.e., online, in-person or bimodal, the duration of sessions, and the broad ethnic group of the mentor. The internal reliability of the scale measured by Cronbach’s alpha was 0.89 at baseline and 0.92 at endline, which suggests that the questions in the scale had a high level of internal consistency among response values for survey respondents.

[Table 2](#) presents the summary statistics for variables included in the analysis. The mean score at baseline (prior to the launch of the scheme) was 2.83 which is notably lower than the mean endline (after the scheme had concluded) score of 3.66. Mentees were split almost evenly across years of study with 30% in their third year, and 35% in both year 1 and year 2. In terms of demographic characteristics, there were more than two times more Asians, relative to Black students, while only 13% of student participants identified as Mixed or Other. Roughly 36% of mentees were male, and the mean age among mentees was ~20. On average, mentees attended three sessions with their mentors in the 6-month period over which the scheme took place. The mode of these sessions varied with close to half of the mentees reporting

TABLE 1 Career engagement scale adapted from Hirschi et al. (2014).

	Question
	Thinking about a career in academia, to what extent have you in the past 6 months...
1	Actively sought to design your professional future in academia
2	Undertook things to achieve your academic career goals
3	Cared for the development of a career in academia
4	Developed plans and goals for a future career in academia
5	Collected information about employers, professional development opportunities or the job market in your desired area of academia
6	Established or maintained contacts with people who can help you professionally in an academic career
7	Voluntarily participated in further education, training or other events to support a career in academia
8	Assumed duties or positions that will help you progress professionally in an academic career

that their sessions held in person, and just over 25% attending their mentoring sessions online, and an equivalent share reportedly attending bimodal sessions. A majority (57%) of these sessions lasted between 30 min to 1 h on average, with 26% lasting over an hour, and 17% falling below the 30-min mark. Just over 40% of mentees identified their mentor as belonging to a minoritised ethnic group.

## 4 Ethics

After recruitment was complete, all participants were provided with a Participant Information Sheet that explained the reason for collecting and processing their data. The Information Sheet also detailed how long this information would be stored and if/how it would be shared with other parties. It also provided them with the mechanism to ask that their data be removed or to raise a complaint should they need to.

The project was classified as minimal risk and was granted ethical clearance by the KCL College Research Ethics Committee (CREC). This project was also subject to the College’s random audit procedure for minimal-risk registrations and was confirmed to have satisfied the conditions for a minimal-risk project.

## 5 Method

The outcome of interest in this study is career engagement in academia which is measured as the mean score on the career engagement scale at the end of the mentoring scheme. Since the outcome/dependent variable is continuous, the ordinary least square (OLS) model is used for this analysis. In order to evaluate the effectiveness of the intervention, the degree of exposure

TABLE 2 Summary statistics.

Variable	Mean
<b>Career engagement scores</b>	
Baseline score	2.83
Endline score	3.66
<b>Demographic characteristics</b>	
Male	0.36
Black	0.26
Asian	0.61
Mixed/Other	0.13
Age	20.2
<b>Year of study</b>	
Year 1	0.35
Year 2	0.35
Year 3	0.30
<b>Number of mentoring sessions</b>	3.04
<b>Mode of mentoring sessions</b>	
In-person sessions	0.48
bimodal sessions (online & in-person)	0.26
Online sessions	0.26
<b>Ethnicity of mentor</b>	
Black, Asian, and Minority Ethnic (BAME) mentor	0.43
<b>Duration of mentoring sessions</b>	
Less than 30 min	0.17
30 min–1 h	0.57
Over 1 h	0.26

(i.e., number and mode of sessions attended), serve as the key explanatory variables as these may influence the impact of the intervention on identified outcomes. The ethnic group of mentees is also included as a key explanatory variable to observe any differential effects on the outcome by ethnic group. Therefore, the following fixed effects regression model is specified:

$$Y_{it} = \beta_0 + Y_{it-1} + \beta_1 D_i + \beta_2 Z_i + \beta_3 (D_i * Z_i) + \alpha_i + \epsilon_i \quad (1)$$

Where:

- $Y_{it}$  is the mean score of career engagement for student  $i$  at time  $t$  (endline);
- $\beta_0$  is the constant;
- $Y_{it-1}$  is the mean score of career engagement for student  $i$  at time  $t - 1$  (baseline);
- $\beta_1$  is the effectiveness of an additional mentoring session on the outcome of interest;
- $D_i$  is the number of mentoring sessions which is a dosage level indicator;

- $\beta_2$  is the difference in the effectiveness of different modes of mentoring sessions on the outcome of interest;
- $Z_i$  is the mode of mentoring sessions which is also a dosage level indicator;
- $\beta_3$  is the interaction effect between the number and mode of mentoring sessions;
- $\alpha_i$  is the individual fixed effects;
- $\epsilon_i$  is a robust error term

This analysis is approached via a series of linear regression model specifications in order to explore how the relationship between mode and number of mentoring sessions varies by the model specification. The models are categorized into groups based on the types of control variables included. The first model specification only includes the baseline score as an explanatory variable as a way to control for student ability and motivation prior to mentoring, while models 2–5 introduce demographic characteristics such as ethnic group, year of study, and age to control for variation in outcomes due to personal attributes. The mode of the mentoring sessions is introduced as an explanatory variable in model 6, while the number of mentoring sessions is included in model 7. In the final model (8), an interaction term of mode and number of sessions is included as a control variable, as well as the duration of the mentoring sessions and the ethnic group of the mentor.

## 6 Results and discussion

The results from the linear regression model specifications are given in [Table 3](#). The dependent variable, career engagement is defined as the endline score i.e., the mean of the eight career engagement in academia questions, while the ethnic group of the mentee and number and mode of mentoring sessions are the key explanatory variables. The first model includes the baseline score as the sole explanatory variable. The coefficient is positive and significant, showing that an increase in the baseline score by 1 unit will increase career engagement by 0.53 points. This implies that those students who were more active in developing their career in academia prior to the launch of the scheme saw a larger improvement in their career engagement in academia by the end of the scheme, relative to those who were less proactive.

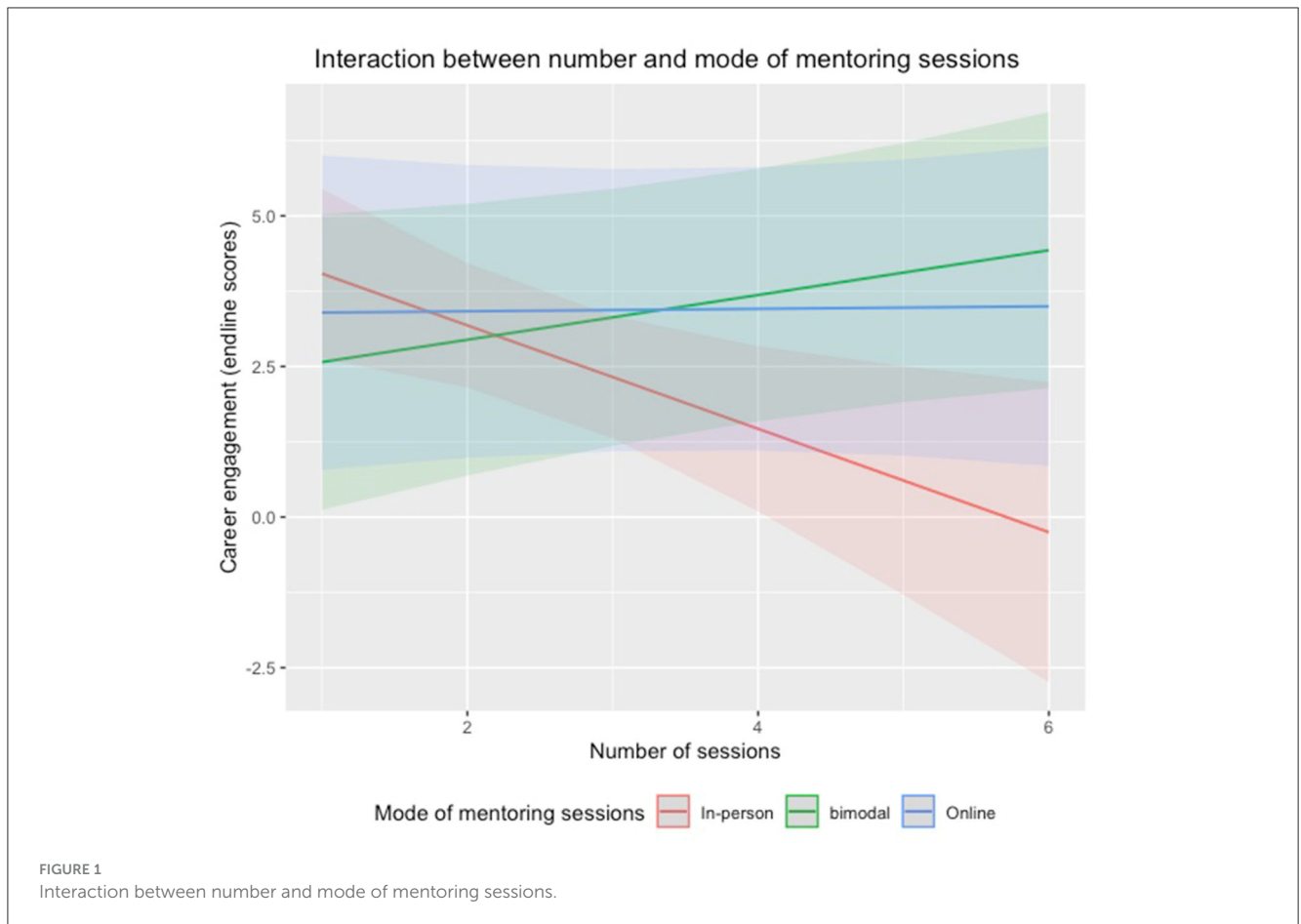
The ethnic group of the mentees is included in model 2, with Black students as the reference category. The results indicate a significant difference of 1.58 points in the career engagement score between students who identified as Mixed/Other and Black students. Therefore, Black students were less proactive in developing their careers in academia, relative to those students who identified as Mixed/Other by the end of the scheme. The difference of 0.71 points in career engagement between Black and Asian students implies that Black students were also less active in developing their careers in academia, when compared to Asian students. This reinforces the non-monolithic experiences of students from minority ethnic groups in higher education and points to the importance of culturally inclusive advice and support for these students ([Haywood and Darko, 2021](#)).

When Year of study, gender and age were jointly included as control variables in model 5, the difference in career engagement scores between Asian and Black students increased to 0.83, and up to 1.98 between students whose ethnic group was Mixed/Other and Black students. These differences were significant at 10% and 5% level of significance respectively. Older students were also more likely to score higher on career engagement. There were no significant effects of the mode or number of sessions (see models 6 and 7). However, including these variables further increased the difference in career engagement scores between Asian and Black students to 1.10, and between students from the Mixed/Other ethnic group and Black students to 2.57. These differences were both significant.

In model 8, when the interaction term between mode and number of sessions, ethnicity of the mentor and duration of sessions were included as control variables, the difference in career engagement scores between Asian and Black students was no longer significant. However, the difference in career engagement scores between students who identified as Mixed/Other and Black students increased in magnitude to 3.33. The coefficient on number of sessions was negative but significant at 10%, suggesting that an additional increase in the number of sessions by 1 will reduce the career engagement score by 0.86 points. However, given that the interaction effect between number of sessions and mode of sessions (bimodal) was positive and significant, this suggests that while an additional increase in the number of sessions may be negatively related to career engagement, this effect was positive when the sessions were bimodal, in contrast to solely in-person sessions. This may be attributed to the lack of flexibility with solely in-person sessions. Whereas, a mix of online and in-person sessions allows mentees and mentors to connect at their convenience due to its asynchronous nature, which may increase the frequency and duration of sessions ([Dahalan et al., 2012](#)). There was no significant difference in the effect of number of sessions between in-person and solely online sessions, by the duration of the sessions, or by the ethnic group of the mentor. These results support those of [Campbell and Campbell \(1997\)](#) who do not find significant differences in student outcomes by mentor ethnicity.

To provide more clarity, [Figure 1](#) plots the predicted values of career engagement based on the interaction effect between the number and mode of sessions. The intersection of the lines shows a valid interaction between the number of sessions, mode of sessions, and career engagement which means that the relationship between the number of sessions and career engagement changes depending on the mode of the sessions. The downward slope demonstrates the negative relationship between the number of sessions and career engagement for in-person sessions, relative to the relationship between the number of sessions and career engagement for online and bimodal sessions which was positive, as demonstrated by the upward slopes of both lines.

This is particularly relevant as students from minority ethnic groups may also be socio-economically disadvantaged and may have term-time work commitments or family responsibilities that prevent them from attending in-person sessions at certain times ([Owen, 2015](#)). Over time, students experiencing financial constraints may find it difficult to make continuous journeys to in-person sessions. Moreover, students for whom English is a second



language may benefit from a combination of online and in-person sessions as online sessions provide a record of interactions that could be revisited in cases where clarity is needed (Ensher et al., 2003). Therefore, these findings suggest that flexible mentoring schemes that allow for a combination of online and in-person sessions would be more inclusive.

## 7 Conclusion

The aim of this study was to investigate whether the 6-month mentorship scheme led to an improvement in career engagement among students from minority ethnic groups, observing whether there were differential effects by ethnic group, as well as by the degree of exposure to mentorship (measured by number and mode of sessions). The results revealed higher levels of career engagement for students belonging to Mixed or Other ethnic groups relative to Black students. However, there were no significant differences in career engagement between Black and Asian students at the end of the scheme. There were also no significant differences in career engagement by mentor ethnicity.

In terms of degree exposure, results were not as expected. The relationship between the number of sessions and career engagement was negative, implying that an increase in the number of sessions would reduce career engagement in academia. However,

the interaction between the number of sessions and the mode of sessions painted a mixed picture, with an increase in the number of sessions leading to a positive effect on career engagement when these sessions were bimodal i.e., a combination of in-person and online sessions, relative to solely in-person sessions.

This study is not without limitations. Most importantly, without a control group, it was not possible to identify a causal relationship between mentorship and career engagement. Given that students self-select into the mentorship programme, it is highly likely that more motivated students signed up for the mentorship scheme, and while results at baseline serve as a way to control for this, the absence of a control group limits the internal validity of the results. Another key limitation was the small size of the sample. Given that only a small share of mentees consented to be part of this study, these results are not generalisable to the wider population of participants in the scheme. It was also not possible to disaggregate results by faculty which may mask important differences between programmes of study.

Notwithstanding, these results are indicative and point to some differential effects of mentoring by ethnic group, with students who belonged to Mixed or Other ethnic groups experiencing more gains in terms of career engagement in academia, relative to Black students. This suggests that Black students may need more tailored support, in-depth mentoring or better-matched role models for improved outcomes.

TABLE 3 OLS results with career engagement (endline scores) as the dependent variable.

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Baseline score	0.53* (0.21)	0.46* (0.19)	0.49** (0.19)	0.55* (0.23)	0.51* (0.20)	0.53* (0.22)	0.51* (0.22)	0.75+ (0.28)
Asian		0.71+ (0.36)	0.69+ (0.37)	0.61 (0.44)	0.83+ (0.39)	0.88+ (0.41)	1.10* (0.47)	1.15 (0.64)
Mixed/Other		1.58** (0.53)	1.57** (0.53)	1.54* (0.58)	1.98** (0.54)	2.18** (0.59)	2.57** (0.71)	3.33* (0.96)
Year of study			-0.15 (0.20)	-0.19 (0.21)	-0.47* (0.22)	-0.60* (0.26)	-0.53+ (0.27)	0.99 (0.66)
Male				0.35 (0.38)	-0.10 (0.37)	-0.21 (0.42)	-0.34+ (0.45)	-1.47 (0.75)
Age					0.29* (0.12)	0.37* (0.14)	0.35* (0.14)	0.34 (0.17)
Bimodal sessions (online & in-person)						-0.30 (0.43)	-0.16 (0.45)	-2.70 (1.21)
Online sessions						0.23 (0.49)	0.21 (0.49)	1.53 (1.41)
Number of sessions							-0.12 (0.13)	-0.86+ (0.34)
Bimodal sessions*Number of sessions								1.23* (0.38)
Online sessions*Number of sessions								0.88 (0.42)
Non-BAME (Black, Asian, and minority ethnic) mentor								-0.18 (0.51)
30-min–1 h sessions								0.21 (0.51)
Less than 30-min sessions								-1.80 (1.97)
R-squared	0.23	0.48	0.5	0.53	0.66	0.69	0.71	0.94
No. of observations	23	23	23	22	22	22	22	18

Standard errors in parentheses.

+ $p < 0.1$ . \* $p < 0.05$ . \*\* $p < 0.01$ . \*\*\* $p < 0.001$ .

## Data availability statement

The raw data supporting the conclusions of this article will be made available by the authors, without undue reservation.

## Ethics statement

The studies involving humans were approved by King's College London College Research Ethics Committee. The studies were conducted in accordance with the local legislation and institutional requirements. The participants provided their written informed consent to participate in this study.

## Author contributions

CN: Conceptualization, Data curation, Formal analysis, Investigation, Methodology, Visualization, Writing – original draft, Writing – review & editing.

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The author declares that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

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## Appendix

