**Report:**

# Understanding online mentoring delivered as part of multi-intervention outreach programmes

May 2023

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# EXECUTIVE SUMMARY

Multi-intervention outreach programmes are commonly delivered by higher education (HE) providers with the ultimate aim of widening participation (WP). These programmes combine two or more different activities over a period of months or years, supporting students of different ages. The existing evidence tends to be correlational, with a focus on multi-intervention outreach programmes as a whole, although more recent evidence looks to unpick the impact of specific elements (for example, Burgess et al., 2021). Mentoring is often delivered as part of a multi-intervention approach and normally involves a sustained programme of engagement between a more experienced mentor (for example, an undergraduate) and a less experienced mentee (for example, a secondary school student). The mentor uses their experience to provide general guidance and support to the mentee. Mentoring can be especially difficult to evaluate as elements such as mode of delivery, type of mentor, duration and desired outcomes can differ greatly across programmes.

TASO worked with three HE providers to seek to produce causal evidence on the impact of multi-intervention outreach programmes. As part of this project, TASO chose to place a specific focus on mentoring to understand how it is conceptualised by different providers, how engagement can be measured, and how it can be evaluated.

## Overview of report

This report outlines an exploratory analysis conducted on mentoring programmes delivered at Aston University and King's College London (KCL). Both providers use Brightside online mentoring delivered by current undergraduate students to school and college students over the age of 16.

At Aston University, mentoring is delivered as part of a science, technology, engineering and mathematics (STEM) outreach programme, focused on supporting students from WP backgrounds to follow a career in STEM, via HE. Mentoring is delivered alongside information, advice and guidance (IAG) sessions, a summer school and subject taster sessions. The programme is delivered over one academic year for students in Year 13.

At KCL, mentoring is delivered as part of the K+ programme for students from WP backgrounds, focusing on supporting access to and participation

in highly selective universities. Students can choose from one of eight different subject streams and are assigned to mentors who are studying a degree course relevant to their subject stream and, in some cases, who share a similar background (e.g. experience of care). Mentoring is delivered across the Year 12 and Year 13 academic years alongside academic taster classes, a careers day, a summer school and personal statement workshops.

**The project explored:**

- Commonalities and differences between the two mentoring programmes

- How best to measure engagement with online mentoring programmes

- How the volume and content of mentoring messages differed over the course of the programmes.

**The exploratory quantitative analysis focused on relationships between:**

- Mentoring engagement data

- Overall outreach programme attendance

- Scores on a 'sense of belonging' scale.

## Key Findings

- Measuring engagement with online mentoring:

  - Engagement is traditionally measured through the number of messages sent by a mentee to their mentor (Brightside, 2021); however, it was found that multiple messages were sent over a single day, which may impact the interpretation of engagement.

  - For instance, when looking at the KCL mentoring programme, 14% of students were classified as unengaged as they only sent between zero and two messages to their mentor across the whole two-year programme. However, when focusing on the number of days on which messages were sent, 40% of students only sent messages on two or fewer days across the two-year programme, giving a much higher proportion of unengaged mentees.

  - Using the number of days engaged as well as the number of messages sent is a more robust engagement measure.

- Analysis showed a positive relationship between engagement with mentoring and overall attendance on the multi-intervention outreach programmes.

- Further analysis showed there was no relationship between engagement with mentoring and scores on a sense-of-belonging scale. However, this was also the case when looking at whole-programme engagement as demonstrated in the local evaluation reports.

- By reviewing the content and timeline of mentoring messages, key themes were observed:

  - UCAS applications, personal statements and subject choices were the most common themes in mentoring messages.

  - The peak of messaging was before the January UCAS deadline.

  - Messages from mentees were more likely to be responding to mentors than reaching out first.

## Recommendations for evaluating online mentoring programmes

- HE providers should be cautious when measuring mentoring engagement solely by the number of messages sent. The engagement data in this report clearly show a disconnect between messages sent and days engaged, with many of those who sent multiple messages only doing so on one or two days, indicating an overall lack of engagement. The 'days engaged' measure, used alongside the number of messages sent, is likely to be a more accurate measure. Mentoring providers should look to make this data directly available to HE providers. HE providers can also look at the number of days on which mentees access the platform.

- Quantitative analysis of messages may not be capturing important qualitative information contained within the content of the message. Content analysis to identify common topics should be conducted where possible and may be useful to practitioners in reviewing and developing their interventions. If there is a large volume of data from mentoring projects, HE providers could also carry out sentiment analysis to distinguish between positive, negative and neutral sentiment, although Brightside notes this can be challenging as conversations can be nuanced, without clear positive or negative views.

- HE providers should seek to identify the most effective features of their mentoring programmes, for instance, both the training of mentors and who is delivering the mentoring. There is some evidence that the more successful programmes are those in which the mentors are trained, and studies suggest it is important for students to see their mentor as a relatable role model. Here, mentees and mentors can be from the same background, as with the K+ programme, or of the same gender. Role models are also likely to be most effective when they can credibly represent HE as a desirable and attainable destination.

- It is important to follow up mentors' activity on the online mentoring platform to ensure that mentors are meeting their commitments to the programme. Structured programmes with set mentor-instigated topics may be more effective here so that teams can follow up mentors who are not sending regular messages to their mentees.

- Structured mentoring programmes, with specific mentor-instigated topics to be covered, may be more successful than unstructured programmes given the finding that mentees are less likely to reach out to their mentor but, instead, respond to their mentor's messages.

- Where possible, the mentoring provider's dashboard should be utilised by practitioners to identify mentees who are not engaging and flag those who may be struggling. Regular use of the dashboard to monitor mentees is an important aspect of the programme.

- It would be useful for evaluators and practitioners if mentoring providers routinely provided a unique identifier for mentees with every data download, to allow them to match participants across different worksheets or file downloads.

- To support better evaluation, mentoring providers should consider advising HE providers on how to utilise data analysis tools (e.g. Excel) to effectively read files exported from online platforms/databases. Most notably, the raw message data provided as part of this evaluation contained special characters when opened with the default character encoding in Excel, which required extensive and even manual cleaning. Providing HE providers with tutorials or guidance would eliminate the need for this data cleaning.

# INTRODUCTION

Multi-intervention outreach programmes combine two or more activities in an ongoing programme of support for students at different stages of their education, with a focus on WP groups. Typical activities include campus visits, subject tasters, IAG, summer schools and mentoring. An evidence synthesis commissioned by TASO (Robinson & Salvestrini, 2020) shows that multi-intervention outreach programmes are associated with positive aspirations and attitudes towards HE, and more recent evidence demonstrates a positive effect on enrolment in HE (The Access Project, 2021; Burgess et al., 2021). However, the methods used do not provide causal evidence; they cannot tell us definitively that the programmes have an impact. The existing evidence also tends to focus on multi-intervention outreach programmes as a whole, without investigating the impact of specific elements, although recent evidence by Burgess et al. (2021) suggests that IAG, summer schools and subject masterclasses are the most effective components.

TASO has partnered with three universities to try to produce causal evidence on the impact of multi-intervention outreach programmes. A range of outputs for this project can be found here. The focus of this report, however, is on mentoring as a specific sub-activity. The impact of mentoring can be difficult to monitor and measure, particularly as mentoring programmes differ in terms of the mode of delivery, duration, type of mentor and aims and outcomes. Therefore, while evidence of a positive impact in one study is helpful, we should not assume that the results transfer to different contexts. Although mentoring is included in the TASO-funded evaluation of multi-intervention outreach programmes, TASO felt it important to spend time exploring how mentoring is conceptualised and implemented, how engagement can be measured, and which methods of evaluation are most useful, to better understand the impact of mentoring on student outcomes.

This report details an evaluation of the mentoring programmes delivered at Aston University and King's College London, both of which use Brightside online mentoring.[1] The University of Birmingham was also a partner in the main project; however, its mentoring programme differed substantially from the other two partners and has been included in its local evaluation report. Whilst the primary outcome for the TASO-funded multi-intervention outreach project evaluation is enrolment in HE, this data does not become available until next year. The focus of this evaluation is therefore more exploratory, covering:

- The similarities and differences between the two mentoring programmes

- How engagement with mentoring can be measured

- The content of mentoring communications

- The timeline of mentoring communications

- Recommendations for future evaluation.

## Overview of mentoring and the existing evidence

Pre-entry mentoring of students and pupils by university students or staff is an intervention designed to help the mentee think about HE as a place for them. It offers IAG about the application process and university life, such as academic and social activities, and provides more general support around study skills, career options and well-being.

Mentoring has traditionally been delivered face-to-face in small groups or one-to-one sessions often termed *synchronous* mentoring. The development of video-conferencing software and Internet mentoring platforms has enabled the implementation of online mentoring. Whereas video-conferencing software moves synchronous mentoring online, online mentoring platforms, such as Brightside, utilise *asynchronous* mentoring. Here mentoring is conducted by email-like messages sent between mentors and their mentees and/or in an online forum or group chat between all mentees and mentors.

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[1]   Brightside is a social mobility charity that connects young people with inspiring mentors to help them make confident and informed decisions about their future. It works across the UK, supporting young people living in 57 of the UK's 65 social mobility cold spots. Brightside runs programmes, trains volunteers, and facilitates meaningful conversations between mentors and mentees – all on its bespoke online platform. The moderated online platform integrates surveys to measure impact, allows mentees to select the mentor most relevant to them, and enables delivery teams to export and review all conversation data.

The advantage of asynchronous mentoring over synchronous mentoring is that mentoring does not have to be delivered according to a rigid schedule. This enables capacity increases as mentors can support many more mentees than in a one-to-one setting. It is arguably a more accessible way of providing mentoring, leading to a wider pool of mentors which, in turn, allows for better matching of mentors to mentees, such as by subject need. The asynchronous structure gives time for both parties to reflect on the content and conversations and can be less intimidating than synchronous mentoring. However, the advantages may be offset by the costs of using the mentoring platform and the challenges of establishing a relationship in the absence of face-to-face communication.

There is mixed evidence on the effect of mentoring on student outcomes. For example, an analysis conducted by Brightside, using the Higher Education Access Tracker (HEAT), found that participation in online mentoring was positively correlated with greater attainment and higher levels of enrolment in HE and in high-tariff providers (Brightside, 2022). TASO (2021), however, found a negative association between participation in mentoring and subsequent enrolment at university, and the relationship with attainment was inconclusive. As these studies were not randomised controlled trials (RCTs) or quasi-experimental studies, the interpretation and generalisation of the results beyond an association are not possible. There are many reasons why students who take part in mentoring may differ from those who do not, even if their demographics are matched. For example, the provision of mentoring is often targeted at students who are less or more likely to attend university (dependent on the motivations of the mentoring providers).

There is stronger evidence of the impact of mentoring from outside the UK. For instance, Castleman and Page (2015) conducted an RCT to understand the impact of a summer mentoring programme delivered by college students to high school students. They found that this mentoring increased college enrolment, particularly for male students.

Looking at the broader research literature, there is evidence that effective mentoring occurs when there is a high-quality relationship between the mentor and the mentee (Garcia-Melgar et al., 2015). Such relationships are defined by:

1. The motivation of the mentor/mentee to take part in mentoring (Shpigelman & Gill 2013) which can change over the course of the programme due to personal circumstances such as school workload

2. The frequency of contact between the mentor and mentee (DuBois et al., 2002; Shpigelman & Gill, 2013) – more frequent contact tends to result in better quality relationships

3. The communication style and literacy skills of the participants (Eby et al., 2010) which affect the development of mentor/mentee relationships, e.g. Shpigelman and Gill (2013) found that more formal communication styles led to less successful relationships

4. The 'emotional closeness' that the mentee feels for the mentor (DuBois et al., 2002; Ward et al., 2014), that is, mentees are more likely to reveal gaps in their knowledge such that they receive appropriate support from their mentors if there is emotional closeness (Garcia-Melgar et al., 2015).

Asynchronous online mentoring poses some challenges to these relationships, particularly around sustaining engagement (Shpigelman & Gill, 2013). Although online platforms provide a record of mentor/mentee conversations and group chats such that the quality of the interactions can be monitored (Sherman & Camilli, 2014), the asynchronous nature of the interactions can negatively affect engagement (Scogin, 2016). Shpigelman and Gill (2013) suggest that online mentoring should be structured, with a defined programme in which mentors ask direct questions to stimulate discussion.

## Description of mentoring at the two universities

Both universities involved in this evaluation delivered the online one-to-one mentoring programme with current undergraduate students, using the Brightside platform.[2] This platform manages communication between the mentor and the mentee in an asynchronous format (i.e. by email-like message). Brightside also has a group chat function that mentors and mentees were able to use if they wished. An overview of the online mentoring programme is provided in Table 1, illustrating the similarities and differences between the two universities' programmes.

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## Table 1. Summary of similarities and differences between the Aston and K+ mentoring programmes.

| | Aston | K+ |
|---|---|---|
| **Mentors (delivering mentoring)** | | |
| Consistent mentor | ✓ | ✓ |
| Academic Staff | ✗ | ✗ |
| Current Students | ✓ | ✓ |
| Industry Experts | ✗ | ✗ |
| WP Staff | ✗ | ✗ |
| **Beneficiaries** | **Y13** | **Y12, Y13** |
| **Desired Outcomes** | | |
| Study skills | ✓ | ✓ |
| Attainment raising | ✓ | ✗ |
| Aspirations to HE | ✓ | ✓ |
| IAG for HE | ✓ | ✓ |
| Pastoral/well-being support | ✗* | ✓ |
| Peer interaction | ✓ | ✓ |
| Progression to HE | ✓ | ✓ |
| Application support | ✓ | ✓ |
| Financial skills | ✓ | ✗ |
| Career guidance | ✓ | ✗ |
| Subject choices | ✓ | ✓ |
| Social life at university | ✓ | ✓ |
| Studying at university | ✓ | ✓ |
| Self-efficacy/confidence | ✓ | ✓ |
| Overcoming WP barriers | ✗ | ✓ |
| Pre-entry sense of belonging | ✓ | ✓ |
| **Delivery** | | |
| Asynchronous | ✓ | ✓ |
| One-to-one | ✓ | ✓ |
| Group** | ✗ | ✗ |
| Structured | ✓ | ✗ |
| **Monitoring** | | |
| Frequency | Fortnightly | Monthly |
| Period of engagement | 6 months (10 sessions) | Jan Y12 – June Y13 |
| Expectations of Engagement | Fortnightly | 1/month contact |
| Sanctions | None but follow-up if lack of engagement | |
| Data available and used | No. of messages, days engaged and content | |
| **Mentor Training** | ✓ | ✓ |

**\*** Pastoral support does occur, though informally.

**\*\*** Students had access to the group chat or forum facility to communicate with other students from the same outreach programme.

## The Aston Mentoring programme

The Aston Pathway to STEM is a 12-month outreach programme which aims to assist students from WP backgrounds in the West Midlands to follow a career in STEM, with an emphasis on the graduate route. In addition to IAG sessions, a summer school and subject taster session, students are enrolled on the Brightside online mentoring platform. The online mentoring comprises a structured programme delivered to Year 13 students. Mentors introduce ten discussion topics at specified times during the programme (see Annex A). Additionally, two on-campus group workshops are held covering personal statements and study skills. Ten undergraduate students were involved in mentoring students on the STEM pathway and each was assigned between three and six mentees. All mentors received training through Brightside. Sessions took place approximately every fortnight. The programme is intended to provide support for Year 13 students as they navigate the UCAS admissions process, post-16 study and preparation for undergraduate life (academic, financial and social).

## The K+ Mentoring programme

K+ is a two-year outreach programme that supports access and progression to highly selective universities for WP students. The programme delivers 13 separate activities to approximately 350 students per year, starting in January for Year 12 students and ending with a graduation event in June for Year 13. Students are allocated to one of the eight subject streams listed below:

- Business and Economics
- Dentistry
- History and Politics
- Languages and Literature
- Law
- Maths and Computer Science
- Medicine
- Sciences.

K+ calendar events include academic taster classes, a careers day, a summer school, personal statement workshops and a mentoring programme (see Annex B for further details).

Students are first given access to Brightside in the January of Year 12, following the official induction. Students are assigned to mentors who are studying for a degree relevant to their subject stream. If possible, priority group students (care-experienced, refugees and forced migrants) are assigned an additional mentor from a similar background. K+ mentors are provided with training on safeguarding, how to be an effective mentor (frequency, style and content of messages) and supporting WP students.

The mentoring programme within K+ is unstructured. There is a minimum expectation of monthly messaging between mentors and mentees; however, no formal action is taken if this is not met (beyond the automatic engagement reminders from Brightside). The mentors are expected to follow the Year 12 calendar, which can be used as guidance on what to discuss, focusing on the student's K+ experience and identifying whether they need any support with the programme. In Year 13, the K+ programme and mentoring both focus on UCAS applications. Access to mentoring ends in January of Year 13. At this point, students no longer have access to their mentors or any of the messages exchanged; however, they are able to access Brightside's 'Brightknowledge'[3] website, which covers general university information.

# METHODOLOGY

## Sample

The sample population, split by male and female students, can be found in Table 2. For both programmes, the figures show all students who had not withdrawn from the overall programme at the time of mentoring. For Aston, all students in the sample were in Year 13 in the 2021–22 academic year. For K+, the sample was taken in Year 12 in the 2020-21 academic year, and Year 13 in the 2021-22 academic year. A full breakdown of the sample demographic can be found in the local multi-intervention outreach programme evaluation reports here.

**Table 2. Sample population**

|       | Male | Female | Total |
|-------|------|--------|-------|
| Aston | 23   | 24     | 47    |
| K+    | 93   | 225    | 318   |

## Measuring engagement with the Brightside mentoring platform

The Brightside platform records details of how many messages were sent and received by the mentors and mentees, and stores the messages themselves. For each mentee, we analysed the number of messages sent, to whom they were sent (mentor or group chat) and when they were sent. Using the message data, it was also possible to summarise the number of different days on which each student sent a message on Brightside. This was felt to be a useful variable – alongside the number of messages sent – to give a more accurate picture of engagement.

Brightside conducts analysis on the basis that mentees have 'attended' the mentoring programme if they have sent at least three messages to their mentor (e.g. Brightside 2021, 2022). Those who send 0–2 messages are categorised as having not attended the programme. To allow for finer-scale analysis, we partitioned the data into bins corresponding with 0–2, 3–4, 5–9 and 10 or more (10+) messages. The same partitioning was used for days of engagement.
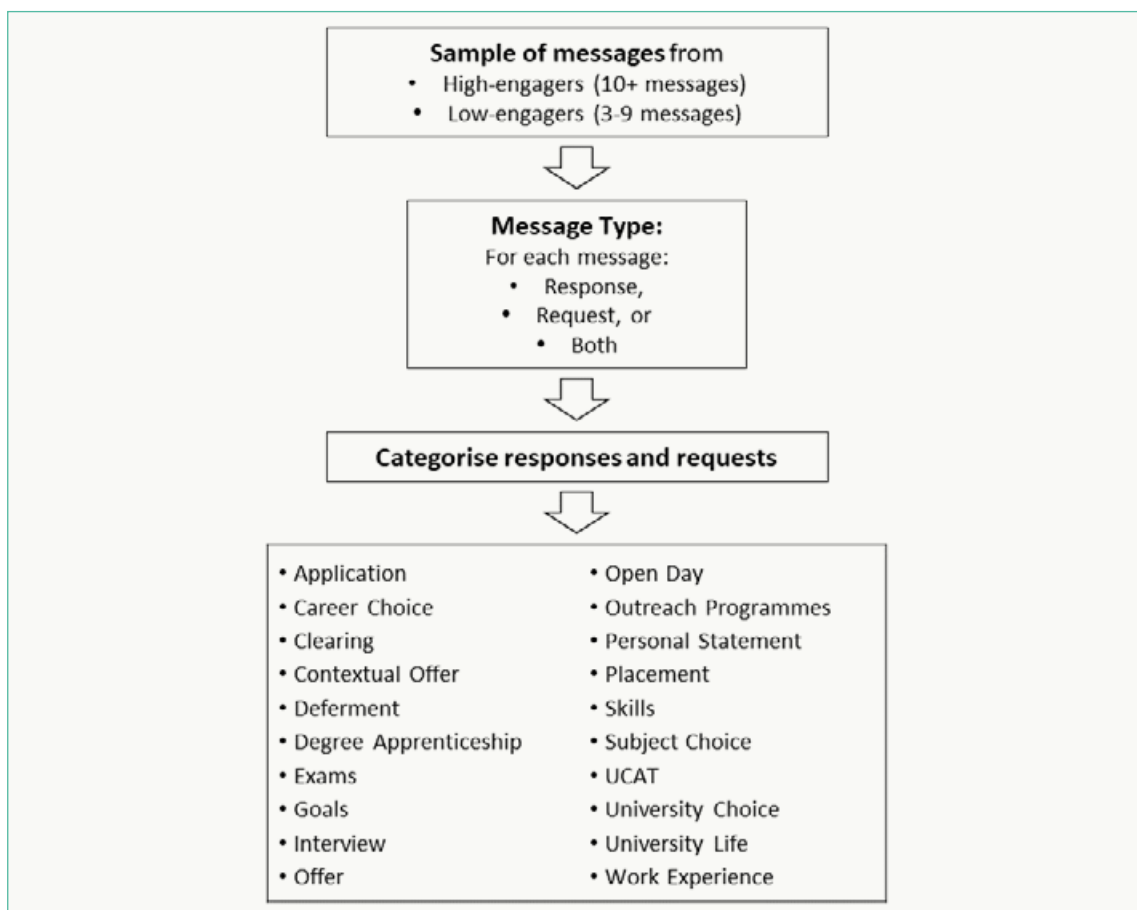
## Categorisation of message content

An overview of the process of categorising message content is shown in Figure 1. Due to the volume of messages sent and the exploratory nature of the evaluation, message content was assessed using a random sample of students. The number of messages sent was used as a guide to the level of engagement: low engagement indicated 3–9 messages sent and high engagement 10 or more messages sent.

At Aston, 42 students met these criteria, of whom 12 had low engagement and 30 had high engagement. Half the students from each group (6 and 15 respectively) were randomly selected for further analysis of their messages. For K+, which had a much larger sample, 15 high engagers and 15 low engagers were randomly selected for further analysis.

Message analysis was carried out by categorising the message type as a 'response' to a mentor's message, a 'request' for information, or both. Then, for each message type (response or request), the topic or topics of the message were identified from the content of the message.

**Figure 1. Illustration of the process for categorising message content**



Sample of messages from
- High-engagers (10+ messages)
- Low-engagers (3-9 messages)

↓

Message Type:
For each message:
- Response,
- Request, or
- Both

↓

Categorise responses and requests

↓

- Application
- Career Choice
- Clearing
- Contextual Offer
- Deferment
- Degree Apprenticeship
- Exams
- Goals
- Interview
- Offer
- Open Day
- Outreach Programmes
- Personal Statement
- Placement
- Skills
- Subject Choice
- UCAT
- University Choice
- University Life
- Work Experience

## Survey data: pre-entry sense of belonging

Both Aston and K+ ran surveys that included questions aimed to assess a pre-entry sense of belonging (see Table 3), relevant to the aims of the mentoring programme. Five of these questions were extremely similar between the two universities, with differences due to the K+ programme's focus on WP at highly selective universities, and a minor difference in the response scale.

K+ used a 7-point response scale, whereas Aston used a 5-point response scale; both ranged from Strongly Agree to Strongly Disagree. These were converted to lie on the range 0 (Strongly Disagree) to 1 (Strongly Agree) by linear transformation for compatibility across sites. A sense-of-belonging score was obtained by summing the scores of the five questions such that the score could range between 0 and 5. Only students who answered all 5 questions were included.
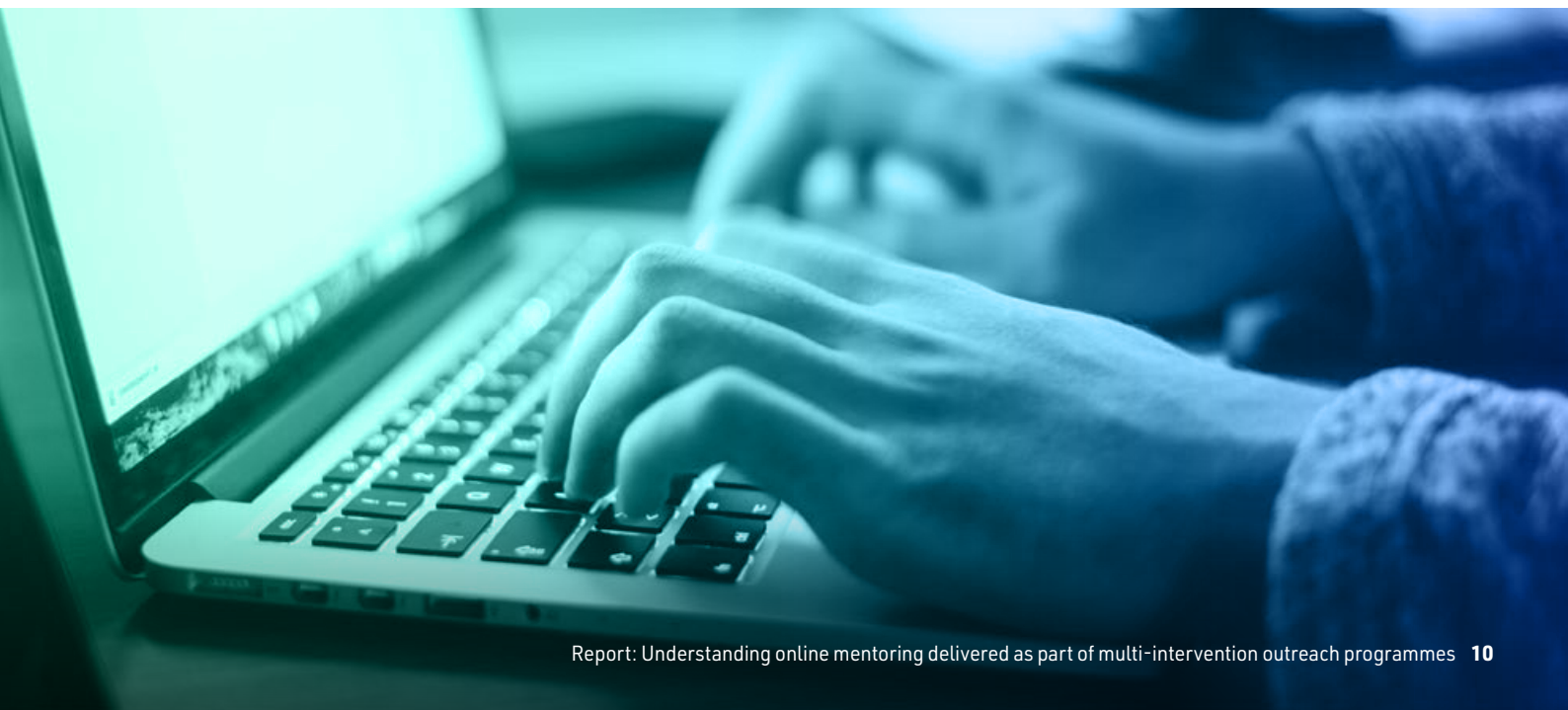
**Table 3. Pre-entry sense of belonging questions for K+ and Aston.**

| K+ | Aston |
|---|---|
| I have a clear understanding of what to expect from life at a highly selective university. | I have a clear understanding of what to expect from life whilst at university. |
| I have a clear understanding of what to expect from my social life at a highly selective university. | I have a clear understanding of what to expect from my social life whilst at university. |
| I have a clear understanding of what to expect from studying at a highly selective university. | I have a clear understanding of what to expect whilst studying at university. |
| People like me have the skills and experiences to actively participate in classrooms at highly selective universities. | People like me have the skills and experiences to actively participate in classes at universities. |
| People like me can make contact with teaching staff at a highly selective university. | People like me can initiate contact with teaching staff at university. |

Aston conducted one survey approximately halfway through mentoring; the second – a post-UCAS application survey – was carried out after mentoring had ceased in the Spring.

All three K+ surveys identified as relevant to the mentoring evaluation included these belonging questions. The first was a milestone survey conducted during the first K+ event before students had access to Brightside. The second was the Year 13 relaunch survey, delivered to students in September 2021 on their return from the summer holidays and corresponding to Aston's first survey. The final survey was the post-UCAS survey sent to students in Spring of 2022.

However, since at both universities a survey was gathered after the UCAS application deadline (end of January 2022), the sense of belonging score was computed from responses to this survey.

Figure 2 below presents a timeline showing students' access to mentoring and the dates when relevant surveys were conducted for both universities.

**Figure 2. Timeline of surveys in the context of mentoring programmes**
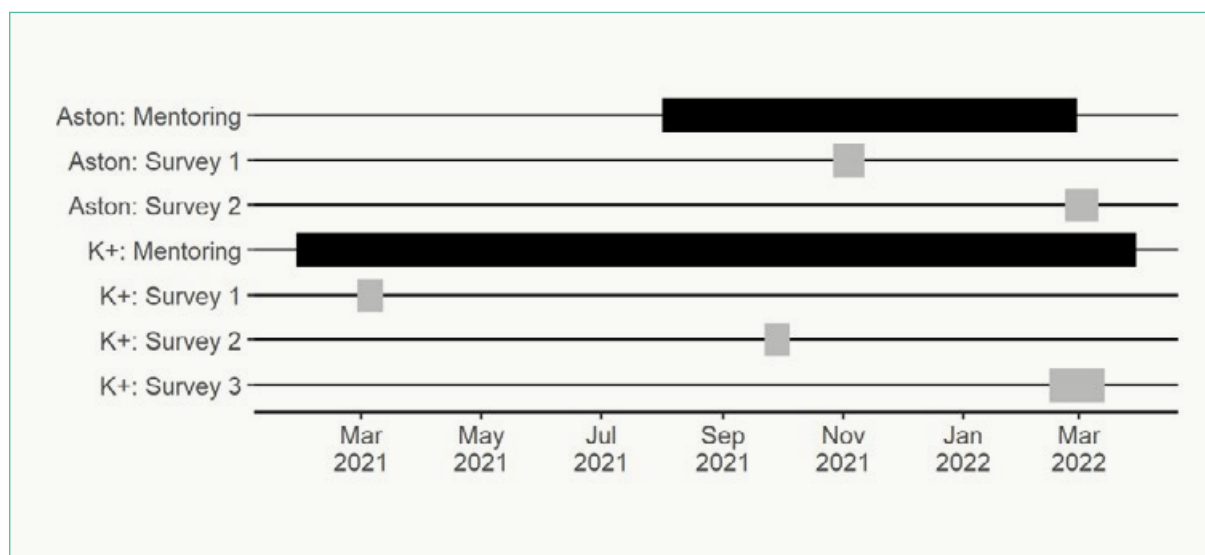
## Measures of engagement with the multi-intervention outreach programmes

To determine engagement with the outreach programme, we used measures of attendance at activities.

Aston's activities included IAG sessions, subject tasters, an online summer school, UCAS personal statement day and study skills day. The summer school was weighted at twice the level of the other events because it was run over two days and students were counted as attending the summer school if they attended 50% of the activities. Therefore, students' attendance could be 0%, 20%, 40%, 60%, 80% or 100%.

For K+ attendance, the total percentage of Year 12 attendance and total percentage of Year 13 attendance were combined. Year 12 attendance is compulsory and therefore weighted at 40%. Attendance is expected to drop in Year 13 with students' priorities shifting to exams; therefore, Year 13 is weighted at 60%.

## Analytical methods

Both the engagement and attendance data were highly skewed:

- The skewness of 'messages sent' was found to be 3.1, indicating that the distribution was right-skewed.
- The skewness of 'days engaged' was found to be 0.6, indicating that the distribution was right-skewed.

- The skewness of 'attendance' was found to be -0.4, indicating that the distribution was left-skewed.

We, therefore, opted to use the non-parametric Spearman's correlation ($\rho$) and associated significance test to determine the relationships between mentoring engagement data (sent messages/days engaged with Brightside), attendance at programme activities, and sense of belonging scores.

## Limitations

Although the number of messages sent is collated by Brightside, it became apparent during the analysis of message content that many students accidentally (or, perhaps, intentionally) send a single message spread over multiple messages. For instance, a greeting, question and comment could be sent over three separate messages within the same timeframe. For the purposes of analysing message content, such messages were grouped and treated as a single message; however, the individual message count data (as a measure of engagement) was not updated to reflect this.

None of this analysis was pre-planned and it is purely exploratory. It is hoped that the results and methods will help inform future planned evaluations of online mentoring programmes. It should also be noted that mentoring forms part of a larger outreach programme which has its own evaluation.
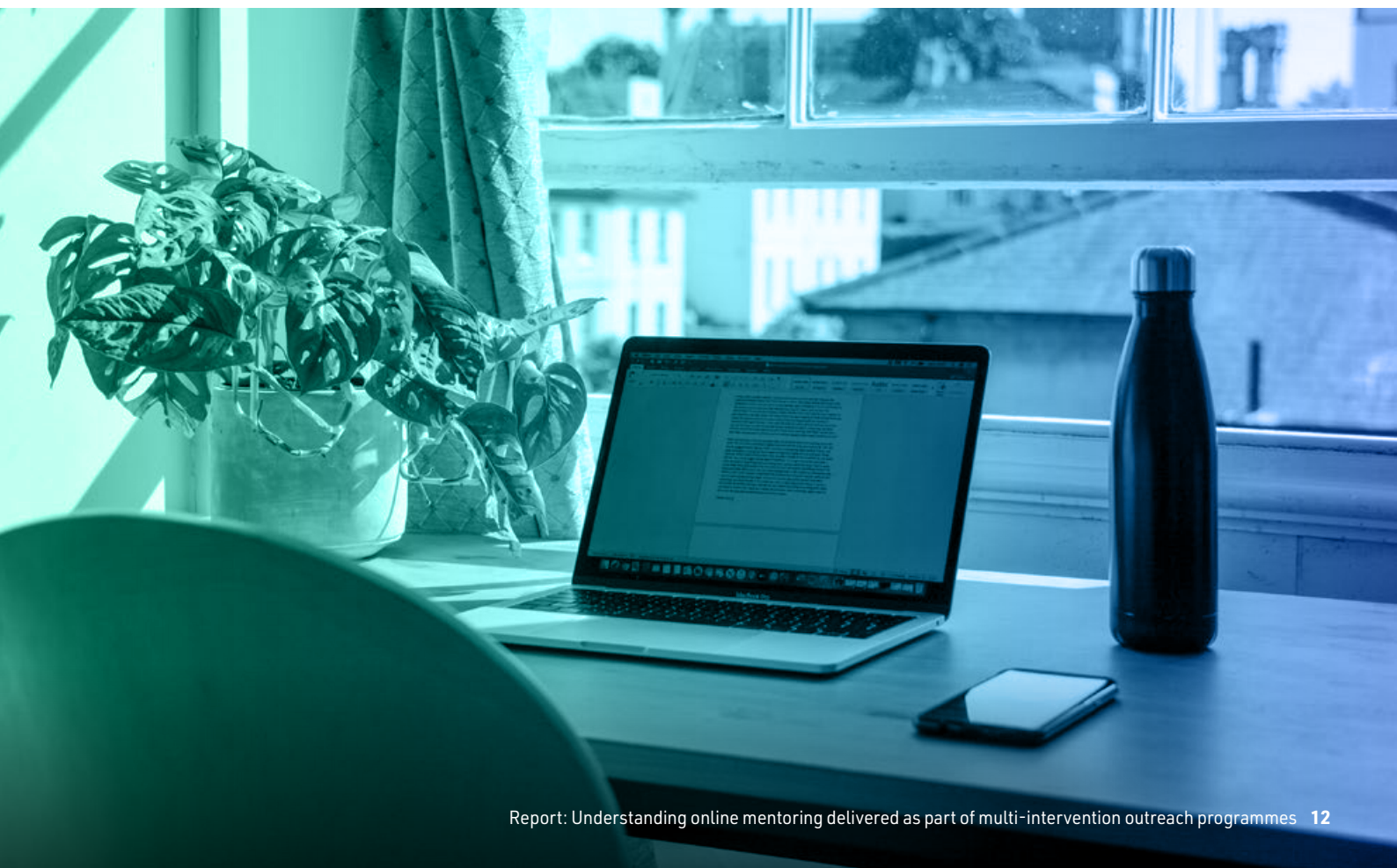
# RESULTS

## Brightside engagement

Figure 3 plots the distributions for the number of messages sent and the number of days engaged for students on the Aston Pathway to STEM and those on the K+ programme. A clear majority of students send 10 or more messages: 138 out of 327 for K+ (42%), and 32 out of 47 students for Aston (68%).

However, when engagement is measured as the number of days on which students used the system, the picture changes somewhat in that there are clearly some students who send more (possibly many more) than one message per day. Just under 40% of

students at Aston and 26% of students at K+ engaged with Brightside on 10 or more days. It is, therefore, apparent that determining engagement may differ depending on the data under examination. This is clearly demonstrated when looking at the K+ data on the number of messages sent, where 47 students (14%) were classified as unengaged as they sent only between zero and two messages to their mentor across the whole two-year programme. However, when focusing on the number of days on which messages were sent, 132 students (40%) sent messages on only two or fewer days across the programme, giving a much higher proportion of unengaged mentees.

**Figure 3. Brightside engagement data (left column = messages sent, right column = days engaged) for Aston (top row) and K+ (bottom row)**
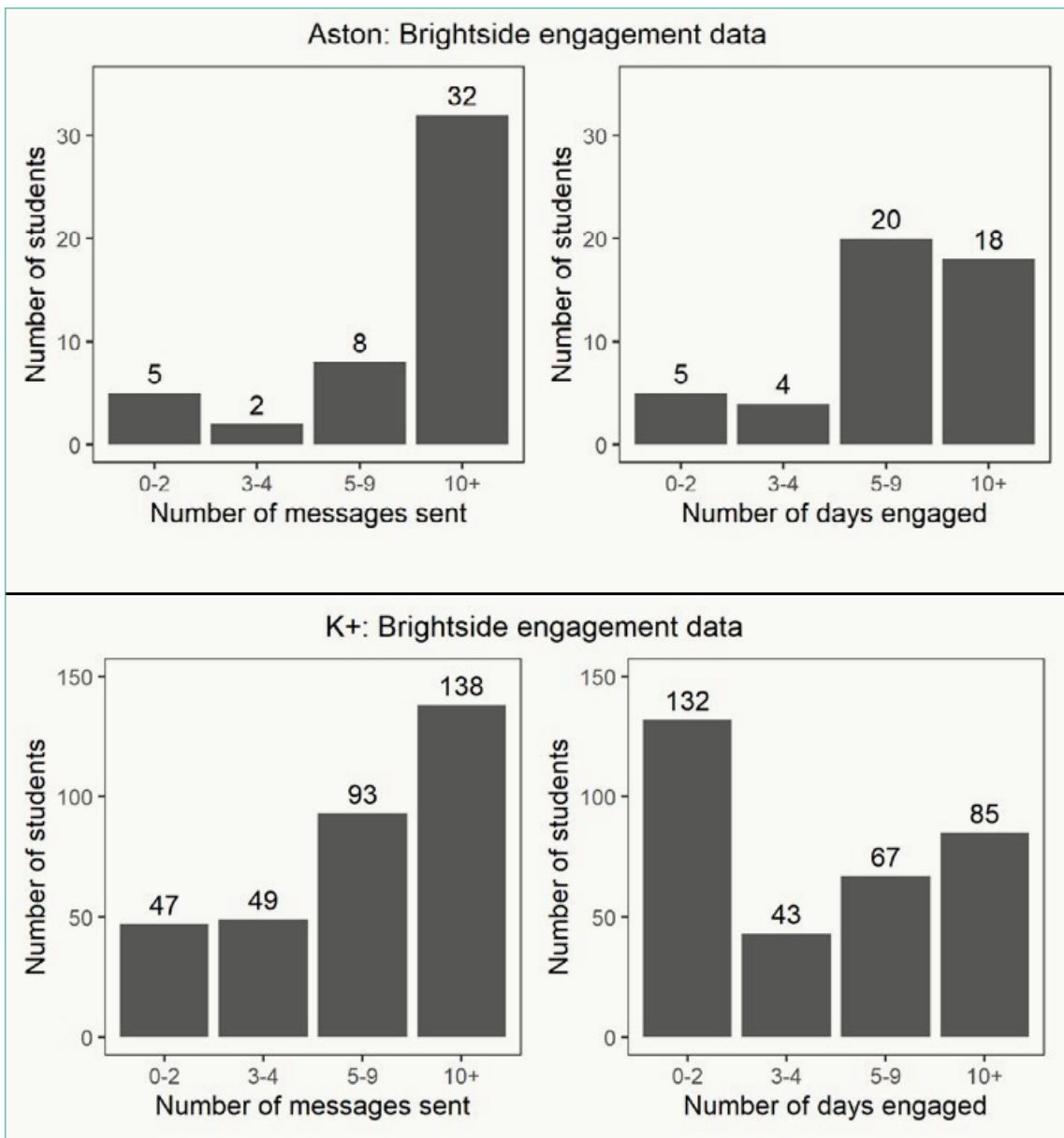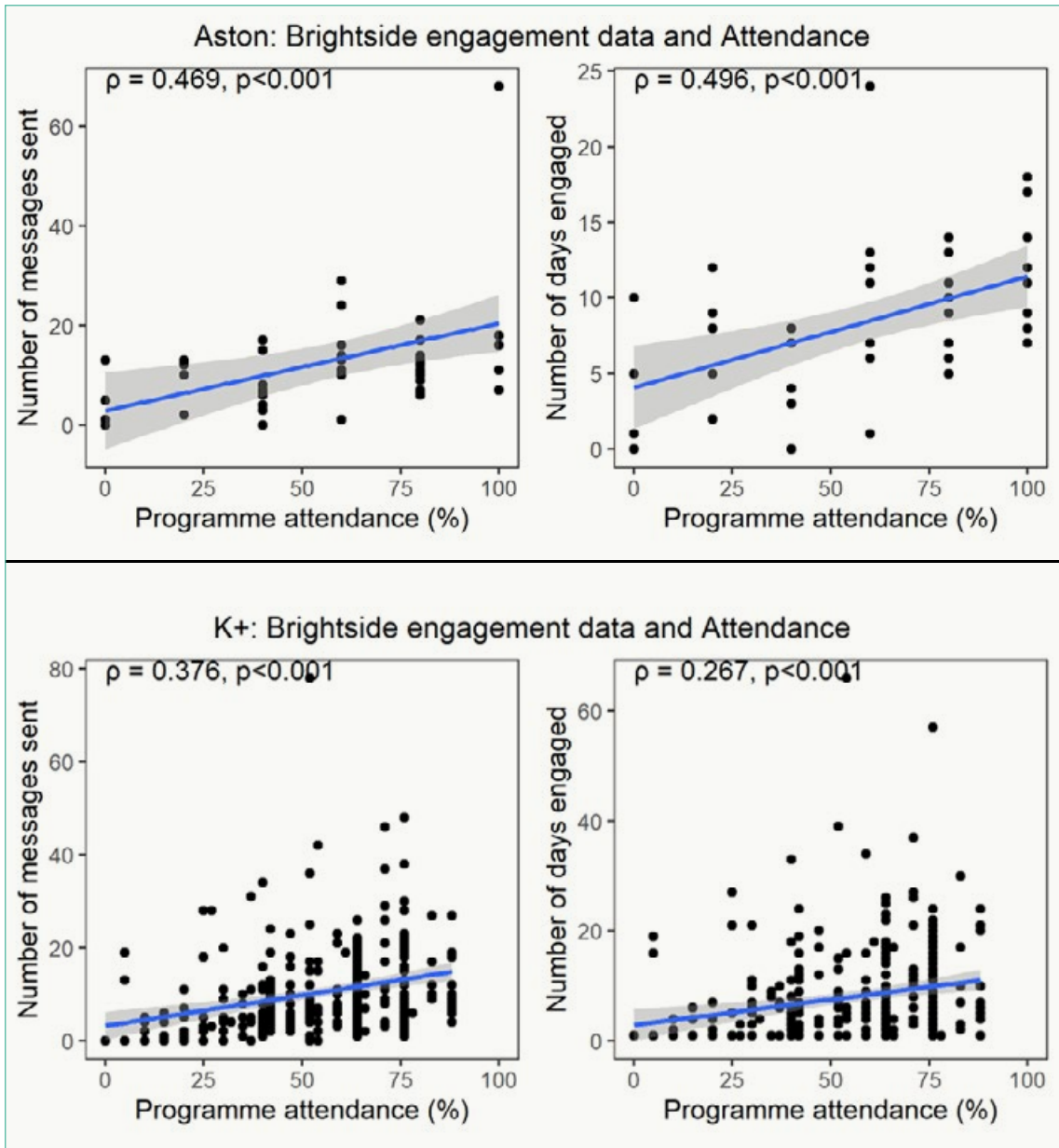
## Event Attendance and Brightside Engagement

Figure 4 plots the relationship between engagement with Brightside and attendance at events on the respective outreach programmes. For both programmes there is a positive relationship between engagement with mentoring – as measured by number of messages sent and number of days engaged – and overall programme attendance.

For Aston, Spearman's ρ between sent messages and programme attendance is 0.469 ($p<.001$), and 0.496 ($p<.001$) for days engaged and programme attendance. For K+, Spearman's ρ between sent messages and programme attendance is 0.38 ($p<.001$), and 0.27 ($p<.001$) for days engaged and programmes attended. Students who engage with mentoring are also more likely to engage with the overall outreach programme, as measured by attendance at events.

**Figure 4. The relationship between Brightside engagement data and programme attendance (left column = messages sent, right column = days engaged) for Aston (top row) and K+ (bottom row)**

## Sense of Belonging Scale and Brightside Engagement

Figure 5 plots the relationship between engagement with Brightside and the sense of belonging scores.[4] For both programmes, there is no relationship between a sense of belonging and Brightside engagement.

For Aston, Spearman's ρ between a sense of belonging score and sent messages is -0.102 (*p*=.919), and -.269 (*p*=.252) for a sense of belonging score and days engaged. For K+, Spearman's ρ between sense of belonging score and sent messages is 0.14 (*p*=.0.34); for a sense of belonging score and days engaged it is 0.07 (*p*=.0.64).

**Figure 5. The relationship between Brightside engagement data and sense of belonging score (left column = messages sent, right column = days engaged) for Aston (top row) and K+ (bottom row)**



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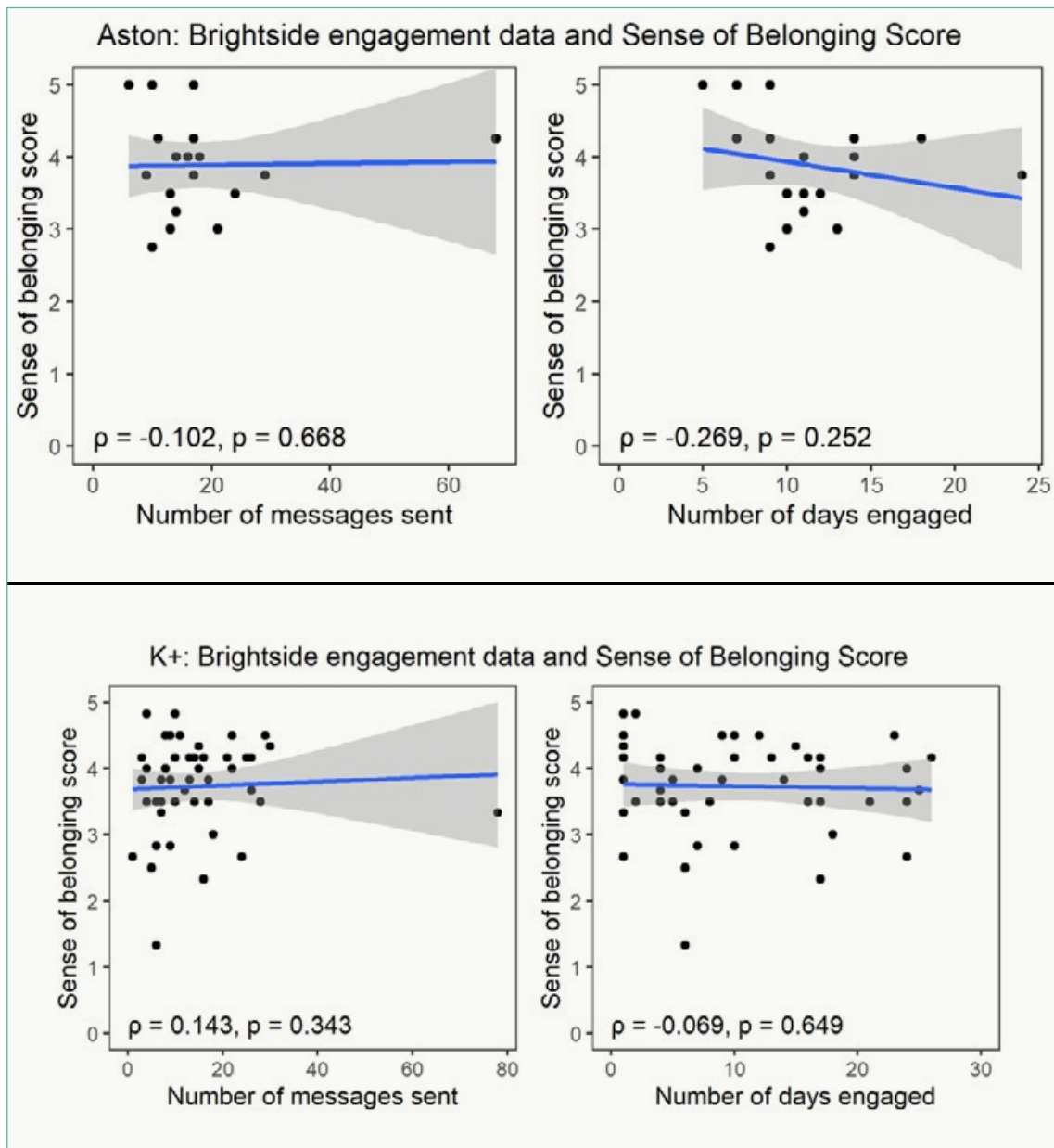
[4]  The trend lines on these graphs are Pearson trend lines for illustration purposes only. The correlation coefficients are Spearman's non-parametric and are not susceptible to outliers in the data.

## Timeline of mentoring communication

The timeline of messages sent by mentees for both Aston and K+ programmes is plotted in Figure 6. Given that the Aston programme is structured, it is not surprising that peaks in sent messages coincide with the timeline of the programme (vertical lines). Note, however, that messaging is generally high early on in the programme but then falls rapidly and stays low until the end.

The K+ programme is unstructured with a minimum expectation of monthly messages between mentors and mentees. Therefore, we expect to see fairly consistent messaging throughout the year, as reflected in the graph below. There is a peak around November and December, aligning with the UCAS applications cycle.

**Figure 6. Timeline of messages for Aston and K+ programmes. Each dot is the number of messages sent each day. The grey line is the 7-day moving average. Vertical lines indicate when a mentor message or workshop should have occurred.**
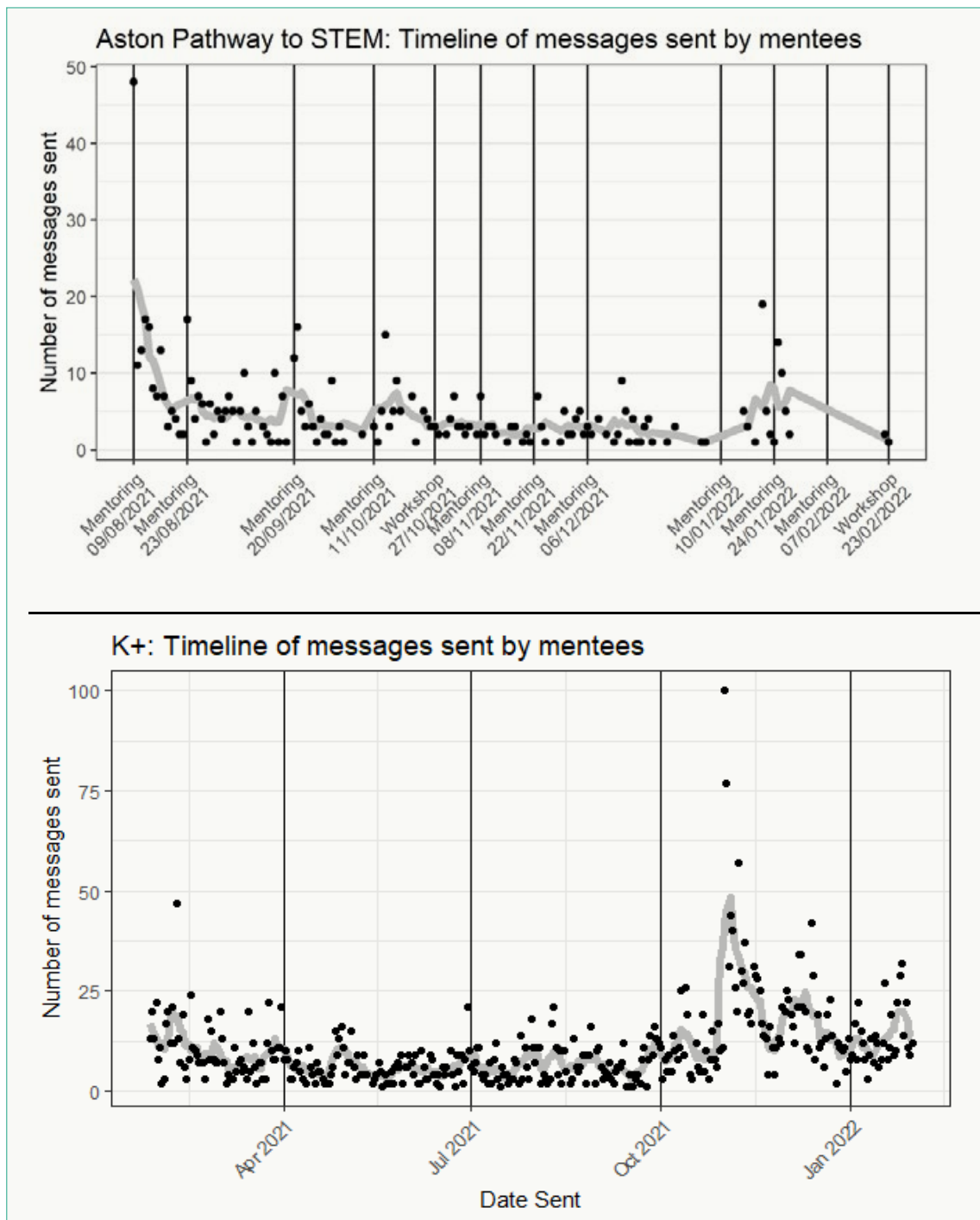
## Message category data

For Aston, the categories of the subsample of messages analysed are shown in Figure 7 for messages containing requests, and in Figure 8 for messages that are responses. The figures show a timeline of when messages were sent, whether the recipient was a mentor or the group chat (different shapes), and the category of the message content. Different colours indicate different recipients. The figures are further divided into those who sent 3–9 messages and those who sent 10 or more messages.

The number of messages for each category is plotted at the left-hand end of each graph.

It is clear that students generally respond to mentors more than they make requests of them. For both requests and responses, the topic of Personal Statements was the most common, closely followed by Subject Choice. It is not clear from the message category data if the structured programme (see Annex B) was followed by the student or not. For example, personal statements are discussed throughout the mentoring programme but only form part of the structured programme in October/November 2021.

**Figure 7. Aston: Timeline of message requests made to mentors by less-engaged (top row) and more-engaged (bottom-row) students. Squares represent messages in the group chat; diamonds are messages to mentors. Different colours indicate individuals. The numbers on the left-hand side indicate the number of messages in each category.**
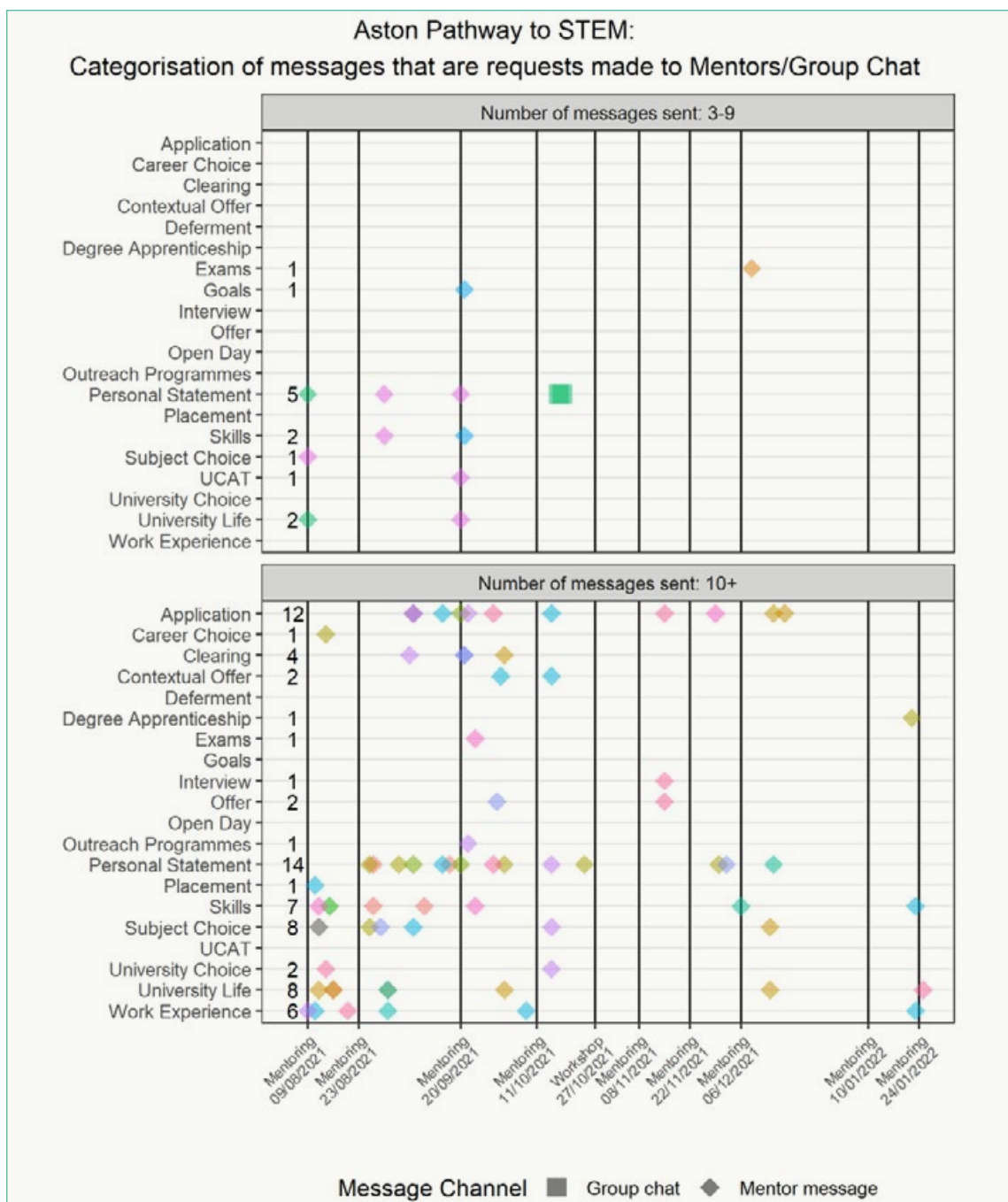
## Figure 8. Aston: Timeline of messages sent in response to mentees/group-chat by less-engaged (top row) and more-engaged (bottom row) students
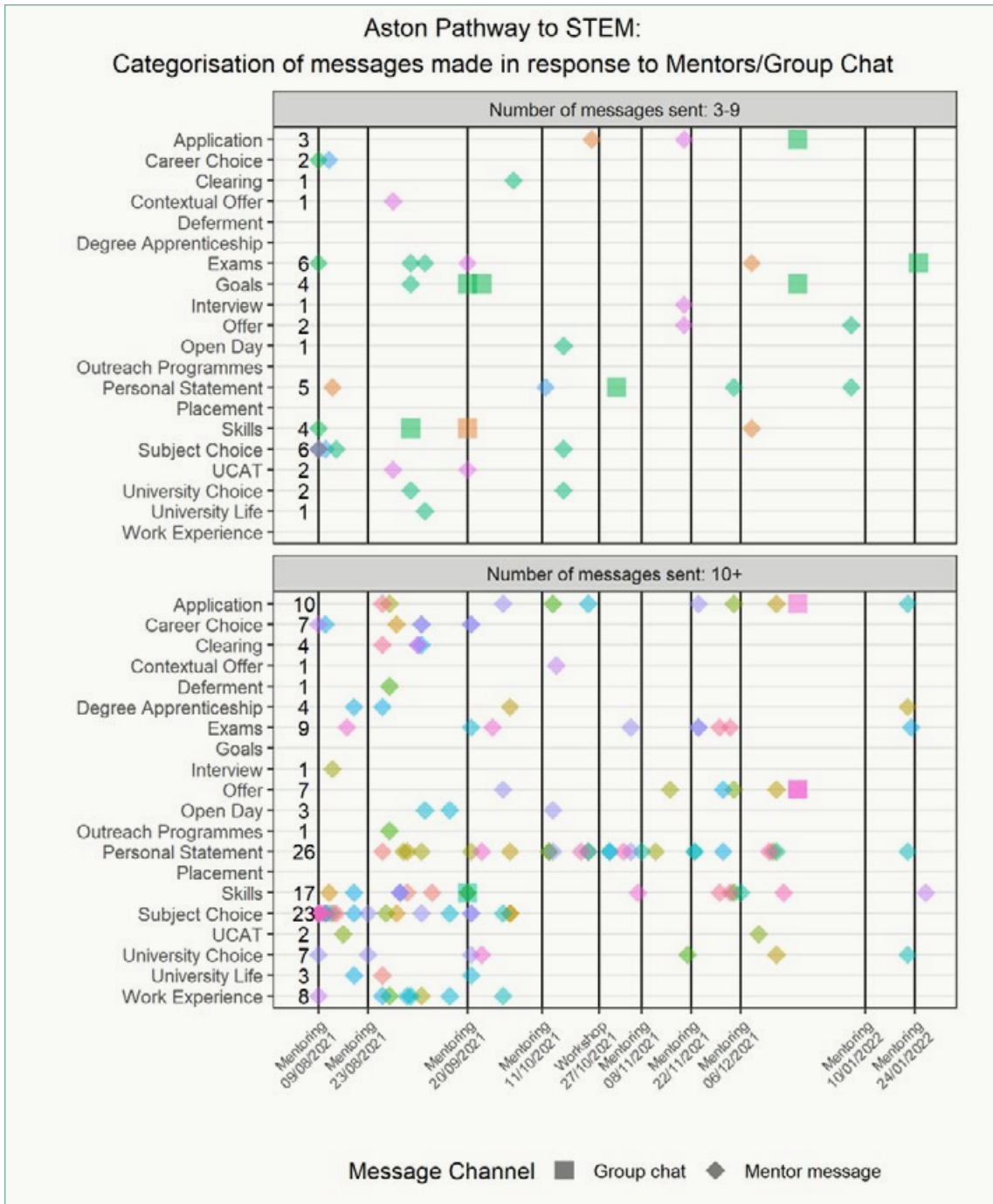


For K+, the categories of subsampled messages analysed are shown in Figure 9. As for Aston, the messages were more likely to be responding to the mentor than instigating the conversation. As with Aston, Personal Statements was one of the most common categories, alongside Academic Goals, UCAS applications, University Life, and Choices. An additional finding is the occurrence of 'Wellbeing', which covers managing stress, anxiety and balancing schoolwork and life, and was a notable theme from looking at the raw data.

**Figure 9. K+: Timeline of message requests made to mentors by less-engaged (top row) and more-engaged (bottom-row) students. Circles represent high-engagers and diamonds are messages for low-engagers. Different colours indicate individuals.**
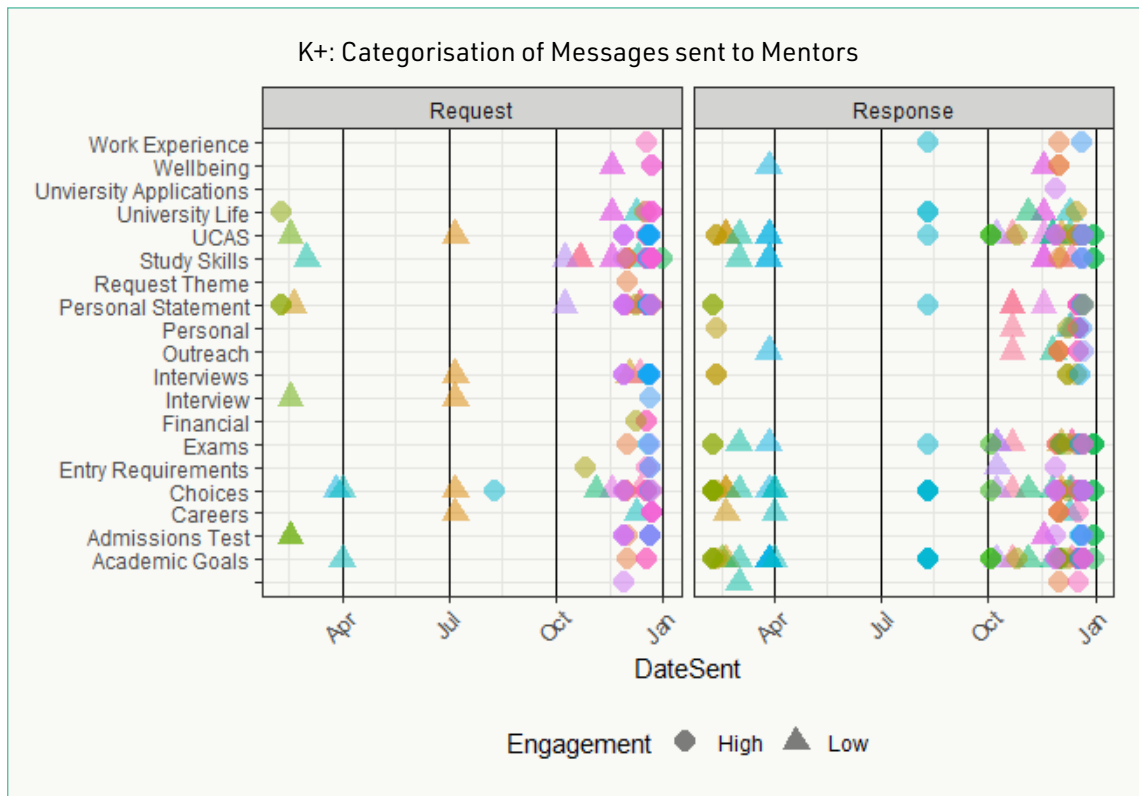
# DISCUSSION

This exploratory research demonstrates the complexities of evaluating mentoring programmes. Although the two universities featured in this report both deliver an outreach programme to post-16 students to encourage and support enrolment in HE, and both use the Brightside platform, their mentoring programmes differ greatly. One university delivers a structured mentoring programme with specific mentor-instigated topics to be covered at certain points in the academic year, while the other is unstructured, with no set topics, although dialogue between mentors and mentees is encouraged throughout the programme. Both universities use current university students as their mentors, but differ in how they match mentors to mentees. Although general preparation for HE is a running theme across both programmes, the desired outcomes vary, with one focused on careers, financial skills and attainment-raising, and the other on well-being and overcoming barriers to HE. Given that mentoring differs substantially between programmes, local impact evaluations are needed to confidently assess the effect of these particular activities.

There are, therefore, a range of factors to consider both in implementing and evaluating a mentoring programme. With regard to who delivers the mentoring, there is some evidence that the more successful programmes are those where mentors are trained and demonstrate confidence (Sanders & Higham, 2012). Both Copley (2010) and Lewis and Ritchie (2010) outline unsuccessful mentoring connections where the HE students acting as mentors have failed to meet their mentee's expectations. These include instances where mentors lacked the confidence to deliver sessions, or were unprepared and disorganised, highlighting the importance of training.

Gartland (2014) draws on extensive interview and observation data collected from two university case studies to explore the role of student ambassadors as mentors. Here the evidence suggests that student ambassadors are most effective when they are seen as relatable role models. A role model can be broadly defined as someone who is successful and inspirational and whose behaviour makes a goal desirable, particularly to those who share a similarity or group membership with them (Morgenroth et al., 2015). In an RCT focused on role modelling, Sanders et al. (2018a) found that an inspirational talk delivered in schools by a current university student increased applications to university and, particularly, to more selective universities.

The relatability of a role model may depend on particular characteristics. O'Sullivan et al. (2017) report that students highlight the importance of their mentor's background, such as coming from the same school or community. Other examples can be seen in relation to gender (Porter, 2010) and experience of care (University of Liverpool, 2010). The feedback from mentees indicates that similar characteristics determine whether they perceive an HE student to be a role model, with some revealing a desire for mentors to be 'an older version of [them]' (Lewis & Ritchie, 2010). In their review of the mentoring literature, Sanders and Higham (2012) suggest that learners like to be matched effectively to their mentor and that their preference is to be linked to an HE student with similar career and subject interests (Copley, 2010; Lewis & Ritchie, 2010). These approaches to matching mentees and mentors were utilised in the K+ mentoring programme, most notably for priority group students (care-experienced, refugees and forced migrants) who are assigned an additional mentor from a similar background.

The majority of evidence on the type of mentor comes from mentoring programmes delivered face-to-face; therefore, the impact of role-modelling may not be as pronounced in the online mentoring platform evaluated in this report. Sanders et al. (2018b), however, demonstrate that letters written by a current university student to 16-year-olds in school/college proved effective in raising the number of applications to, and accepted offers from, selective universities. Furthermore, in an evaluation of 'CyberMentor', a Germany-wide online mentoring programme, Stoeger et al. (2019) found that female mentors with a degree or profession in STEM were successful in increasing both intentions to study STEM subjects and certainty about career plans in female students aged 11 to 18. Here women working in STEM professions were matched with girls based on the similarity of both STEM interests and hobbies and the effect of mentoring was stronger in mentees who perceived they had a 'quality relationship' with their mentor, demonstrating that this can still be achieved in an online setting.

The evidence around role modelling and mentoring conflicts with the finding in the current research that there was no relationship between engagement with mentoring and sense of belonging scores. A link between the presence of role models and a sense of belonging has been demonstrated in the

literature (e.g. Lewis et al., 2016; Johnson et al., 2019; Bradshaw & Mann, 2021). As both mentoring programmes list a sense of belonging as a desired aim, further research needs to be conducted to understand whether mentoring can affect this outcome. However, the analysis conducted for the local evaluation reports on the overall outreach programmes also shows no relationship with the sense of belonging measure. In K+, there was no difference in sense of belonging scores between the treatment group, who received a place on the programme, and the control group, who did not receive a place. At Aston, the majority of participants already had a high level of agreement with the sense of belonging statements prior to the start of the programme; therefore, any changes in these measures over the course of the programme were not significant. It is also worth noting that the sense of belonging scale used was unvalidated; thus, it is not possible to know with any certainty that the questions asked do indeed measure the intended outcome of interest. For example, it could be that participants did not understand the questions, or had different interpretations of the questions' meaning. Since this evaluation, TASO has developed a partially validated sense of belonging scale that is currently being tested in the sector.

Using current HE students as mentors appears to be the most effective, or certainly the most well-evidenced, approach. However, as demonstrated in the CyberMentor study above, professionals can also be impactful as mentors. Other research suggests that faculty members (Sneyers & Witte, 2017) and graduates (Sandner, 2015) can be effective mentors, although it is important to note that these studies focused on mentoring that took place post-entry to HE rather than pre-entry. Further evidence is needed on the benefits of using different mentors, including peers, current students, graduates and professionals.

This evaluation highlights important factors to consider when measuring engagement with mentoring programmes, particularly in an online context. Existing online mentoring platforms appear to measure attendance and/or engagement with mentoring programmes based on the number of messages sent (e.g. Brightside, 2021). However, our evaluation highlighted a disconnect between this metric and the number of days on which mentees engaged. For K+, this was particularly prominent,

with the proportion of low-engagers increasing from 14% to 40% with the shift from messages sent to days engaged. For sustained mentoring programmes taking place over several months or years, it seems important that mentees engage over a substantial number of days rather than spending only one or two days online, even if they do send multiple messages to their mentor on these days. The finding was less pronounced for Aston, however, which may indicate the benefits of a structured mentoring programme to ensure the mentee engages with the platform over a more sustained period.

A key benefit of online mentoring is that the message content – as well as the message count – can be accessed and analysed. Here, a mixed-methods approach is likely the most beneficial way to discern engagement, using quantitative methods to understand the number of messages sent and days engaged, and qualitative methods to understand what is being communicated within the messages. While sentiment analysis can allow researchers to identify whether the general tone of a message is positive or negative (e.g. Mason et al., 2021), the categorisation of message content by topic type may be useful to practitioners in reviewing and developing programmes. For instance, personal statements and university applications were the most common topics of discussion across both programmes, perhaps indicating that more sessions could be dedicated to these areas as part of the outreach programme as a whole. in the mentoring of pre-16-year-old students, content analysis is likely to reveal different themes.

Although not necessarily indicating engagement, the categorising of mentoring messages as either initiated by the mentee or responding to questions from the mentor allows us to understand how mentor-mentee relationships are better encouraged and supported. Given the finding in this evaluation that mentees are significantly more likely to respond to mentors than initiate a conversation, a structured programme, as implemented by Aston, may be more effective in enabling engagement and the realisation of the desired outcomes. This is supported by evidence suggesting that mentees appreciate consistency from their mentors in terms of how often they are contacted (O'Sullivan et al., 2017) and aligns with Shpigelman and Gill's (2013) guidance that online mentoring should be structured around a defined programme, in which mentors ask direct questions to stimulate discussion.

Overall, this exploratory research provides interesting insights into the variation in mentoring programmes across the sector and how engagement, particularly with online mentoring platforms, can be robustly measured. However, we still lack causal evidence on the impact of mentoring and need to build the evidence base on the most effective features, in terms of duration, delivery mode and type of mentor. Mentoring is included in the analysis of the whole programme evaluation conducted at these two universities and it will be interesting to see whether engagement with mentoring, both in terms of the number of messages sent and the number of days engaged, has an impact on enrolment in HE when this data becomes available next year.

# RECOMMENDATIONS FOR EVALUATING ONLINE MENTORING PROGRAMMES

- HE providers should exercise caution when measuring mentoring engagement solely by the number of messages sent. The engagement data in this report clearly shows a disconnect between messages sent and days engaged, with many of those who sent multiple messages only doing so on one or two days, indicating an overall lack of engagement. The 'days engaged' measure is likely to be a more accurate measure when used alongside the number of messages sent. Mentoring providers should aim to make this data directly available to HE providers. HE providers could also look at the number of days on which mentees access the platform.

- The quantitative analysis of messages may not capture important qualitative information within the content of the message. Content analysis should be conducted where possible to identify common topics and may be useful to practitioners in reviewing and developing their interventions. If there is a large volume of data from mentoring projects, HE providers could also carry out sentiment analysis to distinguish between positive, negative and neutral sentiment, although Brightside notes that this can be challenging as the nature of conversations can be nuanced, without clear positive or negative views.

- HE providers should seek to identify the most effective features of their mentoring programmes, in terms, for instance, of the training of mentors and who is delivering the mentoring. There is some evidence that the more successful programmes are those where the mentors are trained, and studies suggest that it is important for students to see their mentor as a relatable role model. Here mentees and mentors can be from the same background, as in the K+ programme, or of the same gender. Role models are also likely to be most effective when they can credibly represent HE as a desirable and attainable destination.

- Following up on a mentor's activity on an online mentoring platform is important to ensure that mentors are meeting their commitments to the programme. Structured programmes with set mentor-instigated topics may be more effective so that teams can follow up on mentors who are not sending regular messages to their mentees.

- Structured mentoring programmes, with specific mentor-instigated topics to be covered, may be more successful than unstructured programmes, given the finding that mentees are less likely to reach out to a mentor themselves than to respond to a mentor's message.

- Where possible, the mentoring provider's dashboard should be utilised by practitioners to identify mentees who are not engaging and to flag those who may be struggling. Regular use of the dashboard to monitor mentees is an important aspect of the programme.

- Evaluators and practitioners would benefit if mentoring providers routinely provided a unique identifier for mentees with every data download to allow them to match participants across different worksheets or file downloads.

To support better evaluation, mentoring providers should consider advising HE providers on how to utilise data analysis tools (e.g. Excel) to more effectively read files exported from online platforms/databases. Most notably, the raw message data provided as part of this evaluation contained special characters when opened with the default character encoding in Excel, which required extensive and even manual cleaning. Providing HE providers with tutorials or guidance would eliminate the need for this data cleaning.

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# ANNEX A. ASTON STRUCTURED ONLINE MENTORING PROGRAMME

| Session | Date | Theme | Notes |
|---|---|---|---|
| 1 | w/c 9th August | Introductions & the Student Journey | • Icebreakers, introductions<br>• Information audit (where are they knowledge-wise)?<br>• What to expect going into Year 13<br>• Work through Student Journey – focusing on summer of Year 12 |
| 2 | w/c 23rd August | Clearing & Confirmation | • Knowing your options<br>• What if things don't go to plan<br>• Open Days |
| 3 | w/c 20th September | Goal Setting & Skill Development | • Goal setting – what do you want from Year 13?<br>• Skills audit – what do you need to work on?<br>• How to develop skills/find new opportunities<br>• Touch on different skills they have highlighted |
| 4 | w/c 11th October | Personal statement & UCAS Process | • Introduction to UCAS process<br>• Prepping for Personal statement Workshop – what to expect. Send the Personal statement worksheet.<br>• Mapping out skills needed for courses/what you have, where to get them<br>• Check if the learner has started to draft something and send on Brightside – assist where needed. |
| 5 | w/c 8th November | UCAS: In-depth | • How does the UCAS process work?<br>• Entry points/tariff points, are the unis correct for you? |
| 6 | w/c 22nd November | Revision Skills | • Top tips<br>• Preparing for mocks (if relevant)<br>• Benefits of a revision timetable<br>• Different techniques |
| 7 | w/c 6th December | Check-in Session | • Plans for over school break |
| 8 | w/c 10th January | UCAS / Personal statement Check-in (2 weeks before) | • Looking over personal statement drafts<br>• Any last-minute worries |
| 9 | w/c 24th January | Setting up for Skills on Campus – what are your skills? | • Discuss skills – key ones for university?<br>• Student Life |
| 10 | w/c 7th February | Wrap up- any other questions? Worries? 'Ask me anything' session. | • Any other questions and concerns?<br>• 'Ask me anything' style session<br>• Budgeting as a student |

# ANNEX B. K+ PROGRAMME OF EVENTS

| Session | Date | Theme | Notes |
|---|---|---|---|
| 1 | Year 12 – January 5th 2021 | Induction | • Introduction to K+<br>• Icebreakers<br>• Student Welcome Talks<br>• Getting the most out of K+<br>• Reflections from Year 13 students |
| 2 | Year 12 – January 27th- 29th | K+ UniLife | • Introduction to online mentoring – Setting up Brightside.<br>• Study Skills<br>• KCL Student Union session<br>• Student Life Q&A |
| 3 | Year 12 – February 26th | Academic Day 1 | • Subject masterclass delivered by academic teaching staff.<br>• Student Q&A |
| 4 | Year 12 – March | Culture Day | • Introduction<br>• Presentation on Cultural Capital in Higher Education<br>• Presentation – Updating Cultural Capital<br>• External Speaker |
| 5 | Year 12 – Mid-April | Careers Day | • Each subject stream is hosted by a relevant organisation within that field<br>• Company overview<br>• Group activities led by company employees<br>• Panel discussion<br>• Careers – Day in the Life |
| 6 | Year 12 Academic Day 2 | 22nd June | • Study Skills<br>• KCL Student Union session<br>• Student Life Q&A |
| 7 | Year 12 – Spotlight Summer School | 26–30th July | • Academic Project (The Brilliant Club) |
| 8 | Year 13 – Relaunch Event | 28th September | • Introduction to Year 13 timetable |
| 9 | Personal statements workshop | 28th September | • Personal statements<br>• Successful University applications |
| 10 | Oxbridge Mock Interviews / MMI Workshop | 15th–10th Dec | • Interview practice |
| 11 | A-level – Exam revision skills | 11th December | • Managing exam stress<br>• Revision strategies<br>• Study timetables |
| 12 | Year 13 – University Wellbeing and Transition Skills | 12th March | • Money & Budgeting<br>• Mental Health<br>• Nutrition & Food<br>• Study Skills |
| 13 | Year 13 – K+ Graduation | 30th June | |