# Living 'between two worlds': a doctoral thesis exploring the psychological experiences and mental health of first-generation university students

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**This thesis is submitted in partial fulfilment of the degree of Doctorate in Clinical Psychology**

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## Overall Abstract

This projects area of study is student mental health, particularly the psychological experiences and mental wellbeing of first-generation students (FGS). FGS are students whose parents or carers did not attend university or obtain a degree, regardless of whether their siblings did. It is well-documented that although FGS are the majority in some universities, they continue to be the minority in occupying high-status careers and leadership positions. There is evidence that FGS in university experience high rates of mental health difficulties and are at an increased risk of drop-out.

The project firstly consists of a systematic review which is a mixed-methods narrative review of the experiences of uncertainty among FGS at university. Intolerance of uncertainty (IU) is a transdiagnostic mechanism across a range of mental health presentations and a trans-situational factor that can increase vulnerability to distress. Although all students experience uncertainty at university, uncertainty may be more significant for FGS due to their lack of familial university experiences which leaves them to navigate novel experiences independently. Therefore, this review aims to synthesise the existing literature on the experiences and types of uncertainty among FGS at university and establish how uncertainty is defined and measured in the literature, as well as critically appraise this literature, in the hope of informing support options to ameliorate mental health difficulties in FGS and subsequently improve their academic outcomes. The results feature a number of relevant quantitative and qualitative sources identified through six electronic databases, as well as grey literature searching. The results encompass the types of uncertainty experienced by FGS, as well as factors which contribute to this and associated coping strategies. Definitions and measurements of uncertainty are also discussed, and considerations are given to methodological strengths and weaknesses of identified sources.

The remainder of this project consists of an empirical paper which explores how experiences of IU, as well as perfectionism, imposter syndrome, belonging and socioeconomic status (SES), documented to be key experiences for FGS, impact psychological wellbeing among FGS at university. This paper features an exploration of the existing research into these FGS experiences, discusses the three-phase, cross-sectional research design which was employed and provides a comprehensive summary of the findings. The results highlight how the way that some of these experiences interact with IU contributes to psychological distress, as well as the different experiences between FGS and continuing-generation students (CGS). In line with these findings, primary prevention recommendations are made, alongside future research recommendations.

This systematic review and empirical paper are linked as they explore the psychological experiences of FGS at university, both including IU and uncertainty. The systematic review findings around the experiences of uncertainty in FGS provide the foundation for which the empirical project builds upon by exploring experiences of IU, amongst other key experiences, in FGS. The findings of both highlight experiences which are unique to FGS and allow for primary prevention recommendations to be made to FGS, as well as CGS. Both also highlight the need for further research into the psychological experiences of FGS.

**Acknowledgement of Contributions**

I would firstly like to thank all of the participants who took part in both the pilot and final online surveys. I would like to say an additional thank you to the participants who were dedicated in engaging in the focus group. Your openness and bravery to reflect on your experiences has been an enormous contribution to this project. To all the students on the Newcastle University Student Mental Health Co-production panel, thank you for your contributions in the development of the patient information sheet, consent form and debrief sheet. I would also like to say a thank you to my supervisors, Professor Mark Freeston and Dr Sarah Thwaites, for your continued guidance and support over the past three years. Without your knowledgeable advice and encouragement during my times of self-doubt, I believe that this project would not have progressed in the same way. Mark, your passion and expertise in the field of uncertainty and statistical analysis has been truly invaluable. Sarah, thank you for creating a space where I could thoughtfully reflect on the emotions that arise from studying a topic so closely tied to my lived experience. Your approach created a safe, validating and transformative space. An additional thank you goes to the undergraduate students who were involved at the pilot phase of this project and worked closely with Mark to develop a syntax which was crucial to the initial part of phase three data analysis. Maryam, it has been a pleasure to work with you on developing projects exploring the experiences of living 'between two worlds' in different populations. Your support has played such a big role in this project. Finally, thank you to Newcastle University for the financial support which allowed me to provide incentives to participants in the form of Amazon vouchers and donations to not-for-profit organisations.

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**Section 1: Systematic Review**

# A mixed-methods narrative review of the experiences of uncertainty in first-generation university students

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## Abstract

### Background

First-generation students (FGS) experience increased rates of mental health difficulties, and intolerance of uncertainty (IU) is understood as a transdiagnostic factor within a range of mental health presentations, as well as a trans-situational vulnerability which is a common feature of the university experience. Due to the nature of the FG experience, it is reasonable to assume that FGS may encounter greater uncertainty at university than continuing-generation students, negatively impacting their wellbeing.

### Objectives

The purpose was to explore experiences of uncertainty among FGS at university, including establishing the types, definitions and measures of uncertainty applied in this field of research, as well as critically appraise the literature.

### Methods

Consistent search terms were employed across six electronic databases, with the addition of grey literature searching, to identify relevant sources.

### Results

Sixteen sources (seven quantitative; nine qualitative) with primary data were identified. Sources discussed the types of uncertainty that FGS can experience (IU, belonging, financial and decision-making uncertainty), contributing factors (the role of a lack of information), and strategies employed to navigate uncertainty (seeking information, connection and determination).

### Conclusions

Uncertainty is common among FGS, negatively impacting their wellbeing at university. Uncertainty is typically defined by the specific type of uncertainty being measured or as a sense of not knowing. Critical appraisal deemed the literature as largely trustworthy, however the implications of any methodological weaknesses were considered. Uncertainty reduction interventions and peer-support are recommended as primary prevention. Further research into uncertainty and IU in FGS within UK universities is recommended.

# Introduction

## Background

### *Student mental health*

The pressures and demands of university combined with the developmental transition from adolescence to young adulthood means that it is not uncommon for students to experience psychological distress or mental health difficulties (Nemic & Mamic, 2019). A recent Student Academic Experiences study conducted with over 80,000 students by The Policy Institute at King's College London and Transforming Access and Student Outcomes in Higher Education found that reported mental health difficulties rose from 6% in 2016/17 to 16% in 2022/23 (Sanders, 2023). Additionally, this report indicated a greater incidence of mental health difficulties among students who attended state schools, were from areas which had lower rates of higher education participation, identified as LGBTQ+, and whose parents did not attend university, or only their mother attended university.

### *First-generation students (FGS)*

The 93% Club (2024) are a non-profit organisation dedicated to improving the equity of access to higher education establishments, networks and resources of support which have historically benefitted privately educated peers. They derive their name from the well-documented statistic that although 93% of students in universities are from state-educated schools and are therefore the majority, they continue to be underrepresented in high-status careers, with the remaining 7% of privately educated students disproportionately occupying these spaces. The 93% Club (2024) define FGS as university students whose parents or carers did not attend university or obtain a degree, regardless of whether their siblings did so (Tyson, 2023). Within universities, it has been reported that in comparison to continuing-generation students (CGS), FGS experience higher rates of low mood and negative emotions,

as well as stress and experiences of threat (Jury et al., 2017; Stebleton & Soria, 2013). Similarly, Smith and McLellan's (2023) scoping review (k=40, N=221,655) found that stress, anxiety and depression had a higher prevalence within FGS compared to CGS and Rockwell and Kimel's (2025) systematic review (k=62, N=114697) found that FGS mental health concerns were heightened during times of academic competition and a lack of social support. Financial instability, potentially unsupportive familial attitudes, a sense of not belonging and a lack of social networks have been evidenced as factors which may contribute to the higher prevalence of mental health difficulties and detrimental outcomes within this population, including poorer academic achievement and increased drop-out rates (Pires & Chapin, 2022; Smith & McLellan, 2023).

***Intolerance of uncertainty (IU) and mental health***

IU has been defined in the literature as an "individual's dispositional incapacity to endure the aversive response triggered by the perceived absence of salient, key, or sufficient information, and sustained by the associated perception of uncertainty" (Carleton, 2016, p.31). IU has also been described as consisting of two factors, namely prospective IU, a desire for predictability, and inhibitory IU, a paralysis of action when presented with an unknown (Birrell et al., 2011). Brosschot et al.'s (2016) theory outlines how uncertainty is not a response to a perceived threat but instead, a response to an absence of perceived safety. From an evolutionary perspective, the stress response is our default setting as a way of keeping us safe, and when we perceive a sense of safety, this stress response is inhibited. Therefore, when we are uncertain about our safety, or our safety is unknown, our stress response is disinhibited.

More recently, Freeston and Komes (2023) built on Brosschot et al.'s (2016) theory and the somatic error hypothesis of anxiety (Khalsa & Feinstein, 2018) to develop the

somatic error theory of IU, which conceptualises the fundamental nature of IU as “a dislike of not knowing” (p.2). It outlines how an uncertain situation promotes an increased awareness of internal bodily sensations which do not match what is expected, such as ‘butterflies’ in the stomach. If this feeling is strong enough, it creates a sense of discomfort and unease. An individual either invites this feeling and uses it to explore new possibilities or interprets it as an absence of safety, and that something must be wrong, and makes attempts to get rid of it, reducing opportunities for sense making. It is the latter which is associated with IU.

Theory into uncertainty and IU highlight the pinnacle role that perceived safety has in shaping an individual’s response to uncertainty (Brosschot et al., 2016). For example, when individuals lack internal or external cues that signal safety, such as familiarity, predictability and structures of support, they are more likely to interpret new and vague situations as lacking safety and therefore, as potentially threatening. Taking this into account, IU may best be understood as a heightened sensitivity to a lack of safety which is met with distress, or curiosity if an individual does not have this dispositional tendency (Freeston et al., 2023). The development of IU is understood to be shaped by an individual’s repeated experiences of unpredictable environments characterised by uncertainty and a lack of control and safety which has resulted in a lowered tolerance for ambiguous situations (Carleton, 2016).IU is a construct which first became important in how we understand, formulate and treat generalized anxiety disorder (Dugas et al., 1998). Over time, it has been proposed that IU is a central transdiagnostic factor across a wide range of anxiety and other mood disorders (Einstein, 2014). Meta-analytic evidence (k=181, N=52402) supports this position for social anxiety, panic, and health anxiety, as well as obsessive-compulsive disorder, eating disorders and depression (McEvoy et al., 2019). IU is also a trans-situational factor that can increase vulnerability to distress in response to challenging life circumstances, for example, in the

context of the Covid-19 pandemic (k=85, N=69997; Akbari et al., 2024) and for parents or carers of an autistic child (Goodwin et al., 2022).

***IU at university*** Given that university is a major transition period with many unknowns, it is unsurprising that IU can be a common experience for some students, which continues to persist after the Covid-19 pandemic (Kim et al., 2023). As IU is understood from a perspective of experiencing distress in the absence of safety, it is important to consider what this means for university students. It is well-documented that the presence of IU in university environments can have detrimental outcomes. For example, Lucchese et al.'s (2023) scoping review (k=9, N=8445) highlights how IU contributes to poor mental wellbeing in the student population and IU has been found to be a predictor of psychological distress among undergraduate students (Lally & Cantillon, 2014). University is the next step in education, where academic complexity and workload increases. Qiang et al. (2024) evidenced that student experiences of IU can increase academic burnout, and the anxiety associated with frequent exams at university has been linked to IU (Huntley et al., 2022). University is also the time when students begin to make decisions about their future careers. Arbona et al. (2021) highlighted how IU and anxiety are a prominent part of career decision-making for students, whereby IU and anxiety are positively and directly associated with aspects of career decision making, such as a lack of readiness and consistent information about career paths.

Other contextual factors, such as being from a lower socio-economic background (Gellisch et al., 2024) and studying during the covid-19 pandemic (Piyakun, 2022; Lucchese et al., 2023), have also been found to contribute to IU in university. Given the context of this review, it is important to think about what this means for FGS. As research suggests that responses to uncertainty, particularly IU, are shaped by an individual's life experiences (Carleton, 2016), it is reasonable to hypothesise that FGS may have a higher dispositional tendency to experience IU. For example, they may be more likely to have experienced

repeated unpredictability, instability and a lack of control throughout their lives as they are documented to more likely be from economically disadvantaged backgrounds, have dependents and generally, have fewer cultural resources (Wright et al., 2021). Chronic exposure to unpredictability and a lack of stability may contribute to a heightened sensitivity to an absence of safety, and therefore, uncertainty in the environment. In university specifically, FGS experiences of unfamiliarity and unpredictability, and a lack of a safety net to help navigate this, is likely to contribute to an absence of safety. This, alongside prior life experiences, is likely to contribute to increased IU. Additionally, it is documented that FGS experience an increased pressure to succeed in order to move away from poverty (Stebleton & Soria, 2013) and therefore, this is likely to reduce their tolerance of ambiguous situations in the academic environment. Therefore, FGS lived experiences are likely to shape how they respond to uncertainty.

### *Uncertainty in university*

There is extensive evidence that all students in university experience uncertainty. For example, a review of healthcare students indicated that they experience uncertainty in relation to healthcare practice, wider educational processes and their sense of self throughout their undergraduate study (Moffett et al., 2021). Transitions were identified as a key time of uncertainty as students were in unfamiliar and difficult situations without a clear solution, relating back to uncertainty being a "dislike of not knowing" (Freeston & Komes, 2023, p.2).

Qualitative research has outlined six types of uncertainty that higher education students experience. This is in relation to the content and quality of academic work, its applicability to their chosen careers, using required software, classroom norms and interactions with their peers (Sollitto et al., 2018). As university is new territory for all

students, it is no surprise that uncertainty is typically a prominent part of their experience. Research into the experiences of Chinese students highlights that uncertainty stress is more likely to result in mental health difficulties, in comparison to stress about studies or wider life circumstances (Wu et al., 2020). Additionally, in university students, uncertainty stress is found to be more strongly associated with suicidal ideation (Wu et al., 2018) and both short and long-term illness, in comparison to wider life stress (Yang et al., 2018).

Although all students experience uncertainties in university, exposure to situational uncertainty may be more prominent for FGS due to a lack of familiarity with the environment. Additionally, a lack of familial university experience is likely to result in FGS having to navigate these novel experiences independently (Unverferth et al., 2012). It is also well-documented that FGS are more likely to experience financial barriers. For example, Universities UK identified that 41% of graduates who were FGS required essential financial support in university (Hall, 2024). Therefore, accessing financial support and understanding associated processes can be another high-stake unknown for FGS (Unverferth et al., 2012).

**Rationale**

Rates of mental health difficulties in the student population are continuing to grow, and due to the challenges often faced by FGS in university and reports of reduced academic outcomes in this group, these difficulties may be more common for FGS. IU is both a transdiagnostic and common trans-situational factor at university and may similarly be particularly relevant to the FGS experience. Therefore uncertainty, and any associated distress, may play a pivotal role in the wellbeing and academic achievement of FGS in university.

As a starting point, this review will summarise the literature which addresses the experiences of uncertainty among FGS, as well as establish how this reported uncertainty is

defined and measured in the literature. Ultimately, a better understanding of the experience of uncertainty in FGS could usefully inform support options to reduce or ameliorate mental health difficulties in FGS, in turn improving academic outcomes for this group (Ishitani & Kamer, 2022).

### Objectives

This review will aim to address the following objectives:

1. To synthesise existing literature on the experiences and types of uncertainty among FGS.
2. To establish how uncertainty is defined in the literature.
3. To identify how uncertainty has been measured within the literature.
4. To critically appraise the existing literature within this field.

## Methods

The review protocol was registered on the Open Science Framework (https://doi.org/10.17605/OSF.IO/GM3DH).

### Characteristics of a narrative review

A narrative review is "an approach to the systematic review and synthesis of findings from multiple studies that relies primarily on the use of words and text to summarize and explain the finding" (Popay et al., 2006, p.5). It is a method which can be used when a research question includes studies which are heterogenous in nature (Joanna Briggs Institute, 2020), for example, employing a range of study designs (Popay et al., 2006). As this is a relatively new and emerging field and uncertainty as a variable is often conceptualised differently within the literature, a narrative approach will be beneficial as they work to outline what is already known about a topic area, whilst examining and critiquing the literature within it (Sukhera, 2022).

## Procedure

The research team included a Trainee Clinical Psychologist (lead researcher) and two supervisors who were experienced in the fields of uncertainty research, clinical psychology and research methodology. Initially, the research team explored possible research questions. The lead researcher then conducted literature searches to refine the review question. The review protocol was subsequently developed, including identifying search terms, databases and inclusion and exclusion criteria. In February 2023, the lead researcher conducted a pilot to confirm the review's feasibility. The PRISMA Extension for Scoping Reviews (PRISMAScR) guidelines were used to inform reporting (Tricco et al., 2018).

## Eligibility criteria

The population of study was FGS. The 93% Club definition of FGS was used, defined as university students whose parents or carers did not attend university or obtain a degree, regardless of whether their siblings did so (Tyson, 2023). The context was any higher education environment. As this is a relatively new and emerging field, sources were also included if participants were prospective FGS (about to transition to higher education). The concept of study was uncertainty, defined by "the perceived absence of salient, key, or sufficient information" (Carleton, 2016, p.31) or a dislike of "not knowing" (Freeston & Komes, 2023, p.2).

### *Inclusion criteria:*

- Sources with the full text available.
- Sources with any country of origin.
- Sources written in the English language.
- Sources from any date.

- Published and unpublished sources which can be accessed online and contain relevant primary data.
- Grey literature, such as theses, reports and conference papers and presentations, which can be accessed online and contain relevant primary data.
- Quantitative, qualitative, or mixed methods sources.
- Sources which explicitly discuss the concept of any type of uncertainty within the FGS population.
- Qualitative sources which discuss the concept of uncertainty, or a sense of 'not knowing', within FGS in their results section and/or discussion section.

***Exclusion criteria***

- Sources which do not have the full text available. When a full text is not readily available, the researcher will seek contact with the first author to obtain the full text. If this is not received within two weeks and remains unavailable, the source will be excluded.
- Sources which are not published in the English language.
- Sources without relevant primary data (meta-analyses and any type of review papers, including systematic, scoping and literature reviews).
- Book chapters.
- Sources which do not explicitly measure or discuss the concept of any type of uncertainty within the FGS population.
- Sources with undifferentiated samples of FGS and CGS.
- Sources which measure or discuss the concept of uncertainty within FGS with an additional focus on another aspect of identity (e.g. first-generation Latinx students). If a source's research questions, aims or objectives focus on other intersectional aspects

of the sample's identity, such as ethnicity, the source will be excluded. This is to ensure that in line with this review's question, the results encompass experiences of uncertainty in relation to a participant's FGS status, not uncertainty in relation to another aspect of their identity, such as immigration status. The source will also be excluded if the focus is unclear.

- Qualitative sources which discuss the concept of uncertainty or a sense of 'not knowing' within FGS in only their introduction section.

A consistent screening process was used to check the eligibility of sources. This involved two phases.

***Phase 1 – Title and abstract screening***

All sources were screened by title and abstract for relevancy. Sources that did not contain an abstract, or where it was unclear whether they met inclusion criteria, were included in phase 2.

***Phase 2 – Full text screening***

All sources that passed phase 1 screening were screened by full text to determine their eligibility.

**Data sources and search strategy**

The search was completed on 27th October 2024 and was conducted across six electronic databases: Scopus, Web of Science, PubMed, ProQuest (including ASSIA and only searching for theses), Ovid (including PsycINFO, Medline and Embase) and Educational Resources Information Center (ERIC). The search strategy employed remained consistent across all databases, (uncertain* OR "uncertainty distress" OR "IU" OR "intolerance of uncertainty") AND ("higher education" OR "HE" OR universit* OR college OR "tertiary education" OR "TE") AND (student AND "first-generation" OR "first in family" OR "first of family").

On 31st January 2025, the reference lists of eligible sources were examined and on 2nd March 2025, forward citing searches were conducted to identify any additional relevant sources. On 6th March 2025, a grey literature search was conducted on Google Scholar. Currently in the literature it remains unclear as to the best way to effectively access grey literature with different recommendations being made as to how many Google Scholar results should be screened, with recommendations ranging between 50 to 1000 results (Haddaway et al., 2015). Therefore, a decision was made to screen the first 500 results to ensure any relevant grey literature was captured as potentially relevant sources were located within the first 300 results.

Proximity operators were used on the 'Student AND First-generation OR First in family OR first of family' terms to ensure that the term 'Student' appeared within 50 words of 'First-generation', 'First in family' and 'First of family'. For example, "first-generation" W/50 student OR "first in family" W/50 student OR "first of family" W/50 student. This increased relevancy of returned sources in relation to the review question.

Search term alerts were activated on all six databases to alert the lead researcher of newly published research which may be eligible to be included. These alerts were reviewed on 20th February 2025 to identify any eligible additional research published after the initial search.

**Data charting and items**

Data from eligible sources was extracted into two tables: characteristics of sources of evidence and results of individual sources of evidence. Separate tables were used for quantitative and qualitative data. For mixed methods studies, the relevant quantitative and qualitative aspects were included in the appropriate table.

***Characteristics of sources of evidence***

Both quantitative and qualitative tables included the following information: title, authors, publication year, country of origin, publication type, aims and purpose, methodology, sample, setting and programme of study.

### *Results of individual sources of evidence*

The quantitative table included study design, type of uncertainty, definition of uncertainty, measure of uncertainty, other factors measured, type of analysis and a summary of key findings. The qualitative table included type of analysis, how uncertainty was conceptualised, the relevant theme uncertainty was discussed within, a summary of key findings and relevant quotations.

## Critical appraisal of individual sources

Quantitative sources were critically appraised using the Critical Appraisal Skills Programme checklists for descriptive/cross-sectional studies, randomised controlled trials (RCT) and cohort studies (CASP, 2024) due to the design of quantitative sources. Qualitative sources were critically appraised using the Critical Appraisal Skills Programme checklist for qualitative studies (CASP, 2024). No amendments were made to these frameworks as they captured the necessary elements of sources.

## Synthesis of results

The synthesis was conducted in three stages. First, a summary of the general characteristics of the studies, both overall and for quantitative and qualitative studies separately, was conducted using frequency counts of relevant study features. Second, the findings of quantitative and qualitative studies were summarized separately. Third, an integrative summary of findings was conducted combining data from quantitative and qualitative studies grouped together to show patterns within the literature, for instance, by

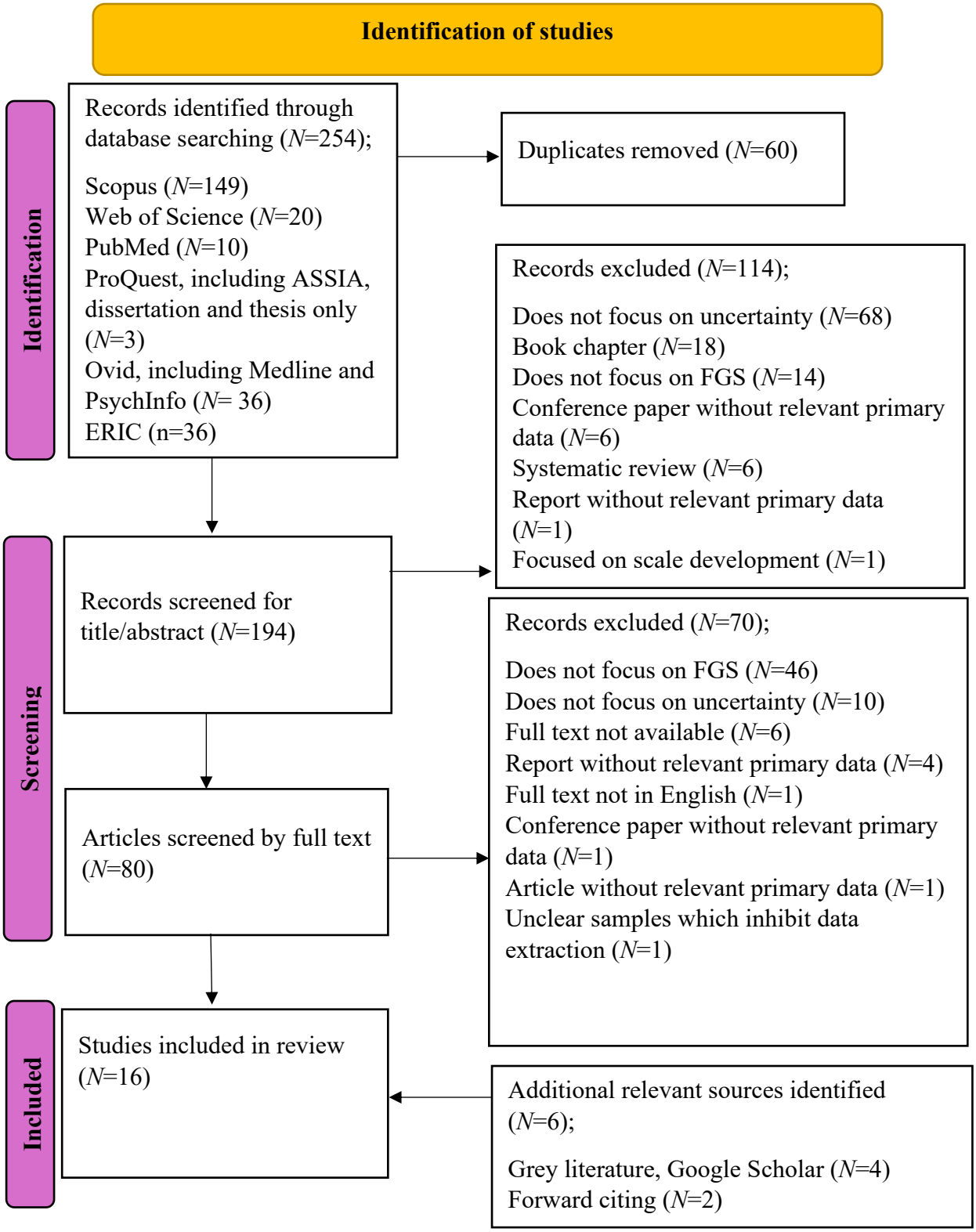
type of uncertainty examined. This summary also considered the trustworthiness of the sources.

## Results

### Search and selection

**Figure 1**

*PRISMA flowchart*



**General characteristics of included sources**

This review included 16 sources, seven quantitative (**Table 1** and **Table 3**) and nine qualitative (**Table 2** and **Table 4**). Sources ranged from 2011 to 2024. All but one source, which originated in Canada, originated in the USA and therefore, experiences of FGS were limited to those within, or transitioning into, North American universities. All but one quantitative source, which was set in a medical school, were set in universities which were classified as undergraduate, comprehensive or research-intensive. Quantitative sources were conducted within Science, Technology, Engineering and Medicine (STEM) except for one conducted within psychology. All but one qualitative source, which was set in a secondary school, were set in universities, one of which was defined as being a specific research university. Qualitative sources were not limited by a programme of study, except for one conducted with psychology students. Study populations included differentiated FGS and CGS samples or sole samples of FGS. Sample sizes ranged from 272 to 3443 for quantitative sources and 10 to 62 for qualitative sources. Four quantitative sources were cross-sectional, two were longitudinal, and one was an RCT. Most qualitative sources (N=6) conducted semi-structured interviews, except for three which conducted open-ended interviews (N=1) and focus groups (N=2).

**Table 1**

*General characteristics of individual quantitative sources*

| Source No. | Title | Authors | Year | Type | Aims and Purpose | Method | Sample | Country of Origin | Setting | Programme of Study |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | Measuring grit, self-efficacy, curiosity and intolerance of uncertainty in first-generation college and first-generation osteopathic medical students. | Jones, McCalla & Beverly | 2023 | Journal Article | To examine the relationship between grit, self-efficacy, curiosity and intolerance of uncertainty in medical students. This was examined by FGS status. | Self-report online questionnaires. | *N* = 420 medical students (89 FGS, 68 students with a physician parent, 162 students with a physician relative); *M* age = 25.4 years (*SD*=3.2); 233 female, 186 male; 2 American Indian/Alaskan Native, 35 Asian, 30 Black/African American, 2 Native Hawaiian/Pacific Islander, 20 Other, 329 | USA | Campuses within a large osteopathic medical school. | Medicine |

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|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | White/Caucasian; 18 Hispanic/Latino; 157 year 1 student, 131 year 2 student, 79 year 3 student, 53 year 4 student. | | | |
| 2 | The cost of being first: belonging uncertainty predicts math motivation and achievement for first-generation, but not continuing-generation, students. | Totonchi, Tibbetts, Lee Williams, Francis, DeCoster, Lee, Hull & Hullemann. | 2023 | Journal Article | (1) Examining expectancies, values, and costs as motivational mechanisms through which belonging uncertainty generally experienced in college predicts students' math achievement in selective | Self-report online questionnaires. | *N* = 3443 first-time, first-year students who were enrolled in at least one math course (1293 FGS,2150 CGS); *M* age = 18.39 years (*SD*=1.69); 63.2% female, 36.8% male; 45.0% White, 26.3% Black, 12.1% Hispanic, 10.0% Asian, 5.5% Multiracial, <1.0% Other. | USA (South East) | Four research universities and four comprehensive universities. | STEM |

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|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | STEM environments. (2) Exploring whether the relations among belonging uncertainty, expectancy-value-cost beliefs, and achievement differ between first-generation and continuing-generation students. | | | | | |
| 3 | Relationship between course-level social belonging | Edwards, Barthelemy & Frey | 2022 | Journal Article | To gain a baseline understanding of how course-level | Self-report online questionnaires, as well as accessing student records | Total consenting participants: *N* = 725 General Chemistry 1 students (170 | USA (Mountain West region). | A large, public, research-intensive | General Chemistry |

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|---|---|---|---|---|
| (sense of belonging and belonging uncertainty) and academic performance in General Chemistry 1. | social belonging and course performance interact throughout a semester in a General Chemistry course of a university which has a high proportion of first-generation students. | for relevant information. | FGS,526 CGS); 321 female, 404 male; 1 American Indian/Alaskan Native, 57 Asian, 9 Black/African American, 16 Hispanic/Latinx, 106 Multiracial, 1 Native Hawaiian/Other Pacific Islander, 520 White). This differed per section of analysis due to participant drop-out. Participant age not reported.<br><br>Model 1 (Early-semester social- | university . |

| | | |
|---|---|---|
| | | belonging multiple regression model): *N* = 569 (149 FGS, 420 CGS). |
| | | Model 2 (Early-semester exam performance multiple regression models): *N* = 547 (137 FGS, 410 CGS). |
| | | Model 3 (Late-semester social-belonging multiple regression models): *N* = 484 (122 FGS, 362 CGS). |
| | | Model 4 (Exam 3 performance |

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | multiple regression models): *N* = 480 (121 FGS, 359 CGS). | | | |
| 4 | The effect of social belonging on persistence to General Chemistry 2. | Edwards, Torres & Frey | 2023 | Journal Article | To examine the role of social belonging (sense of belonging and belonging uncertainty) in General Chemistry 1 in persistence to General Chemistry 2. | Self-report questionnaires and the use of previously published data. | Total consenting participants: *N* = 374 General Chemistry 2 students (81 FGS, 276 CGS); 186 female, 188 male; 32 Asian, 66 Black, Indigenous, and People of Colour, 270 White. Participant age not reported.<br><br>Model 1: *N* = 272 (63 FGS, 209 CGS). | USA (Mountain West region). | A large, public, research-intensive university. | General Chemistry |
| 5 | Testing basic assumptions | McPartlan, | 2020 | Journal Article | To investigate the | Self-report questionnaires, | Total consenting participants: | USA | A four-year | Biological Science. |

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| reveals when (not) to expect mindset and belonging interventions to succeed. | Solanki, Xu & Sato. | effectiveness of growth mindset and social belonging interventions in a college setting with large numbers of traditionally underrepresented groups. | student's responses to writing prompts and university records. | *N* = 1091 first-year biological science majors students (46% FGS); 68% female, 32% male, <1% declined to state gender; 52% Asian, 27% Hispanic, 15% White, 4% Black, 3% Other; 40% from low-income backgrounds. Participant age not reported.<br><br>Participants were then randomised by FGS status. Growth Mindset Intervention: *N* = 274 (127 FGS, 147 CGS). | undergraduate institution at the University of California. |

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| | | | | | | | Social Belonging Intervention: *N* = 269 (122 FGS, 147 CGS). Double Intervention: *N* = 273 (125 FGS, 148 CGS). Control: *N* = 275 (124 FGS, 151 CGS). | | | |
| 6 | Closing the social achievement gap for first-generation students in undergraduate biology. | Harackiewicz, Canning, Tibbetts, Giffen, Blair, Rouse & Hyde | 2014 | Journal Article. | To establish whether a Values Affirmation (VA) intervention was effective in closing the social achievement gap and in promoting | Self-report questionnaires. | *N* = 772 undergraduate students (159 FGS, 613 CGS);454 females, 318 males; 53 underrepresented minorities (African American, Hispanic, or Native American), 719 Majority (Asian, | USA (Mid West) | A large, public university. | Biology. |

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| | | | | | FGS decisions to continue in biology. Additionally, a separate survey was completed to characterise the experience of FGS in biology. This separate survey was the section of interest. | | Asian American or White). Participant age not reported. | | | |
| 7 | Affirming independence: exploring mechanisms underlying a values affirmation intervention | Tibbetts, Harackiewicz, Canning, Boston, Priniski & Hyde | 2016 | Journal Article | To examine whether these performance effects observed in an introductory biology course persisted over | Self-report questionnaires. | *N* = 333 psychology undergraduate students (111 FGS, 222 CGS); *M* age = 18.73 years (*SD*=1.44); 9% Asian/Asian | USA | University of Wisconsin-Madison. | Introductory psychology course. |

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| for first-generation students. | subsequent semesters (Study 1A). To examine whether either independence or interdependence, measured with multiple methods, accounted for the effect of the intervention on performance and on students' concern about their background (Study 1B and | American, 6% African American, 3% Hispanic, 1 participant Native American, 70% White, 2% declined to answer; 67% first-year students. |

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| | 1C). To test hypotheses experimentally by manipulating the extent to which students wrote about independence and interdependence in VA essays and testing the effects on performance on a math test (Study 2). Pre-test cross-sectional measures are | |

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| | of interest in this study. |

**Table 2**

*General characteristics of individual qualitative sources of evidence*

| Source No. | Title | Authors | Year | Type | Aims and Purpose | Methodology | Sample | Country of Origin | Setting | Programme of Study |
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| 1 | "You're doing great. Keep doing what you're doing": socially supportive communication during first-generation college students' socialisation. | Gist-Mackey, Wiley & Erba | 2018 | Journal Article | To explicate the role of various types of social support as an integral component of the socialization processes, including support from both formal institutional and informal non-institutional sources. | Semi-structured interviews. | *N* = 28 FG college students; age ranging from 18-19 years; 14 females, 14 males; 3 Asian, 4 African/African American, 4 Black, 1 Haitian, 9 Hispanic/Latinx, 3 Mexican, 4 White/Caucasian; 1 PreNursing major, 1 Microbiology major, 1 International Studies major, 2 | USA (Mid West). | A large, predominantly white, public state university | Any |

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| | | Psychology major, 2 Exercise Science major, 1 Marketing major, 3 Pharmacy major, 1 Sociology major, 1 Biology major, 5 Engineering major, 1 PreBusiness major, 1 Latin American studies major, 2 Communication major, 1 Athletic Training major, 1 Community Health major, 1 Journalism major, 1 English and Women's Studies major, 1 Entrepreneurship major, 1 Sports Medicine major. |

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| 2 | Finances and future health: understanding barriers to first-generation student utilization of federal work-study. | Dissen & Tome | 2024 | Journal Article. | The research seeks to contribute to gaining greater awareness of first-generation EOF students' knowledge, beliefs, and attitudes. Specifically, how do first-generation EOF students think about the role of financial literacy and Federal Work-Study in terms of their contributions to students' current and future health and well-being and their overall academic success? | Semi-structured focus group interviews.[a] | *N* = 45 incoming first-year students enrolled and an active participant in the Summer 2023 EOF program. Participant age not reported. | USA | Three four-year public, comprehensive institutions (Stockton University, Rutgers University-Camden and Rowan University) located within the southern region of New Jersey. | Any |
| 3 | Social capital and post- | Missaghian | 2021 | Journal Article | To examine who students from low- | Semi-structured | *N* = 30 secondary school students (26 | Canada (Ontario). | A secondary school in a | Any |

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| | secondary decision-making alignment for low-income students. | | | | income backgrounds turn to for post-secondary advice during the application process. | interviews and brief accompanying survey. | FGS, 4 non-FGS whose parents experienced higher education outside of Canada so were unfamiliar with the Canadian higher education system); 18 females, 12 males; 20 Black, 10 South, West and Southeast Asian. Participant age not reported. | | deprived area of Ontario | |
| 4 | Navigating uncertainty and responsibility: understanding inequality in the senior-year transition. | Silver & Roksa | 2017 | Journal Article | To examine the senior-year transition for first-generation and continuing-generation students and highlight the role of parents in this transition. | Semi-structured, in-depth interviews. | *N* = 62 students (26 FGS, 36 CGS); 38 female, 24 male; 9 African American, 11 Asian American, 7 Hispanic/Latino, 5 Biracial/Multiracial, 30 White; 17 Arts | USA (Mid-Atlantic region). | A large, public, research university. | Any |

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| | | | | | More specifically, we examine how college seniors manage uncertainty and responsibility as they plan for life after college and how that varies by parental education. | | and Humanities major, 14 Math and Natural Sciences major, 31 Social sciences major. Participant age not reported. | | | |
| 5 | Entering the workforce or going to graduate school: themes in psychology alumni decision making. | Strapp, Bredimus, Wright, Cochrane & Fields | 2021 | Journal Article | To explore how psychology majors decide whether to enter the workforce or attend graduate school. | Semi-structured interviews | *N* = 32 total students who graduated within 5 years previous (13 FGS, 19 non-FGS); 22 female, 10 male; 2 American Indian/Alaska Native, 2 Biracial/Multiracial, 24 White; 6 Hispanic/Latinx. | USA | Western Oregon University. | Psychology |

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| | | | Participant age not reported.<br><br>Students who entered the workforce following graduation: *N* = 22 (11 FGS, 11 non-FGS); 16 female, 6 male; 1 American Indian/Alaska Native, 17 White; 5 Hispanic/Latinx.<br><br>Students who commenced a graduate program following graduation: *N* = 10 (2 FGS, 8 non-FGS); 6 |

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| | | | | | | | female, 4 male; 1 American Indian/Alaska Native, 2 Biracial/Multiracial, 7 White; 1 Hispanic/Latinx. | | | |
| 6 | "Those invisible barriers are real": The progression of first-generation students through doctoral education. | Gardner & Holley | 2011 | Journal Article | To examine the experiences of first-generation doctoral students. Three research questions guided the study: (1) How do first-generation doctoral students negotiate the pipeline to graduate education? (2) How do these experiences influence their | Semi-structured interviews. | *N* = 20 FGS college graduates; age ranging from 23-58 years; 16 females, 4 males; 3 African American, 1 African American/Hispanic, 1 Hispanic, 15 White; 4 History discipline, 1 Forestry discipline, 2 Interdisciplinary studies, 1 Biochemistry discipline, 1 | USA | Two institutions that rank in the top 10% of universities in the U.S. that award doctorates to FGS. | Any |

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| | | | | | desire and pathway to graduate school? and (3) What is the overall experience and satisfaction of first-generation doctoral students? | | Counselling discipline, 2 Literacy discipline, 2 Psychology discipline, 2 Chemistry discipline, 2 English discipline, 1 Political Science discipline, 2 Social work discipline. | | | |
| 7 | How first-generation college students adjust to college. | Gibbons, Rhinehart & Hardin | 2019 | Journal Article | To investigate how first-generation college students adapted and adjusted to college life. | Focus groups. | *N* = 15 FG college students; 11 females, 4 males; 1 Asian American, 2 African American/Black, 2 European American/White, 3 Biracial/Multiracial; 8 first-year, 6 sophomore, 1 junior. | USA (South East) | Large public-state university. | Any |

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| | | | | | | | Participant age not reported. | | | |
| 8 | Transitioning to College: Experiences of Successful First-Generation College Students. | Ricks & Warren | 2021 | Journal Article | To explore the role cultural and social capital plays in successful FGCS transition: "what are the experiences of first-generation college students during the transition to college and how did these experiences lead to success?". | Semi-structured interviews. | *N* = 10 FGS; age ranging from 20-24 years; 8 females, 2 males; 8 Black, 1 Multiracial, 1 White; 3 Social Work major, 1 Criminal Justice major, 2 Psychology major, 1 Mass Communications major, 2 Biology major, 1 Political Science major. | USA (South East) | A historically black university. | Any |
| 9 | Experiences, Supports, and Strategies of First-Generation | Watts, Garfield & Davis | 2023 | Journal Article | To explore FGCS' perceptions and experiences related to successes, barriers/challenges, and their | Open-ended interviews. | *N* = 10 FGS; M age = 26.5 years; 8 females, 2 males; 1 African American, 9 Hispanic/Latinx. | USA (Texas) | A public, four-year university in Central Texas. | Any |

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| College Students. | developed strategies and/or supports for success. |

[a] Study was mixed methods, however only the qualitative element was relevant.

## Quality appraisal

### *Quantitative sources*

The CASP (2024) checklists for cross-sectional studies, RCTs and cohort studies were used to critically appraise validity, risk of bias and methodological rigour in cross-sectional, RCTs and longitudinal studies respectively. Details of assessment at each criterion are illustrated in **Appendix A** whereby green, orange and red indicates the criteria were met, partially met or where it was difficult to conclude and not met, respectively.

In line with the CASP criteria, minor concerns were identified in cross-sectional sources 1, 2 and 7. These three sources did not report effect sizes within their results and sources 2 and 7 had a lack of clarity in data collection processesand priori power analyses were not reported. Issues around recruitment were also identified in sources 1 and 7 whereby there was potential bias reported in the sample of source 1 and a lack of clarity in the representation of source 7's sample.

Minor to moderate concerns were identified in sources 3, 4, 5 and 6. Longitudinal sources (sources 3 and 4) identified issues whereby it was difficult to conclude sample representation and confounding variables, and their potential bias, were not explicitly discussed. Appraisal of the RCT (source 5) identified issues with bias reduction, due to only participants being blind to the intervention they received, and analysis rigour, due to confidence intervals not being reported. Appraisal of the cross-sectional source (source 6) identified issues due to the sample representation being unclear, a lack of clarity in the way questionnaires were completed, effect sizes not being reported, and no comment on the credibility of findings.

### *Qualitative sources*

The CASP (2024) checklist for qualitative sources was used to critically appraise the validity, risk of bias and methodological rigour in qualitative sources. Details of assessment at each criteria are illustrated in **Appendix B** whereby green, orange and red indicates the criteria were met, partially met or difficult to conclude and not met, respectively.

In line with the CASP criteria, minor concerns were identified in sources 4, 8 and 9. Appraisal of these sources identified issues with their data collection as they did not explicitly discuss information power and source 8 did not provide sufficient justification for the research setting. They also provided limited, or no information around how their research was described to participants and although source 4 raised no ethical concerns, they did not include an explicit ethical statement. Minor to moderate concerns were identified in sources 3, 5, 6 and 7. Appraisal identified issues with data collection due to a lack of justification around the research setting, method employed and information power, and a lack of explicit information about how data was collected. These sources also lacked researcher reflexivity whereby there were either a lack of discussion around the researchers position or role in the study, or, if this discussion was present, there was a lack of explicit consideration around associated potential bias. For sources 3, 5 and 6, this was also not discussed in relation to the findings. It was also either unclear how the research was described to participants, or an explicit ethical statement was not included. Issues with research design were also identified in sources 3, 5 and 7 whereby although as a reader this method felt appropriate, there was no explicit justification for this.

Moderate to major concerns were identified in sources 1 and 2. These two sources had a lack of justification of research design and discussion around information power, and researcher reflexivity and associated potential bias. Appraisal of source 1 also identified issues with recruitment, due to limited justification around participant sample, and ethics, as there was no discussion around how research was described to participants and no statement

of ethics. Appraisal of source 2 additionally lacked discussion around the credibility of findings.

**Results of individual sources of evidence**

The key design and analysis features and a structured summary of results of quantitative sources can be found in **Table 3**. See **Appendix C** for raw data extraction.

**Table 3**

*Results of individual quantitative sources of evidence*

| Source No. | Study Design | Type of Uncertainty | Uncertainty Definition | Measure of Uncertainty | Other Measured Factors | Analysis Type | Summary of Key Findings |
|---|---|---|---|---|---|---|---|
| 1 | Cross-sectional | Intolerance of uncertainty | No definition provided. | Intolerance of uncertainty scale – short form (Carleton et al., 2007). | Grit, self-efficacy and curiosity. | Bivariate Pearson correlations and a hierarchical linear regression model. | Among 420 medical students, of whom 89 were FGS, 68 had a physician parent and 162 had a physician relative, students with a physician relative had significantly lower total IU scores, compared to students without a physician relative. Additionally, students with a physician relative or physician parent had significantly lower prospective IU scores compared to those who did not have a physician relative or parent. However, no significant differences were observed in the total or prospective IU scores for FGS. Regression analyses concluded that having a physician relative was predictive of lower total IU scores and prospective IU scores. |

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| 2 | Cross-sectional | Belonging uncertainty | "*Worries about one's ability to fit in with others and build quality social relationships*" | Two-items of The Belonging Uncertainty Scale (Walton & Cohen, 2011). These included, 1) "Sometimes I feel that I belong in college, and sometimes I feel that I don't belong in college", 2) "When something bad happens, I feel that maybe I don't belong at college". Item | College generation status, expectancy-value-cost in math & math achievement. | Descriptive statistics, multi-group confirmatory factor analyses, multi-group measurement invariance and a series of single-group structural equation models. | In a study of 3443 first-time, first year students who were enrolled in at least one math course, of whom 1293 were FGS and 2150 were CGS, FGS had greater belonging uncertainty in comparison to CGS. For these FGS, belonging uncertainty was negatively associated with their motivational beliefs, which subsequently, negatively predicted their achievement. Additionally, the negative relationship between belonging uncertainty and expectancies was stronger for FGS compared to CGS, and the positive relationship between belonging uncertainty and costs was also stronger for FGS, compared to CGS. For both FGS and CGS, belonging uncertainty did not predict values. Additionally, math expectancies, values, and costs significantly predicted math grades for both FGS and CGS, however this relationship was stronger in FGS. Lower success expectancies and costs mediated the relationship between |

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| | | | | 2 only used in analysis due to the single-item scale showing better validity. | | | belonging uncertainty and achievement for FGS. Math expectancies and costs significantly explained the negative relationship between belonging uncertainty and math achievement for FGS, but not for CGS. |
| 3 | Longitudinal | Belonging uncertainty | "*an uncertainty of the quality of those social relationships and a concern about one's academic abilities*" | A 6-item survey adapted from a previously developed measure of social belonging (items 1-4 used to measure sense of belonging and items 5-6 used to measure | Social belonging, academic preparation and course grades. | Multiple linear regression. | Being a FGS did not predict levels of belonging uncertainty at the start of a General Chemistry 1 course. However, gender and being a FGS impacted the relationship between levels of belonging uncertainty at the beginning of the semester and mid-term exam performance. Specifically, for female FGS, as belonging uncertainty increased, mid-term exam performance decreased. However, this significant interaction was not observed when exploring the relationship between late semester belonging uncertainty and exam 3 performance. Additionally, although overall early semester belonging uncertainty predicted later semester |

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| | | | | belonging uncertainty). | | | belonging uncertainty, being a FGS was not a significant moderator of this. For FGS, late-semester belonging uncertainty level did not predict non-cumulative exam 3 performance. |
| 4 | Longitudinal | Belonging uncertainty | "*a student's perception of the stability of one's belonging or perceived ability relative to their peers in the class*" | A 6-item survey adapted from a previously developed measure of social belonging (items 1-4 used to measure sense of belonging and items 5-6 used to measure belonging uncertainty). | General Chemistry 1 course grade & persistence to General Chemistry 2 | Multiple linear regression and logistic regression. | Within a study of 272 General Chemistry students, of whom 63 were FGS, FGS status did not predict early semester belonging uncertainty in a General Chemistry 2 course. |

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| 5 | Randomised Controlled Trial | Belonging uncertainty | No definition provided. | A single item ('When something bad happens, I feel that maybe I don't belong at UCI') from a small scale of belonging uncertainty (Yeager et al., 2016). | Growth mindset and performance and enrolment measures. | T-test & multiple regression. | At baseline, FGS were found to have somewhat low levels of belonging uncertainty. Additionally, FGS did not have significantly greater belonging uncertainty in comparison to their peers. Overall, when delivered independently and when delivered alongside a growth mindset intervention, the social belonging intervention had no main effect on belonging uncertainty and being a FGS did not significantly moderate this relationship. |
| 6 | Cross-sectional [a] | Belonging uncertainty | No definition provided. | Two-items from the Walton & Cohen (2007) and (2011) measures of belongingness which measure belonging | Motives for attending college, academic and social concerns, confidence about performance and concern about background. | Means, correlational analyses and regression. | In a study of 772 undergraduate students, of whom 159 were FGS, FGS had significantly higher levels of belonging uncertainty in comparison to CGS. |

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| | | | | uncertainty specifically were adapted to relate to this university of study. | | | |
| 7 | Cross-sectional [b] | Belonging uncertainty | No definition provided. | Two-items from the Walton & Cohen (2007) and (2011) measures of belongingness which measure belonging uncertainty specifically. These were adapted to relate to this university of study. | Motives for attending college, academic fit and academic belonging. | Means, correlational analyses and regression. | At baseline, FGS had significantly higher levels of belonging uncertainty in comparison to CGS. |

[a, b] Only cross-sectional element of source was relevant.

Quantitative sources (N=7) typically quantified the experience of a particular type of uncertainty in FGS and compared this to that experienced by CGS. Out of seven quantitative sources, six explored experiences of belonging uncertainty, and one explored IU. Three out of six sources exploring belonging uncertainty provided a definition of this term which were "worries about one's ability to fit in with others and build quality social relationships" (Totonchi et al., 2023, p.2), "an uncertainty of the quality of those social relationships and a concern about one's academic abilities" (Edwards et al., 2021, p.1), and "a student's perception of the stability of one's belonging or perceived ability relative to their peers in class" (Edwards et al., 2023, p.1). Belonging uncertainty was measured using two-items from the Walton & Cohen (2007/2011) measure of belongingness (N=5) and one-item from Yaeger et al.'s (2016) small scale of belonging uncertainty (N=1). The source which explored IU did not provide a definition of this, although this is a well-defined term within current literature. IU was measured using the Intolerance of Uncertainty scale – short form (Carleton et al., 2007).

**Table 4** includes key design features, a structured summary of key findings and relevant quotations.

**Table 4**

*Results of individual qualitative sources of evidence*

| Source No. | Analysis Type | Uncertainty Conceptualisation | Relevant Theme | Summary of Key Findings | Relevant Quotations |
|---|---|---|---|---|---|
| 1 | Open, focused and theoretical coding. | A sense of not knowing and having a lack of information. | Consuming organisationally produced media. | In a study of 28 FGS at university, it was found that when FGS arrived on campus, they were exposed to new support systems, such as friends, student peers, residence hall assistants, advisors, mentors, professors, staff, and teaching assistants. FGS often engaged in informational support interactions with these new support systems. This was understood in the context of aiming to reduce high amounts of uncertainty. FGS also reported relying on direct mail, such as university brochures, as a method of reducing their uncertainty. | "A lot of my questions were answered through brochures that they sent in the mail." p.59 |
| 2 | Grounded theory | A sense of not knowing and having a lack of information. | Feelings of uncertainty and lack of preparation and readiness. | In a study of 45 FGS who were enrolled on the Education Opportunity Fund programme, experiences of uncertainty were specifically related to financial literacy whereby participants felt that they did not have the | "I have no clue how to do the financial aid process... my brother got to go to college, but he didn't understand. Even though I applied to college, I don't understand how to |

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| | | | | financial literacy skills, or the competence required to understand how to finance their education. As a result, they were uncertain about whether starting their undergraduate degree was a prudent financial decision. These experiences of uncertainty contributed to stress, anxiety and worry for participants. | apply for financial aid. That's, like, the most terrifying thing I've seen. I stay up at night and I worry and I wonder if I did everything correctly, and if I'm gonna wake up one day and I'm gonna find I'm not even enrolled." p.52 |
| 3 | A two-phase coding process. | A sense of not knowing and having a lack of information. | Bonding social capital: aligned but uncertain. | In a study of 30 secondary school students considered to be FGS, a large proportion of students reported having very few people that they could seek advice from about their postsecondary education. As well as having few ties, they did not consult these ties frequently which lead to uncertainty in decision-making processes. When students attempted to seek this advice from people of a similar background to them, they were more likely to choose an education pathway which did not align with their desired career, in comparison to students who sought advice from people of a different background to them. Not all students who reported seeking advice from people of a similar background chose an | Being "unsure" about a potential pathway. p.9 |

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| | | | | education pathway which did not align with their desired career, however, they remained vulnerable to uncertainty in their postsecondary choices. Additionally, a large amount of students who chose the right education pathway for their desired career also exhibited uncertainty in their decision-making. It was felt that if students met with their guidance counsellors, they would have access to more accurate information which could have prevented choosing the incorrect education pathway for their desired career or uncertain decision-making. | |
| 4 | Open and closed coding. | A sense of not knowing and the fear of the unknown, as well as having a lack of information. | Inequality in parental resources and information. | In a study of 62 students, with whom 26 were FGS, FGS shared that although their parents were able to provide them with emotional support, they lacked the information and financial resources required to support their transition to college which added to their experiences of uncertainty. | "[My parents] know that I wanna continue education in the near future. They're supportive . . . Since they didn't go to undergrad either, it's not that they don't understand, but it's a different perspective… I mean my dad kind of sees it in a way like he didn't go to college and he's still successful" p.256 |

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| 5 | Consensual qualitative research procedures (Hill et al., 2005). Chi-squared test completed within qualitative research. | A sense of not knowing. | Uncertainty (unsure about next steps and uncertainty regarding graduate school). | Within a study of 32 students, of whom 13 were FGS, CGS talked about uncertainty more than FGS in relation to considering their next steps. When discussing graduate school, both CGS and FGS talked about uncertainty with no notes of this being at differing levels. | “I think I had a common panic moment like a lot of students do when they’re like AHH! What am I doing next?”. p.149 |
| 6 | Constant comparative method (Glaser, 1978). | A sense of not knowing and having a lack of information. | Knowing the rules. | Within a study of 20 first-generation doctoral students, participants described how deciding whether to access higher education was a challenging uncertainty in itself due to having a lack of knowledge. The importance of having the knowledge before making the decision about whether to access higher education was highlighted. Participants generally discussed how they had less knowledge and resources about higher education in comparison to their peers and instead, they had to learn about this as they proceeded through. | "If you got football you can go to school. Well, I didn’t have football so it was obvious I wasn’t going because I didn’t know you could go to school without football. That line of thinking was not in my world of knowledge and understanding.". p.83<br><br>"You need to be aware of this game before you start playing it to make sure this is a game you want to play. |

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| | | | | | Once you get to a certain level there is no backing out." p.83 |
| 7 | Focus group data analysis procedures described by Rabiee (2004) and informed by Hsieh & Shannon (2005). | A sense of not knowing and having a lack of information. | Barriers (lack of information). | Within a study of 15 FGS in college, participants described lacking information in various situations when preparing for and transitioning to college. Specifically, they discussed uncertainty regarding obtaining and renewing financial aid and involvement in additional activities which would support them to get the most out of their college experiences. They described that this lack of knowledge and experiences of uncertainty caused them to experience stress. | "Make sure you understand those loans too. Some people will go out and spend it and not understand that you have to pay those back with interest on them." pp.497<br><br>"I had orientation the day before class started because I didn't know I was supposed to do it." p.497 |
| 8 | Data reduction and elimination, open coding and theme development. | A sense of not knowing and having a lack of information. | Questions and confusion during the first year of college. | Within a study of 10 FGS, participants described having a lack of information and knowledge about vital college processes and procedures, despite attending a summer orientation. Specifically, they were unclear about academic-related matters, financial aid and housing procedures, course registration and developing a course plan to ensure a timely graduation. | "Freshman year definitely wasn't easy… I knew nothing about Blackboard [learning management system] and going on the websites and looking for work online was hard. I also didn't know anything about syllabi. It was very different from high school." p.6 |

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| | | | Personal and social experiences. | One participant described that their personal determination supported them to navigate the uncertainty within higher education. | "I was my siblings' first example of somebody who can do it [complete college] without their parents, and I needed to make it look flawless and doable. I couldn't just give up and not being comfortable at first was not a good reason to give up." p.7 |
| 9 | Thematic analysis | A sense of not knowing. | Financial uncertainty. | Within a study of 10 FGS, participants described experiencing uncertainty in relation to their financial situation each year, especially as they were the primary or sole source of financial support for their education. They further described that they managed these feelings of uncertainty by discussing them with other FGS. | "Mostly it comes from the financial side, being worried about every year. You kind of have this… inkling of like, am I going to get the same school aid next year? Am I going to have to pay more? Am I going to have to take out loans? I feel other kids who don't have to, they can be focused on moving on to the next year." p.41<br><br>"But then I also have made other friends who are in the same [boat] and you can kind of talk to them about it and that makes it helpful." p.41 |

All qualitative sources defined and conceptualised uncertainty more generally as ‘not knowing’, as opposed to definitions for specific types of uncertainty. They reported some types of uncertainty and additionally discussed causes of uncertainty and mechanisms which FGS employ to cope with uncertainty. Regarding types of uncertainty, financial uncertainty (N=2) and uncertainty about decision-making (N=1) were discussed. Sources also discussed causes of uncertainty to be a lack of information (N=4) and identified that seeking information (N=2), connecting with others (N=1) and determination (N=1) supported them to reduce their uncertainty.

The next section will synthesize the findings across both quantitative and qualitative sources in terms of types of uncertainty, causes of uncertainty, and coping strategies, while considering the trustworthiness of the sources.

### *Types of Uncertainty*

**IU.** One quantitative source explored IU and found that medical students with a physician relative had significantly lower overall and prospective IU scores(Jones et al., 2023). However, total and prospective IU scores did not differ based on FGS status. Appraisal deemed this source trustworthy.

**Belonging uncertainty.** Three quantitative sources found that FGS experienced greater levels of belonging uncertainty, in comparison to CGS, for example, in a pre-test, baseline survey (Tibbets et al., 2016) and a separate survey study (Harackiewicz et al., 2014). Another source further demonstrated that when FGS in a math class experience belonging uncertainty, this negatively impacts their motivational beliefs, perceived costs and therefore, achievements, more than it does for CGS (Totonchi et al., 2023). Appraisal indicated that two of these sources (Totonchi et al., 2023; Tibbets et al., 2016) were deemed trustworthy,

however one source had minor to moderate concerns which should be considered when weighing up the strength of the evidence. (Harackiewicz et al., 2014).

Three quantitative sources showed contradictory findings, whereby being FG was not a predictor of experiencing belonging uncertainty at the start of two General Chemistry courses (Edwards et al., 2021/2023), and although FGS experienced somewhat low levels of belonging uncertainty, this was not significantly greater than in CGS (McPartlan et al., 2020). Despite FGS status not significantly predicting belonging uncertainty, Edwards et al. (2021) found that when FGS did experience belonging uncertainty, this was associated with costs to their mid-term exam performance. Appraisal showed that these three sources had minor to moderate concerns which should be considered in interpretation.

When reviewing contradictory findings, it is important to consider the role of critical appraisal. In comparison to McPartlan et al.'s (2020) RCT, the remaining three sources with minor to moderate concerns (Edwards et al., 2021/2023; Harackiewicz et al., 2014) had much smaller samples of FGS compared to the CGS samples. Hackiewicz et al. (2014) also did not report a power analysis or effect sizes, therefore the findings may have limited statistical power. Additionally, as Edwards et al. (2021/2023) had limited discussion around confounding variables, there may be risk of bias. Therefore, evidence which summarises that FGS experience greater levels of belonging uncertainty in comparison to CGS may be more trustworthy.

**Financial uncertainty.** Two qualitative sources discussed how FGS experienced uncertainty around finance. Some participants described feeling uncertain about what their financial situation would look like when studying, which was due to them being the primary source of their own finances (Watts et al., 2023). Additionally, participants described feeling uncertain about whether they possessed the financial literacy skills required to understand

how to navigate and access necessary financial support (Dissen & Tome, 2024). Because of this, they felt uncertain about whether starting an undergraduate degree was a good decision and described these experiences as contributors to stress, anxiety and worry. Appraisal considered Watts et al. (2023) trustworthy. However, moderate to major concerns were identified for Dissen & Tome (2024) whereby there may be potential bias due to a lack of discussion around the role of researcher reflexivity and credibility of the findings.

**Uncertainty in decision-making.** One qualitative source illustrated that CGS talked about uncertainty more than FGS when considering the next steps in their education and career (Strapp et al., 2020). However, both FGS and CGS talked about uncertainty to the same degree when discussing graduate school specifically. Appraisal deemed this source to have minor to moderate concerns due to potential bias as although researcher reflexivity was discussed, there was a lack of consideration in the role of this.

### *Factors which contribute to uncertainty*

**A lack of information or knowledge.** Three qualitative sources discussed how FGS experienced a general lack of information about university when transitioning into these establishments. They discussed how their parents did not possess the relevant information to share with them (Silver & Roska, 2017) and this meant that they were uninformed about whether to access university (Gardner & Holley, 2011). Therefore, uncertainties were present before transition. Additionally, despite attending a summer school, a lack of information remained for FGS, specifically around academic-related aspects, finances, housing and course registration and planning (Ricks & Warren, 2021). This contributed to FGS experiencing uncertainty, with them having to learn about these processes whilst studying (Gardner & Holley, 2011). A further qualitative source found that FGS had very few people that they could seek advice from about their postsecondary education, which at times resulted

in choosing an education pathway which did not match their intended career, and those that did have people to seek advice from were rarely consulted, leading to uncertainty when making decisions about their education (Missaghian, 2021). Appraisal indicated that two of these sources were deemed trustworthy (Silver & Roska, 2017; Ricks & Warren, 2021) and two identified minor to moderate concerns due to a potential risk of bias around a lack of discussion into researcher reflexivity, including the role of the researcher and their relationships to the study and participants (Gardner & Holley, 2011; Missaghian, 2021).

### *How do FGS cope with uncertainty*

**Seeking information.** One qualitative source illustrated how when FGS enter university and experience uncertainty, they engage with new support systems, such as advisors, student peers or professors, in a way which elicits information (Gist-Mackey et al., 2018). They also relied on university brochures and these strategies helped reduce their uncertainty. Critical appraisal indicated moderate to major concerns overall and potential bias should be considered in interpretation due to a lack of discussion around the researcher's role and relationships.

**Connecting with others.** Another qualitative source described how FGS connect with others of similar backgrounds as a way of managing their feelings of uncertainty, particularly in relation to financial concerns (Watts et al., 2023). Appraisal deemed this source trustworthy.

**Determination.** In one qualitative source, one FGS described how their personal determination to achieve in university is what supports them to manage uncertainties (Ricks & Warren, 2021). Appraisal deemed this source trustworthy.

## Discussion

This review provides an overview of the current literature exploring the experiences of uncertainty among FGS in university. The aim of this narrative review was to summarise the literature, including the types of uncertainty that are experienced by FGS and how uncertainty is defined and measured, as well as critically appraise the identified sources. Both quantitative (N=7) and qualitative (N=9) sources were identified to be relevant in addressing these aims and were synthesised to answer these questions. Implications of these results for practice and theory will be discussed, along with future research recommendations.

### Summary of evidence

#### *Aim 1: To synthesise existing literature on the experiences and type of uncertainty among FGS*

The available literature originated from North America. Although some suggestions can be made from this review about how to better support FGS in university, this context must be considered. It is likely that differences in university systems across the world may account for nuances in the experience of FGS across these environments.

Quantitative sources compared rates of uncertainty in FGS to CGS. Rates of IU were not found to differ between FGS and CGS, however, in some cases, rates of belonging uncertainty were higher in FGS, in comparison to CGS (Harackiewicz et al., 2014; Tibbets et al., 2016; Totonchi et al., 2023). Increased rates of belonging uncertainty for FGS negatively impacted their motivational beliefs and the drawbacks they associated with academic tasks, as well as their overall academic performance (Totonchi et al., 2023). Sources which did not find this same comparison found that FGS and CGS experienced similar rates of belonging uncertainty (Edwards et al., 2021; Edwards et al., 2023; McPartlan et al., 2020). Despite this, the experience of belonging uncertainty again, negatively impacted FGS mid-term exam

performances (Edwards et al., 2021). Therefore, there is evidence that FGS experience belonging uncertainty to a greater extent than CGS in university, which negatively impacts their academic performance. Even when the rates of belonging uncertainty were not greater for FGS, these negative consequences persisted. These conclusions make sense given that FGS are at an increased risk of mental health difficulties, poorer academic achievement and drop-out (Smith & McLellan, 2023), all of which are positively correlated in this group (Ishitani & Kamer, 2022). The fact that no differences were found in IU between FGS and CGS contradicts the current literature which assumes that due to the unique characteristics and experiences of FGS, they may be more likely to perceive an absence of safety in the experience of uncertainty at university and as such, they may be more prone to IU.. FGS also described experiencing financial uncertainty, understood as a sense of not knowing about financial processes, and greater uncertainty in decision making related to their future education.

Given the fact that qualitative sources conceptualised uncertainty as a sense of not knowing, it is no surprise that one of the contributing factors to uncertainty was found to be a lack of information or knowledge (Ricks & Warren, 2021). This finding is consistent with the current literature which discusses how universities continue to be viewed as a space of privilege whereby FGS lack the knowledge of how to access required information, as well as the support networks where valuable information can be sought (Wainwright & Watts, 2019). Therefore, it makes sense that FGS report seeking information from new support systems and relying on university brochures to reduce uncertainty (Gist-Mackey et al., 2018). FGS also use connection with others from similar backgrounds to reduce uncertainty (Watts et al., 2023) and research shows that the development of mentoring schemes for FGS is imperative in providing this population with more expansive support networks (Thurman et al., 2023). Finally, this review highlighted the strengths of being a FGS, which is often overlooked in

research (Lee, 2023). One FGS described how their personal determination helped them to navigate uncertainties (Ricks & Warren, 2021). This aligns with research by Nkansah & Ikbal (2023) who found that the experiences of FGS in Africa, such as being from a deprived background and wanting to contribute to their parent's income, contributed to their resilience which encouraged them to persist and achieve.

These results evidenced different types of uncertainty experienced by FGS which were either situational, whereby more general uncertainty arises within a particular context, or a specifically defined construct, an operationalised psychological concept which captures specific ways individuals experience, interpret, or respond to uncertainty. For example, uncertainty in relation to financial processes and uncertainty in decision-making were evidenced situational uncertainties and IU and belonging uncertainty were specifically defined constructs. Although these are understood in different ways, there are some overlaps as experiences of specifically defined constructs of uncertainty may be exacerbated in particular contexts or situations. Given this, it is important to consider whether FGS are more vulnerable to experiencing uncertainty generally, or whether their uncertainty is related specifically to the university environment. These results evidence that the nature of the university environment contributes to FGS experiences of uncertainty, for example, the requirement to make career decisions or navigate financial processes. Regarding the specifically defined construct of IU, the results did not show differences in the levels of IU between FGS and CGS, meaning that they did not have an increased dispositional tendency to experience IU. However, for belonging uncertainty, there is evidence that FGS experience this at increased levels in comparison to FGS which plays a salient role in shaping their academic outcomes. These experiences of belonging uncertainty may therefore contribute to an increased sensitivity to situational uncertainties, particularly in the unfamiliar environment of university. ***Aim 2: To establish how uncertainty is defined in the literature***

This review demonstrated that different types of uncertainty are experienced by FGS and as a result, uncertainty was defined differently throughout the literature. For sources which defined belonging uncertainty, definitions were inconsistent and included worries about being a part of social groups and having high quality relationships within these groups, as well as worries about one's own academic ability in class and in relation to peers. Although a definition of IU was not provided by the source which explored this, IU is an already established concept within the literature. Carleton et al.'s (2007) measure of IU was used, and these authors define IU as an "intolerance of the notion that negative events may occur and there is no definitive way of predicting such events" (p. 106). Qualitative sources implicitly agreed on a definition of uncertainty by conceptualising it as 'not knowing', like Freeston & Komes' (2023) conceptualisation. These sources referenced that FGS experienced 'not knowing' in relation to finances and decision-making, as well as having a lack of sufficient information or knowledge.

***Aim 3: To identify how uncertainty is measured within the literature***

Quantitative sources measured uncertainty using self-report questionnaires specific to the type of uncertainty they explored. One source measured IU using the Intolerance of Uncertainty Scale – Short Form (Carleton et al., 2007). A consensus was largely found on measuring belonging uncertainty whereby five out of six sources used two-items from Walton & Cohen's (2007/2011) measure of belongingness and the remaining source used a single-item from Yeager et al.'s (2016) small scale of belonging uncertainty. Most qualitative sources (N=6) relied on semi-structured interviews to elicit the experiences of uncertainty from FGS and the remaining used focus groups (N=2) and open-ended interviews (N=1).

***Aim 4: To critically appraise the existing literature within this field***

Most sources (N=14) within this review were deemed to be of relatively high quality and had none to very minor concerns or minor to moderate concerns, except two qualitative sources where moderate to major concerns were identified. Typical methodological limitations which were present in quantitative sources included incomplete outcome data and for qualitative sources, typical methodological limitations were around a lack of reflection on potential bias and information power. For the two sources which had moderate to major concerns, there was also a lack of justification around the research design and method. For these quantitative sources, it may be unclear if samples were over and underpowered, making it difficult to interpret clinical or practical significance of the findings. For qualitative sources, unknown bias may be present and again, it may be unclear if the samples are significantly robust to support conclusions made. The presence of studies with a higher risk of bias limited the strength of the evidence in particular aspects of this synthesis, such as evidence that FGS seek information to reduce uncertainty (Gist-Mackey et al., 2018) and FGS experience uncertainty in their financial literacy skills (Dissen & Tome, 2024).

Given the reduced quality in the aforementioned sources, it is important that future research prioritises methodological rigour and transparency in order to strengthen the evidence base. Additionally, the use of the CASP checklists allowed for a structured and transparent quality assessment of the relevant literature, which proved important in considering the strength of the evidence. However, the CASP has a level of subjectivity which may increase potential variability in quality assessment (Harrison et al., 2016).

**Clinical and theory implications**

It is important that these insights into the experiences of uncertainty among FGS inform how universities and widening access schemes can better support this at-risk population. Primary prevention involves the delivery of programs specifically designed for non-clinical populations that research has shown are at an increased risk of developing

mental health difficulties, with the aim of promoting good physical and mental wellbeing to ensure these difficulties do not develop (American Psychological Association, 2018). This review tells us that FGS often have a lack of information when transitioning into and entering university, which contributes to their experiences of uncertainty. Additionally, even when some FGS have received support from widening access schemes, such as attending a summer school, this has not been sufficient in reducing their uncertainty and providing them with the information that they require. Given these findings, it would be beneficial for primary prevention to take the form of uncertainty reduction interventions for FGS. It would be beneficial for these interventions to include providing FGS with more high quality, specific and well-timed information, for example, direct information on all aspects of university life, from finances to choosing their courses of study, before their transition commences. As this review also noted that FGS connect with others as a way of reducing uncertainty, uncertainty reduction interventions should include peer-support opportunities. This would help to build FGS support systems and reduce the higher levels of belonging uncertainty which this population has been found to experience.

A recent blog by HE Professional (2024), an organisation dedicated to supporting service leaders within the higher education sector, illustrates that although FGS are encompassed within the umbrella term of 'widening participation students', they have unique needs which are often not met under this umbrella. They similarly identified that timely information and guidance, mentoring and networking opportunities would be specifically beneficial for FGS (HE Professional, 2024), which is in line with this review's recommendations of uncertainty reduction interventions.

Although the concept of uncertainty is something which has been discussed within the literature for many years, this review included sources from 2011 onwards, with the majority more recent. Given this, and the small number of relevant sources within this review, there

appears to be a theoretical and practical gap in understanding the experiences of uncertainty within FGS. This review highlighted that there are different types of uncertainty that FGS experience, and different definitions that have been used in the field, with the most prominent implicitly reflecting the conceptualisation of uncertainty as a sense of 'not knowing', aligning to Freeston & Komes (2023) theory of IU.

## Strengths and limitations

### *Strengths*

Although this review is relatively small in size, this was expected due to it being a new and emerging field and the first review of its kind. This review serves as a starting point to gain an understanding into the experiences of uncertainty in FGS and how this can impact their university experiences. The fact that this search was conducted across multiple databases, included grey literature databases and used both forward citing and examining the reference lists of key papers meant that more sources were included than on indexed databases alone. It was also important to ensure that this search was not limited to the UK, this became more apparent as searching and selection progressed as no relevant UK studies were identified. The use of proximity operators within databases also appeared beneficial in improving the relevancy of the sources that came from this search strategy. Finally, broadening the definition of uncertainty to encompass both Carleton's (2016) and Freeston & Komes (2023) conceptualisations meant that relevant sources were not omitted, this was particularly important as this is the first review in the area.

### *Limitations*

The first aspect of note is that this review did not include a second reviewer due to time and resource available within the Doctorate in Clinical Psychology programme. Consideration was given to whether a second reviewer could be sought to review a sample of

the data, however evidence shows that a second reviewer is unlikely to completely eradicate bias (Stoll et al., 2019). Therefore, the lead researcher met with the two research supervisors to review several sources and collectively decide whether they met criteria to be included. Should this review be published, a second reviewer will be sought. Additionally, during the searching and selection process, one source was excluded due to its full text not being available in the English language as reliable translation was not feasible. Although this ensured that incorrect translation did not provide misleading results, it meant that a source was missing which had the potential to include valuable information.

An area of complication for this review was considering aspects of intersectionality within the inclusion and exclusion criteria. Some sources selected samples based on an aspect of identity, such as ethnicity, as well as FGS status, such as Havlik et al.'s (2023) exploration of the experiences of Latine FGS in college. Although sources like these initially met the review's inclusion criteria, it was unclear whether their reflections were based on their experiences of being Latine, FG, or both. Intersectionality is a complex concept, and this review recognises that it is impossible to separate apart how aspects of people's identity, such as their ethnicity and educational background, may separately or in combination influence university experiences. However, as this review is the first of its kind in the field, inclusion of sources which focused on additional aspects of an individual's identity, such as ethnicity, and not just FGS status, or where this was unclear, would potentially result in a review which was not specific to the FGS population. Therefore, a decision was made to exclude any sources where this dilemma arose and was not clear, such as Havlik et al. (2023).

**Future research**

Given the small nature of this review and the fact it is a new and emerging field, it is important that more research is completed in this area. As this review shows that uncertainty is a prominent experience for FGS, and we know that IU is a key transdiagnostic mechanism

in mental health difficulties (Huntley et al., 2022), and that FGS experience increased stress, anxiety and depression in comparison to their CGS peers (Smith and McLellan, 2023), it would be beneficial for more research to focus specifically on IU among FGS in university. This would provide a deeper understanding into the unique experiences of this population and add to this review's findings. As no research in this area has been conducted in the UK, this would be beneficial to allow for exploration of any differences in the experiences of FGS in UK universities. Additionally, given the complexities addressing intersectionality in this review, it would be beneficial for future reviews to explore the experiences of uncertainty among FGS from different backgrounds.

**Conclusions**

This review is the first of its kind to explore the experiences of uncertainty among FGS in university. Synthesis of relevant sources found that uncertainty is a prominent experience for FGS, and it takes the form of being uncertain about their sense of belonging, finances and decision-making. Typically, uncertainty is experienced to a greater extent in FGS in comparison to their CGS peers, and even when rates of uncertainty are similar in these populations, uncertainty results in worse outcomes for FGS. Recommendations of uncertainty reduction interventions, in the form of information provision and peer support opportunities are made for primary prevention in this at-risk population. Uncertainty is largely defined as a sense of 'not knowing' and as a result, having a lack of information contributes to these experiences for FGS and they seek information and use connection with others from similar backgrounds and their determination to navigate this. Although these findings provide insight into how universities can better support this population, more research is needed to gain a deeper understanding into how these experiences of uncertainty contribute to the poorer mental health and increased risk of drop-out that this population experience.

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# Appendices

## Appendix A

## CASP checklist for quantitative sources

**Table A1**

*CASP checklist for quantitative sources using a combination of cross-sectional, randomised-controlled trial and cohort studies checklists.*

| Source No. | Criteria | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
|---|---|---|---|---|---|---|---|---|
| 1. | Focused question | | | | | | | |
| 2. | Appropriate method (C) | | | | | | | |
| | Randomisation (RCT) | | | | | | | |
| | Recruitment strategy (L) | | | | | | | |
| 3. | Recruitment strategy (C) | | | | | | | |
| | Accounted participants (RCT) | | | | | | | |
| | Exposure bias (L) | | | | | | | |
| 4. | Bias reduction | | | | | | | |
| 5. | Data collection (C) | | | | | | | |
| | Group similarities (RCT) | | | | | | | |
| | Confounds (L) | | | | | | | |
| 6. | Statistical power (C) | | | | | | | |
| | Group care (RCT) | | | | | | | |
| | Follow-up (L) | | | | | | | |
| 7. | Results reporting | | | | | | | |
| 8. | Analysis rigour/precision | | | | | | | |
| 9. | Findings statement (C) | | | | | | | |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | Benefits and costs (RCT) | | | | | | | |
| | Belief in results (L) | | | | | | | |
| 10. | Local population application | | | | | | | |
| 11. | Value | | | | | | | |
| Concerns summary | | None–very minor | None–very minor | Minor-moderate | Minor-moderate | Minor-moderate | Minor-moderate | None–very minor |

*Note.* (C) – cross-sectional criteria, (RCT) – RCT criteria, (L) – cohort criteria.

## Appendix B

## CASP checklist for qualitative sources

**Table B1**

*CASP checklist for qualitative sources*

| Source No. | Criteria | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1. Aims statement | 2. Appropriate method | 3. Appropriate design | 4. Recruitment strategy | 5. Data collection | 6. Reflexivity | 7. Ethics | 8. Analysis rigour | 9. Findings | 10. Value | Concerns summary |
| 1 | | | | | | | | | | | Moderate-major |
| 2 | | | | | | | | | | | Moderate-major |
| 3 | | | | | | | | | | | Minor-moderate |
| 4 | | | | | | | | | | | None–very minor |
| 5 | | | | | | | | | | | Minor-moderate |
| 6 | | | | | | | | | | | Minor-moderate |
| 7 | | | | | | | | | | | Minor-moderate |
| 8 | | | | | | | | | | | None–very minor |

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 9 | | | | | | | | | | | None–very minor |

## Appendix C

## Raw data extraction for quantitative sources

**Table C1**

*Raw data extraction for quantitative sources*

| Source No. | Raw Data Extraction |
|---|---|
| 1 | Total IU scores differed by physician relative only: *M* difference - FGS=30.6 (non-sig), physician parent=28.1 (non-sig), physician relative=28.5 (sig).<br>Prospective IU differed by physician relative and parent only: *M* difference - FGS=19.9 (non-sig), physician parent=18.3 (sig), physician relative=18.5 (sig).<br>Inhibitory IU did not differ by FGS, physician parent or physician relative: *M* difference - FGS=10.7 (non-sig), physician parent=9.8 (non-sig), physician relative=10.0 (non-sig).<br>Total IU scores differed by physician relative(s) ($t$= -2.830, $p$ = 0.005), but not by first-generation college status ($t$ = 0.749, $p$ = 0.454) or physician parent(s) status ($t$= -1.934, $p$ = 0.054). Further, prospective intolerance of uncertainty scores differed by physician relative(s) ($t$= -3.379, $p$ < 0.001) and physician parent(s) ($t$= -2.077, $p$ = 0.038), but not by first-generation college status ($t$ = 0.746, $p$ = 0.456)). Inhibitory intolerance of uncertainty scores did not differ by any of the first-generation statuses.<br>FGS status was not predictive of IU**:** IU - β =0.184 ($p$=0.864), PIU - β =0.070 ($p$=0.915), IIU - β =0.114($p$=0.826).<br>Having a physician parent was not predictive of IU: IU - β =-0.669 ($p$=0.617), PIU - β =-0.333 ($p$=0.682), IIU - β =-0.335 ($p$=0.604). |

| | |
|---|---|
| | Having a physician relative was predictive of lower IU and lower PIU: IU - β =-2.171 ($p$=0.033), PIU - β =-1.666 ($p$=0.007), IIU - β =-0.505 ($p$=0.304).<br>Overall regression model: ($F$(11,374) = 4.509, $p$ < 0.001). Final model predicting PIU: ($F$(11,374) = 3.806, $p$ < 0.001) |
| 2 | For FGS, belonging uncertainty was negatively associated with expectancies (β = -0.18, 95 % CI [ 0.06, 0.29]) and values (β = -0.16, 95 % CI [ 0.05, 0.27]) and positively associated with costs (β =0.24, 95 % CI [0.13, 0.34]).<br>For FGS, expectancies (β =0.54, 95 % CI [0.42, 0.65]), values (β =0.25, 95 % CI [0.12, 0.37]), and costs (β = -0.33, 95 % CI [ 0.21, 0.47]) were significantly related to math GPA.<br>For FGS, the relation of belonging uncertainty with math GPA was not statistically significant in any of the three models (expectancy model, β =0.05, 95 % CI [ 0.02, 0.13]; value model, β = -0.004, 95 % CI [ 0.06, 0.06]; and cost model, β =0.04, 95 % CI [ 0.03, 0.11]).<br>For FGS, expectancies (b = -0.08, 95 % CI [ 0.03, 0.1403]), values ($b$ = -0.03, 95 % CI [ 0.01, 0.07]) and costs ($b$ = -0.07, 95 % CI [ 0.03, 0.12]) significantly mediated the relation of belonging uncertainty with math GPA.<br>For FGS compared to CGS, belonging uncertainty was more strongly associated with expectancies (multigroup difference $Z$ = 0.11, 95 % CI [ 0.001, 0.23]) and expectancies was more strongly associated with Math GPA (multigroup difference $Z$ = 0.25, 95 % CI [0.07, 0.42]).<br>Multigroup difference for the indirect path from belonging uncertainty to Math GPA through expectancies, stronger for FGS, than CGS, $Z$ = 0.07, 95 % CI [ 0.01, 0.13].<br>Multigroup difference of relationship of belonging uncertainty with costs which was stronger for FGS, compared to CGS $Z$ = 0.15, 95 % CI [0.04, 0.25].<br>Significant multigroup difference for the indirect path from belonging uncertainty to Math GPA through perceived costs, which was stronger for FGS, compared to CGS $Z$ = 0.05, 95 % CI [ 0.01, 0.11]. |

| | |
|---|---|
| 3 | Model 1: FGS was not a significant predictor of belonging uncertainty - *b*(unstandardised & 95% CI) 0.1 +/- 0.2, *p*=0.549. Model fit: $R^2$0.07, *F*6,562=7.38, *p*<0.001.<br>Model 2: After accounting for academic preparation (ACT math and preassessment test), early semester belonging uncertainty negatively affected mid-term exam performance (average of exams 1 and 2) only for FGS. FGS: *bi*(standardised)=-0.07, *p*=0.076. FG x BU: *bi*(standardised)=-0.08, *p*=0.044). Model fit: $R^2$0.39, *F*11,535=30.16, *p*<0.001.<br>Model 3: Mid-term exam performance did not significant predict belonging uncertainty in FGS when accounting for early semester social belonging and academic preparation - FG *bi*(unstandardised & 95% CI) 0.1 +/- 0.2 (*p*=0.441). FGXmid-term/10% *bi*(unstandardised & 95% C1) 0.0 +/- 0.1 (*p*=0.751). Model fit: $R^2$=0.34, *F*12,471=20.54, *p*<0.001.<br>Model 4: FGS was not a significant predictor in the belonging uncertainty model - FGS: *Bi*(standardised)=-0.05, *p*=0.242; FGSxbelonging uncertainty: *Bi*(standardised)=-0.06, *p*=0.224. Model fit: $R^2$=0.28(*F*12, 467=18.30, *p*<0.001).<br>Model 5: For FGS, late-semester belonging uncertainty level did not predict non-cumulative exam 3 performance: Unable to access as saved as supporting information (requested full text PDF from author). |
| 4 | FG & BU - *bi*(unstandardised and 95+CI)=-0.1+/-0.2, *p*=0.618.<br>BU Model $R^2$=0.42, *p*=<0.001 |
| 5 | FGS show low belonging uncertainty on entering college (*M*=3.60, *SD*=2.05) and at the end of fall, post-intervention (*M*=3.67, *SD*=2.09). No significant change occurred.<br>The social-belonging intervention had no significant main effect on belonging uncertainty (*b*=-0.04). The social belonging intervention's effects were not significantly moderated by FGS status (*b*=0.32).<br>The social belonging intervention did not show significant consistent positive effects among FGS' introductory fall biology course grades (*b*=0.07), enrolment in the winter biology course (*b*=0.01), introductory winter biology course grades (*b*=0.06), total fall GPA (*b*=0.06) and end of year 1 GPA (*b*=0.09). |

| | |
|---|---|
| 6 | FGS had significantly higher levels of belonging uncertainty in comparison to CGS: $t(767)=3.60$, $p=<0.001$, $B=0.13$. CGS $M(SD)=3.12(1.69)$, FGS $M(SD)=3.69(1.83)$. |
| 7 | At pre-test, FGS had significantly higher levels of belonging uncertainty in comparison to CGS: $t(322)=2.56$, $p=0.01$. CGS $M(SD)=3.25(1.77)$, FGS $M(SD)=3.79(1.87)$. |

**Section 2: Empirical Project**

# Intolerance of uncertainty (IU), perfectionism, imposter syndrome and psychological distress in first-generation university students: the influence of economic disadvantage and a sense of belonging.

**Word Count: 9484 out of 9500 approved limit (including figures and tables; excluding reflections on ethical considerations section)**


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## Abstract

### Background

First-generation students (FGS) at university experience increased rates of mental health difficulties and drop-out. Intolerance of uncertainty (IU), perfectionism, imposter syndrome (IS), belongingness and economic disadvantage are documented as being significant experiences in this population.

### Objectives

This project explores how FGS status, belongingness and socioeconomic status (SES) interact with IU, perfectionism, IS and psychological distress.

### Methods

This three-phase project includes a pilot survey, focus group, and an online survey. The first two phases informed the third, which tested a moderated mediation model exploring the direct relationship between IU and psychological distress, with indirect paths via IS and perfectionism. Additionally, it was examined whether these indirect paths are moderated by FGS status, belongingness and SES.

### Results

For anxiety, there is a significant direct effect of IU, and indirect effects of perfectionism and IS. FGS status significantly moderated the indirect relationship with IS. For depression, there is a significant direct effect of IU, and an indirect effect of IS which is significantly moderated by FGS status. Belongingness and SES are not significant moderators for anxiety or depression.

### Conclusions

The way that IU contributes to psychological distress through IS and perfectionism is potentially an issue for all students. However, for CGS only, experiences of IU, in the presence of IS, exacerbates psychological distress. Primary prevention recommendations are made for UK universities. Future research should explore other contextual factors, specific to the FGS population, which may contribute to wellbeing, as well as replicate this research with an increased focus on intersectionality.

# Introduction

## Background

### *Student mental health*

It is not uncommon for students to experience mental health difficulties (Nemic & Mamic, 2019). The House of Commons Library research briefing evidenced a seven-fold increase in students reporting mental health difficulties from 2010/11 to 2020/21, with anxiety being reported by 61% in a survey of 4,000 UK students (Lewis & Stiebahl, 2024). The National Institute of Health and Care Excellence found that students who are mature, international, neurodivergent, or are from disadvantaged backgrounds are at a particularly increased risk of mental health difficulties and suicide (Lewis & Stiebahl, 2024). Therefore, there is an increased demand to better understand the nuanced experiences of different groups of university students (Morgan, 2024).

### *First-generation students (FGS)*

The 93% Club (2024) is a non-profit organisation dedicated to improving the equity of access to universities and associated support networks which benefit privately educated peers. They derive their name from the statistic that although 93% of university students are state educated, they continue to be under-represented in high-status careers, with the remaining 7% of their privately educated peers disproportionately occupying these spaces. They define FGS as university students whose parents or carers did not attend university or obtain a degree, regardless of whether their siblings did (Tyson, 2023). Although there has been a 24% increase in the number of FGS entering university between 2012/13 and 2021/22 (100 Faces, n.d.) and two thirds of UK university graduates are reported to be FGS, FGS are less likely to access Russell Group universities (Coombs, 2022), are more likely to drop-out of their university studies (Nuffield Foundation, 2023) and are less likely to obtain a degree of at least the 2.1 level (McGinn & True, 2024).

FGS differ from continuing-generation students (CGS), and are more likely to have lower SES, have family members who possess unsupportive attitudes of higher education (HE) due to its financial requirements and unfamiliarity (Unverferth et al., 2012; Pires & Chapin, 2022, Terenzini et al., 1996), and experience financial difficulties, job and family responsibilities and an increased pressure to succeed in order to move away from poverty (Tyson, 2023; Stebleton & Soria, 2013). Qualitative research highlights how these differences contribute to FGS often "living in two worlds" (Gardner & Holly, 2011, p.84); their home culture and the university culture.

Rates of mental health difficulties are found to be higher in FGS compared to CGS (Jury et al., 2015/2017; Stebleton & Soria, 2013), with a scoping review (k=40, N=221,655) highlighting that stress, anxiety and depression are the most commonly reported mental health problems in FGS, which contributes to poorer academic achievement and drop-out (Smith & McLellan, 2023). Rockwell and Kimel's (2025) systematic review (k=62, N=114697) found that FGS mental health concerns were particularly heightened during times of academic competition and a lack of social support. As FGS have the highest drop-out rates in their first two years of HE, which increases if these students have a low SES (Ishitani & Kamer, 2022), and research implies that mental health difficulties contribute to this, it is important to gain a deeper understanding into the nuances of mental health difficulties in FGS. Key experiences which may impact FGS mental health are highlighted below.

***Intolerance of uncertainty (IU)***

IU is an "individual's dispositional incapacity to endure the aversive response triggered by the perceived absence of salient, key, or sufficient information, and sustained by the associated perception of reality" (Carleton, 2016, p. 31). Uncertainty is proposed to be a response to an absence of perceived safety, as opposed to a response to perceived threat, as evolutionarily, the stress response is our default setting and the presence of safety inhibits this

response (Brosschot et al., 2016). Therefore, when we are uncertain about our safety, our stress response is disinhibited. The somatic error theory conceptualises IU as "a dislike of not knowing" (Freeston and Komes, 2023, p. 2). It outlines how uncertain situations can promote an increased awareness of internal bodily sensations which do not match what is expected, such as 'butterflies' in the stomach. If these feelings are strong enough, they create discomfort and unease, indicating a potential lack of safety. Where IU is concerned, individuals interpret this as a sign that something is wrong and make attempts to abolish it, as opposed to being curious about it. A recent systematic review outlines that FGS experience substantial levels of uncertainty, which may be greater than that experienced by CGS (Addy et al., 2025). This is because the nuances in the FGS experience likely contributes to them lacking the internal or external cues which signal safety, such as familiarity, predictability and support systems. For example, due to a lack of familial history in HE, FGS often navigate novel and uncertain experiences independently (Unverferth et al., 2012). IU is fundamental to how we formulate and treat generalised anxiety disorder (Dugas et al., 1998). Research by Dugas et al. (1998) found that a preliminary test of a conceptual model of GAD which incorporated IU was successful in distinguishing between non-clinical participants and participants with GAD. This model explains that for individuals with GAD, IU is pinnacle as it maintains the presence of worry. Additionally, IU has been evidenced as being important in how we formulate and treat depression as Yook et al. (2010) found that rumination mediates the relationship between IU and depression. For example, the presence of IU increases rumination which in turn, increases depression. Since this, IU has been evidenced to have strong correlations with both anxiety and depression whereby higher rates of IU are associated with higher rates of anxiety and depression (Gentes & Ruscio, 2011). IU has also been evidenced as a transdiagnostic mechanism across a broader range of anxiety and mood-related mental health difficulties, including obsessive-compulsive disorder and eating

disorders (Einstein, 2014; McEvoy et al., 2019). It is also a trans-situational vulnerability for distress in challenging life circumstances, including in the context of the Covid-19 pandemic (k=85, N=69997; Akbari et al., 2024), being a parent/carer of an autistic child (Goodwin et al., 2022) and while at university (k=9, N=8445; Lucchese et al., 2023). An individual's dispositional tendency to experience IU is shaped by repeated experiences of unpredictability characterised by uncertainty and a lack of control (Carleton, 2016). This is important to think about within the context of FGS because FGS may have an increased dispositional tendency to experience IU as they may be more likely to have experienced repeated unpredictability and a lack of control throughout their lives. For example, they are documented to more likely be from economically disadvantaged backgrounds, have dependents and generally, have fewer cultural resources (Wright et al., 2021). This chronic exposure to unpredictability and a lack of stability may contribute to a heightened sensitivity to an absence of safety, and therefore, uncertainty in the environment. Additionally, it is reasonable to assume that uncertainty may be particularly difficult for FGS to tolerate as they are often left to manage uncertainty independently, without access to the necessary information or support needed to navigate this successfully (Addy et al., 2025).

### *Belongingness*

Belongingness is "the subjective feeling of deep connections with social groups, physical places, and individual and collective experiences" (Allen et al., 2021, p.1). The unique FGS experience of "living in two worlds" (Gardner & Holly, 2011, p.84) may contribute to reduced belongingness in both home and university environments. Financial hardship alone significantly contributes to lower belongingness (Averitt Taylor et al., 2022), which is significant as FGS are more likely to have low SES (Terenzini et al., 1996). Belongingness is also reported as being protective against drop-out in FGS with low SES (Ishitani & Kamer, 2022).

### *Perfectionism*

Perfectionism is conceptualised as including two domains: perfectionistic striving, which is a tendency to set high standards of achievement, and perfectionistic concerns, which involves excessive worry about failing (Park et al., 2020). Madigan's (2019) meta-analysis (k=37, N=8901) identified that for academic achievement, perfectionistic striving had a significant positive relationship, whereas perfectionistic concerns had a significant negative relationship. Therefore, worry associated with failing is detrimental for academic performance and outcomes. This is particularly relevant to FGS, given reports of increased pressure to perform well to move away from poverty (Stebleton & Soria, 2013). Overall, perfectionistic traits are reportedly significantly higher for FGS relative to CGS, which could be a factor in poorer academic performance in this group (Morpeth-Provost et al., 2022).

### *Imposter syndrome (IS)*

IS is "the notion that some individuals feel as if they ended up in esteemed roles and positions not because of their competencies, but because of some oversight or luck" (Feenstra et al., 2020, p. 1). For FGS, feeling less connected to the university environment may contribute to IS (Stebleton & Soria, 2013). Interestingly, when comparing FGS and CGS, although rates of IS were not significantly different, IS was associated with increased stress for FGS (Holden et al., 2024). IS may be experienced differently for FGS due to the additional presence of perfectionism and uncertainty distress, as well as a reduced sense of belongingness.

## Aims and objectives

The widening participation agenda has been in place within higher education (HE) policy for decades (Connell-Smith & Hubble, 2018). As part of this, formal widening access schemes (WAS) were developed across many UK universities which continue to be present today. The purpose of WAS is to improve access to HE for various disadvantaged groups who

encounter barriers when attempting to do so and as a result, are typically underrepresented within HE populations (Connell-Smith & Hubble, 2018). For example, students who are FG, from a background of economic disadvantage, have disabilities or long-term health conditions and are from racially minoritised backgrounds (HE Professional, 2023). WAS do this by offering these student's summer schools at their chosen universities, mentoring and providing contextual admissions offers, to name a few (Torgerson et al., 2014). HE establishments have been praised for their efforts with widening participation as WAS have been deemed successful in increasing access to HE for historically underrepresented groups. For example, recent Higher Education Statistics Agency data outlines that a higher number of undergraduate students (23.6% of the cohort) came from the most deprived areas (quintile 1), deemed by the Indices of Multiple Deprivation decile, compared to any other deciles of lower deprivation rates (McGinn & True, 2024).

Although WAS are successful in supporting FGS with low SES to access university, consideration must be given to how these students can be better enabled to reach their academic potential and better protected against mental health difficulties, drop-out and poorer academic outcomes (Isitani & Kamer, 2022). For example, students who are from the most deprived areas, according to the Index of Multiple Deprivation, are more likely to drop-out before commencing their second year of studies and are less likely to complete their degree, achieve at least a 2.1, or transition into professional or managerial job roles (McGinn & True, 2024). Additionally, the Oxford Review of Education, which analysed longitudinal data from over 7,700 participants to assess differences in the achievements of FGS and CGS, found that a student's family education background is strongly linked to their educational attainment, such as the university they attend and their likelihood of completing a degree (Nuffield Foundation, 2023). For example, FGS were found to be four percentage points more likely to drop out in comparison to CGS, even after controlling for prior attainment and

socioeconomic status. The Office for Students (2023) annual review also highlighted how students from the most deprived areas have an 87.5% continuation rate in HE compared to a 92.5% continuation rate in students from more advantages areas. As the WA agenda rightly continues to gain pace, equal consideration needs to be given to not only how we continue to diversify the student population, but how we can ensure these spaces are more inclusive for people from marginalised and disadvantaged backgrounds. Research is yet to fully explain how perfectionism, IS, IU and belongingness, all evidenced as common experiences for FGS from economically disadvantaged backgrounds, may collectively contribute towards this population's mental health.

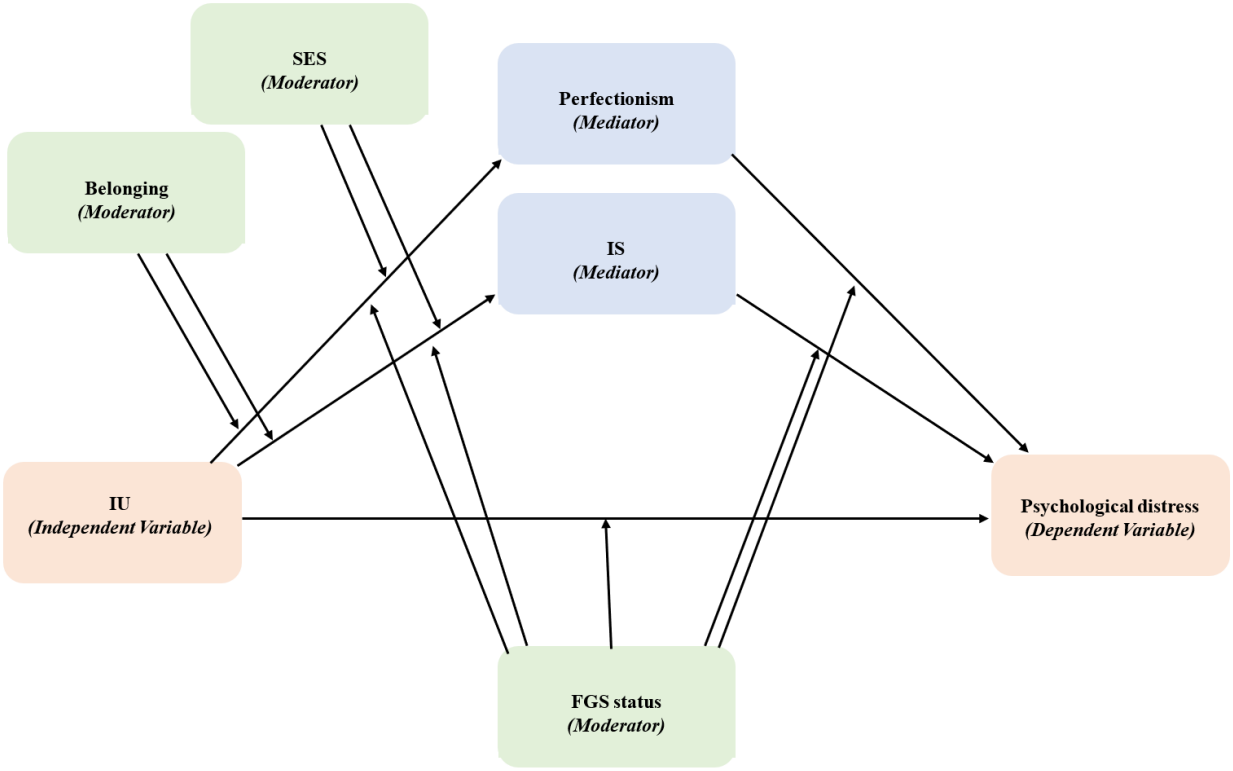
This study therefore aims to explore how perfectionism, IS and IU interact with belongingness and psychological wellbeing in FGS from economically disadvantaged backgrounds to bridge this literature gap. With more understanding, practical recommendations for universities and associated initiatives can be made.

**Proposed theoretical model**

A theoretical model is proposed which outlines the interrelationships among IU, IS, perfectionism and belongingness, and examines how they may collectively influence the mental health of FGS from economically disadvantaged backgrounds in university. A moderated mediation model is proposed to test this model (**Figure 1**) to allow for the exploration of conditional relationships. More specifically, it will explore how the indirect effect of the independent variable on the dependent variable through the mediators are contingent upon the level of the moderator, thereby clarifying the conditions under which the mediation holds.

**Figure 1**

*Proposed moderated mediation model*




### *IU and psychological distress*

IU is evidenced as a trans-situational vulnerability in university due to the new and demanding nature of the environment (Lucchese et al., 2023). Additionally, IU is evidenced to be strongly correlated with both anxiety and depression (Gentes & Ruscio, 2011). Therefore, experiences of IU are likely to predict psychological distress, namely, anxiety and depression.

### *IS*

If students experience IU, this may contribute to self-doubt about their place at university, and as a result, contribute to psychological distress. For example, increased levels of IU are found to be associated with increased levels of IS among students (Maftei et al., 2021).

### *Perfectionism*

Experiencing IU may make students more susceptible to perfectionism as a way of coping which in turn, may contribute to psychological distress. For example, Kummer et al. (2023) suggested that individuals with high perfectionistic concerns are more anxious about the possibility of making mistakes, and the unknowns around potential failure could be experienced as particularly distressing.

### *Belonging*

If students have a high sense of belonging within university, they may experience less IU, due to the presence of a network who can support with uncertainty, and less IS and perfectionism as they may be less likely to question their abilities and deserving of a place at university. For example, reduced belongingness may contribute to increased IS (Stebleton & Soria, 2013) and therefore, if individuals experience a reduced belongingness at university, as well as high internal academic pressure, they may develop perfectionist traits in an attempt to prove their worth (Murphy et al., 2023).

### *Socio-economic status*

Associations are also evidenced between SES, IS and perfectionism. For instance, students with lower SES are more vulnerable to experiencing IS (Maftei et al., 2021), which could be due to the incongruencies between their home and university environments. Additionally, students with low SES are shown to display increased perfectionism (Morpeth-Provost et al., 2022) which could be due to the evidenced increased pressure to move away from a background of poverty (Stebleton & Soria, 2013). Therefore, for students from low socio-economic backgrounds, experiencing IU may exacerbate experiences of imposter syndrome and perfectionism.

### *FGS status*

FGS experience substantial uncertainty in university which they are often left to navigate independently with little available information to support (Addy et al., 2025). Therefore, IU may be difficult to tolerate. Additionally, for FGS, experiences of IU may contribute to increased IS, due to their lack of connection with the university environment (Stebleton & Soria, 2013), with in turns, exacerbates distress as IS is associated with increased stress for FGS (Holden et al., 2024). Finally, for FGS, experiences of IU may contribute to increased perfectionism, due to their increased pressure to move away from poverty (Stebleton & Soria, 2013), and in turn, contribute to distress.

Taking this evidence into account, this model aims to test the direct relationship between IU and psychological distress, and indirect paths whereby perfectionism and IS serve as mediators of this relationship. FGS status is a proposed moderator of both the direct and indirect effects of IU on psychological distress. Belongingness and SES are hypothesised to further moderate the pathways from IU to the mediators.

**Hypotheses**

In line with the proposed moderated mediation model (**Figure 1**), the following hypotheses will be tested in the university student population.

H1: The relationship between IU and psychological distress will be mediated by perfectionism and IS.

H2: FGS status will moderate the direct relationship between IU and psychological distress and/or the indirect relationship via the mediators of perfectionism and IS.

H3: In addition to H2, belongingness will further moderate the relationship between IU and the mediators of perfectionism and/or IS.

H4: In addition to H2, SES will further moderate the relationship between IU and the mediators of perfectionism and/or IS.

## Methods

### Design

A multi-phase, cross-sectional design was utilised. Public and Patient Involvement and Engagement (PPIE) was firstly conducted with the Newcastle University Student Mental Health Co-production Panel to obtain feedback on the accessibility of phase one participant documentation. Phases one to three consisted of an online pilot survey, focus group and an online survey, respectively. This was a logical, sequential process with findings from phases one and two informing the third and final phase. Phase one's purpose was to pilot the online survey. This allowed for the testing of the recruitment strategy and to ascertain the ease of recruitment, the checking of the accessibility of questions and measures to ensure that obtained participant data was as intended and most importantly, to test initial hypotheses as per the proposed moderation mediation model. Phase two's purpose was to obtain more detailed feedback about the phrasing of demographic questions and for those where their value was uncertain, the benefit of them, as well as to obtain feedback about the accessibility of heatmap measures. Phase two also tested the initial hypotheses, as per the proposed moderated mediation model, via discussion about university experiences with participants who had lived experience of being a FGS from a background of economic disadvantage. Phases one and two ensured that the initially hypothesised model was viable for testing in its current format and that the online survey was accessible to participants before proceeding to

the third phase and asking a larger number of participants to dedicate their time to engaging in this.

## Sampling

### *Phase one*

Recruitment ran from February to May 2024 inclusive. Convenience sampling was used to recruit participants via Newcastle University's PARTNERS program and research participation scheme (Newcastle University, 2024/2025), social media (LinkedIn and X) and word of mouth. Per 50 participants who completed the survey, a £20 incentive was donated to The Access Project (2024), a non-profit organisation supporting young people from under-resourced backgrounds to access universities and achieve social mobility. A priori power analysis was not completed as the pilot's purpose was to test the recruitment strategy and provide insight into any required changes for phase three.

### *Phase two*

Recruitment ran from May to June 2024 inclusive. Convenience sampling was used to recruit participants via UK universities and their WAS, Newcastle University campus posters and social media (Linked In). Phase one participants were given the opportunity to register their interest in focus group participation and were contacted as part of recruitment. A £15 Amazon e-voucher incentive was provided. Target recruitment was four to eight participants, ensuring enough participants for rich discussion while not limiting contributions.

### *Phase three*

Recruitment ran from October 2024 to March 2025 inclusive. Convenience sampling was used to recruit participants via Newcastle University's PARTNERS program and research participation scheme (Newcastle University, 2024/2025), UK universities and their WAS, UK Doctorate in Clinical Psychology programmes, The Access Project (2024), 93% Club (2024),

upREACH (2024), social media (LinkedIn and X) and word of mouth. A power analysis was conducted using G* power to determine the appropriate sample size for detecting an effect size of $f^2$=0.04 when testing one predictor out of a total of six in regression analyses. The analysis was conducted with an alpha level of 0.05 and a desired power of 0.08 which indicated that a minimum of 199 participants were required to achieve the desired power at this effect size. However, an interaction of $f^2$=0.04 is quite rare, and 394 would be needed for a conventional small effect size ($f^2$=0.02). An incentive donation of £100 was made to The Access Project (2024).

## Data analysis

### *Phase one*

IBM SPSS Statistics (Version 29) was used for data analysis. Frequency analysis of demographic data was completed to reveal total number of participants by age and gender, for example. This assessed the samples representativeness of the student population. Reliability analysis was completed on all scales. Missingness was explored, and normality tests were completed. Pearson correlation coefficients were conducted between variables to verify the relevance of hypotheses.

### *Phase two*

Conventional content analysis was used to summarise the data (Hsieh & Shannon, 2005). This involved data familiarisation, identifying codes, calculating their frequency and grouping codes to form themes.

### *Phase three*

In addition to phase one analyses, a two-stage imputation procedure was used (details below). The moderated mediation model was tested using PROCESS (version 4.0) macros for SPSS (Hayes, 2022)

## Participants

### *Phase one*

Participants were required to be a FGS (defined as the first member of their immediate family to access university), either having already engaged in, or be currently engaging in, their studies. In total, 141 eligible participants provided their informed consent and participated. Participants were aged between 18-71 years ($M$=27.51, $SD$=11.46) and experienced being a FGS between 1971-2019. See **Appendix A** for additional demographic data.

### *Phase two*

Participants were required to be a FGS as per the phase one definition and be a current UK university student, ensuring that participants could meaningfully reflect on their current experiences in the present. Participants were required to be from an economically disadvantaged background determined by the POLAR4 score (Office for students, 2022) of their postcode at age 18 before starting university. This score was required to be within quintiles one or two, indicating that the area they lived in had the lowest rates of participation in HE. Original research into POLAR4 found that low participation areas are also areas with low SES (Office for Students, 2024). It continues to be used as a geographical measure of disadvantage by universities. Overall, eight participants consented to participate, however four had POLAR4 scores of three or more and therefore, were ineligible. Four consenting participants, aged between 19-42 years, were eligible and engaged (**Appendix B**).

### *Phase three*

Participants were required to be current UK university students, regardless of their FGS status and economic background. The 93% Club definition of FGS (Tyson, 2023) was used to maintain consistency with the literature. Following the removal of data identified as

being potentially fraudulent, 437 participants (246 FGS; 191 CGS) remained who consented and engaged. FGS were aged between 18-56 years ($M$=22.81, $SD$=5.47) and CGS were aged between 18-46 years ($M$=19.72, $SD$=3.25). See **Appendix C** for additional demographic data.

## Measures

### *Phase one*

**Socio-demographic variables.** Socio-demographic variables of age, gender, sexual orientation, language, ethnicity, country of residence, disability, highest educational achievement and occupation were collected, alongside current university, measures of economic background (postcode at age 18, whether they consider themselves as working class, parental occupation, whether they accessed free school meals or whether their parents accessed income support when they were a child and the impact of this on their identity), living situation, sixth form attendance and whether their friends accessed university.

The following measures were administered for the purpose of characterising the sample of participants.

**Acculturation.** Three heatmap scales containing a y and x axis were used (**Appendix D**). Based on hypotheses, these encompassed identifying (*Identify strongly with home/university environment* to *Don't identify strongly with home/university environment*), belonging (*Completely belong with home/university environment* to *Completely don't belong with home/university environment*) and comfort (*Completely comfortable in home/university environment* to *Completely not comfortable in home/university environment*) with home and university environments. Participants chose their representative map position, where the X axis referred to home and the Y axis referred to university, for each. The purpose of this measure was to gain an understanding into the acculturation experiences of participants.

**Penn State Worry Questionnaire (PSWQ).** The PSWQ short form is a three-item reliable and valid measure of an individual's level of worry (Berle et al., 2011; Kertz et al., 2014). Participants responded on a five-point Likert scale ranging from 1 (*Not at all typical of me*) to 5 (*Very typical of me*). Total scores range from 5-15 with higher scores indicating higher levels of worry. The purpose of this measure was to gain an understanding into participant's levels of general worry.

**Primary Care PTSD Screen for DSM-5 (PC-PTSD-5).** The PC-PTSD-5 (Prins et al., 2015) is a reliable and valid five-item scale used to measure the presence of trauma symptomology (Prins et al., 2003). Participants responded (*No* or *Yes*) indicating whether they have experienced trauma symptomology in the past month due to an extremely upsetting experience they had in their university life. Total scores range from 0-5 with higher scores indicating a higher degree of trauma symptoms. A cut-off score of 4 plus indicates clinically significant trauma symptomology. The purpose of this measure was to gain insight into participant's experiences of trauma in relation to their university experiences.

**International Adjustment Disorder Questionnaire (IADQ).** The IADQ is a reliable and valid nine-item scale used to measure stressor exposure including preoccupations with and failure to adapt to the stressor, as well as functional impairment (Shevlin et al., 2020). It provides an algorithmic categorical screen for adjustment disorder and a continuous measure of stress. Items 1-3, 4-6 and 7-9 form the preoccupied, adapting and impairment subscales respectively. Participants responded using a five-point Likert scale ranging from 1 (*Not at all*) to 5 (*Extremely*) to indicate over the past month, how much they have been bothered by a stressful event they experienced in university life. Subscale scores range from 0-12 with higher scores indicating higher levels of adjustment preoccupation, difficulties adapting to adjustment and functional impairment. The purpose of this measure was to gain an understanding into participants adjustment to the university environment.

The following measures were administered as part of the main moderated mediation model analysis.

**Leary Imposter Scale (LIS).** The LIS (2000) is a reliable seven-item measure used to explore an individual's sense of being an imposter (Leary et al., 2000). Participants responded on a five-point Likert scale ranging from 1 (*Not at all characteristic of me*) to 5 (*Extremely characteristic of me*). Total scores range from 7-35 with higher scores indicating higher levels of IS. The purpose of this was to measure participant's levels of imposter syndrome.

**Clinical Perfectionism Questionnaire (CPQ).** The CPQ (Fairburn et al., 2003) is a reliable, well-validated 12-item scale used to measure an individual's strivings to meet perfectionistic standards, as well as the effects of self-evaluation when perfectionistic standards are not met (Egan et al., 2016). Participants responded on a four-point Likert scale ranging from 1 (*Not at all*) to 5 (*All of the time*), indicating how well each item described them over the past month. Total scores range from 12-48 with higher scores indicating higher levels of perfectionism. The purpose of this was to measure participant's levels of perfectionism.

**Belongingness Questionnaire.** The BQ (**Appendix E**) consists of the community, social and place belonging subscales (Hall et al., 2025). The community subscale was adapted from Barr et al.'s (2016) 'Transgender Community Belongingness Scale' to measure general community belonging. Participants firstly identified a community which they belonged or identified most with and answered nine items referring to this community. Total scores range from 9-63 with higher scores indicating higher levels of community belongingness. The social subscale was adapted from Malone et al.'s (2012) 'The General Belongingness Scale'. Participants responded to 12 items referring to the way they feel they belong in general and among people. Total scores range from 12-60 with higher scores

indicating a higher sense of social belongingness. The place subscale was adapted from Venables et al.'s (2012) 'Sense of Place Scale'. This consisted of three items about participant's home life and three items about their university life. Total scores ranged from 3-15 for both home and university places with higher scores indicating a higher sense of place belongingness. Participants responded to all items across all subscales using a seven-point Likert scale, ranging from 1 (*Strongly disagree*) to 7 (*Strongly agree*). The purpose of this was to measure participant's sense of belonging.

**Intolerance of Uncertainty Scale – 5 (IUS-5).** The IUS-5 is a reliable five-item scale used to measure dispositional, an individual's natural tendency, IU (Bottesi et al., 2020). Participants responded on a five-point Likert scale, ranging from 1 (*Not at all characteristic of me*) to 5 (*Extremely characteristic of me*), to indicate how they manage life uncertainties. Total scores range from 5-25 with higher scores indicating a higher degree of IU. The purpose of this was to measure participant's levels of IU.

**Patient Health Questionnaire – Version 2 (PHQ-2).** The PHQ-2 is a reliable and valid two-item scale used to screen for the presence of depressive symptoms (Kroenke et al., 2003; Gelaye et al., 2016). Participants responded on a four-point Likert scale, ranging from 1 (*Not at all*) to 4 (*Nearly every day*), to indicate how often they have experienced each item over the previous two weeks. A cut-off score of 3 plus indicates clinically significant depression. The purpose of this was to measure participant's level of depression symptomology.

**Generalised Anxiety Disorder – Version 2 (GAD-2).** The GAD-2 is a reliable and valid two-item scale used to screen for the presence of anxiety symptoms (Kroenke et al., 2007; Hughes et al., 2018). Participants responded on a four-point Likert scale, ranging from 1 (*Not at all*) to 4 (*Nearly every day*), to indicate the frequency they experienced each item

over the previous two weeks. A cut-off score of 3 plus indicates clinically significant anxiety. The purpose of this was to measure participant's level of anxiety symptomology.

The Between Two Worlds Main Model, adapted from Freeston et al. (2024), Self-Concept Clarity Scale (Campbell et al., 1996) and Intolerance of Uncertainty Behaviours in Everyday Life (Clifford et al., 2015) measures were also administered within the survey (**Appendix F**). However, these were included as part of wider programmatic research and therefore, they were not included in analysis

***Phase two***

To determine eligibility and guide discussions, participants completed an online pre-focus group survey. Participants answered socio-demographic questions about their age, gender, ethnicity, current student status, FGS status and provided their postcode at age 18 before starting university. The gender demographic question from phase one was amended based on feedback (**Appendix G**). A 13-item scale consisting of factors from research which were identified as relevant to FGS transitioning to university (**Appendix H**) were rated on a 10-point Likert scale ranging from 0 (*Does not at all relate to my experiences of transitioning to university as a first of family student from a background of economic disadvantage*) to 10 (*Completely relates to my experiences of transitioning to university as a first of family student from a background of economic disadvantage*).

***Phase 3***

**Socio-demographic variables.** These remained consistent from phase one with amendments based on phase one and two data (**Appendix I**)

**Acculturation.** As focus group participants provided feedback that the 'belonging' and 'identifying' concepts were too similar, heatmaps were amended (**Appendix J**). These included belonging (*Completely belong with home/university environment* to *Completely*

*don't belong with home/university environment*), comfort (*Completely comfortable in home/university environment* to *Completely not comfortable in home/university environment*) and behaviour (*I can completely act like my real, authentic self in the home/university environment* to *I cannot completely act like my real, authentic self in the home/university environment*), encompassing thoughts, feelings and behaviour, consistent with a cognitive-behavioural approach.

**BQ.** To ensure participants directly reflected on belonging related to their home and university environments, the place belongingness subscale was amended where places were pre-defined as 'home' or 'university'

Additional measures remained consistent from phase one.

**Procedure**

PPIE was completed and once feedback was obtained, appropriate amendments were made, such as adding definitions and a research timeline, simplifying language and changing the term 'low socioeconomic background' to 'economic disadvantage'. The pilot survey was developed on Qualtrics (https://www.qualtrics.com/) with participant documentation (**Appendix K**) embedded, along with options to provide qualitative survey feedback and register focus group interest. Once recruitment completed, the data was analysed.

Phase two recruitment commenced with advertising the focus group. Interested participants contacted the researcher via email and the information sheet and consent form (**Appendix L**) was emailed for electronic signature and return. After consenting, participants were emailed the pre-focus group survey link, developed in Qualtrics (https://www.qualtrics.com/). After obtaining the target sample, the time and date was collaboratively arranged. The focus group was held via Microsoft Teams and audio-recorded via Microsoft Word sound recorder. The researcher facilitated and a second facilitator was

present for additional participant support. The focus group lasted approximately 90 minutes and followed a pre-developed topic guide (**Appendix M**). Afterwards, debrief sheets and resource lists were shared with participants (**Appendix L**), the sound-recorder transcription was reviewed to ensure accuracy, and the data was reviewed.

Amendments were made to the pilot survey to incorporate findings from phases one and two. The phase three survey was launched within Qualtrics (https://www.qualtrics.com/) with participant documentation (**Appendix N**) embedded and recruitment commenced. After obtaining the target sample, the data was analysed.

### Ethical considerations

Ethical approval (**Appendix O**) was granted by Newcastle University's Research Ethics Committee (Newcastle University, 2024) and approval was sought for each phase (42046/2023; 44061/2023; 51722/2023). An amendment was submitted to record a change in focus group recording processes (49250/2023). The project adhered to the BPS Code of Human Research Ethics (2021) and a standard operating procedure, risk assessments, and data management plans were used.

## Results

### Phase one

Data was exported into SPSS. Missingness inspection determined that missingness was not at random. As the survey progressed, participant attrition and the rate of missingness increased. A total of 140 participants consented and engaged in the survey, however, participant data sets which were less than 75% completed ($N$=61) were omitted, leaving 80 total participants. This finding informed the randomisation and removal of non-essential questions from the phase three survey to increase the chances of random missingness and reduce survey length.

Distribution assessment, exploring skewness and kurtosis values, was completed (**Appendix P**). Normality assessment, the inspection of box plots and histograms, identified eight extreme outliers (**Appendix Q**) which were winsorised. Subsequently, skewness and kurtosis values indicated that data was normally distributed (**Appendix P**). Reliability tests indicated that all measures had an acceptable Cronbach's alpha of 0.70 plus, except the Place B belonging subscale with a slightly lower alpha score of 0.63 (**Appendix R**). Reliability analysis of the acculturation measure was most acceptable with all three heatmaps included.

Pearson correlation coefficients were completed between variables (**Appendix S**) to test initial hypotheses. This showed significant positive and negative correlations, varying from low to high strength, relating to the bivariate paths in the initial model. Significant positive correlations were found between IS and IU, $r(78) = 0.29$, $p = 0.015$, depression, $r(78) = 0.41$, $p < 0.001$, and anxiety, $r(78) = 0.39$, $p < 0.001$; and perfectionism and IU, $r(78) = 0.45$, $p < 0.001$, and anxiety, $r(78) = 0.37$, $p = 0.002$. Significant negative correlations were found between social belonging and IU, $r(78) = -0.52$, $p < 0.001$, depression, $r(78) = -0.55$, $p < 0.001$, and anxiety, $r(78) = -0.51$, $p < 0.001$.

**Phase two**

Discussions around the acculturation measure and demographic questions (**Appendix T**), contributed to the term FGS remaining and the removal of the demographic question concerning working class status. Pre-focus group survey data indicated that "*Being a commuter student*", "*Noticing the differences between yourself and students who are not first of family and have not experienced economic disadvantage*" and "*Financial difficulties and pressures*" were rated most relevant to participants transition to university (**Appendix U**). Focus group discussion focused on these. Conventional content analysis, i.e., categories derived directly from text (Hsieh & Shannon, 2005), revealed themes of financial difficulties, not knowing, navigating uncertainty and disconnection, belongingness, systemic factors and

impacts on identity and wellbeing. These consisted of 4-8 codes, with frequencies ranging 1-11 (**Appendix V**).

Focus group discussion indicated that FGS from economically disadvantaged backgrounds are exposed to numerous difficult experiences within university. From their university induction, burdensome financial difficulties were present, limiting their academic and social opportunities. It quickly became apparent that university was very unknown to them, from navigating university processes to being unaware of their knowledge gaps. Participants were unable to find answers for these unknowns within their support systems and not knowing was difficult for them to tolerate. Participants experienced a lack of belongingness within their universities whereby they noticed differences between themselves and their CGS peers who were not from economically disadvantaged backgrounds, resulting in difficulties relating to others. Financial difficulties influenced their belongingness, limiting social opportunities where friendships could be formed. Participants navigated not knowing and a lack of belongingness by developing perfectionistic traits within academia to prove their worth, adopting new interests to fit in with peers, finding peers of a similar background and utilising WAS. Systemic factors were discussed, and participants experienced the stereotyping of, or lack of consideration for, the needs of FGS from economically disadvantaged backgrounds, which was particularly apparent in Russell Group universities. These experiences contributed to stress, anxiety, sadness, jealousy and IS. They described a general lack of fit or identification with both their home and university cultures, however described resilience and desires to advocate for similar others. This provided initial supporting evidence for hypotheses.

**Phase three**

Data was exported into SPSS. A data screening syntax file (Freeston et al., 2023) rigorously identified potentially fraudulent responses in the data set. This identified 78

potentially fraudulent responses which were reviewed to establish true fraudulence. Overall, 34 potentially fraudulent responses were deemed to be most likely fraudulent and the remaining 44 were manually overridden. Two additional responses were manually flagged as unreliable due to them having specific, duplicate responses and being completed in significantly less or more time than the average participant.

Questionnaire totals were computed using syntax as per questionnaire guidelines, except the LIS and IUS-5 which were calculated using person-mean imputation. Therefore, if participants missed 30% or less of the items in the scale, missing items were imputed based on their completed item responses. Descriptive statistics and t-tests were completed on the dataset pre-imputation (**Table 1**)

**Table 1**

*Descriptive statistics of variables by FGS status pre-imputation*

| | *N* | | *M* | | *SD* | | Differences Between Groups | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Variable | FGS | CGS | FGS | CGS | FGS | CGS | *t* | df | *p* | Cohen's d |
| LIS | 214 | 181 | 19.76 | 16.65 | 7.84 | 7.38 | 4.121 | 395 | <0.001 | 0.415 |
| CPQ | 214 | 181 | 33.58 | 32.23 | 6.00 | 5.29 | 2.360 | 394.72 | 0.019 | 0.235 |
| Home Place Belonging | 220 | 183 | 14.51 | 15.78 | 4.66 | 3.99 | -3.045 | 402.86 | 0.002 | -0.300 |
| University Place Belonging | 220 | 183 | 14.04 | 15.52 | 3.57 | 3.27 | -4.409 | 403 | <0.001 | -0.440 |
| Social Belonging | 217 | 183 | 57.07 | 60.87 | 13.46 | 12.7 | -2.987 | 400 | 0.003 | -0.299 |
| Community Belonging | 202 | 178 | 52.42 | 52.97 | 7.70 | 6.94 | -0.770 | 380 | 0.442 | -0.079 |
| POLAR 4 | 202 | 151 | 2.79 | 3.91 | 1.42 | 1.30 | -7.613 | 351 | <0.001 | -0.819 |
| IUS-5 | 214 | 182 | 15.21 | 14.53 | 4.33 | 4.39 | 1.591 | 395 | 0.112 | 0.160 |
| PHQ-2 | 216 | 180 | 2.00 | 1.66 | 1.62 | 1.59 | 2.085 | 395 | 0.038 | 0.210 |
| GAD-2 | 216 | 180 | 2.75 | 2.51 | 1.87 | 1.84 | 1.349 | 395 | 0.178 | 0.136 |
| Adjustment Preoccupied | 215 | 181 | 1.85 | 1.81 | 1.27 | 1.24 | 0.352 | 394 | 0.725 | 0.035 |

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Adjustment Adapting | 215 | 181 | 1.49 | 1.56 | 1.33 | 1.27 | -0.529 | 394 | 0.298 | -0.053 |
| Adjustment Impaired | 215 | 181 | 1.36 | 1.10 | 1.27 | 1.23 | 2.048 | 394 | 0.041 | 0.207 |
| Trauma Screen | 214 | 184 | 2.12 | 2.07 | 1.75 | 1.71 | 0.297 | 396 | 0.767 | 0.030 |
| PSWQ | 220 | 182 | 10.01 | 9.79 | 3.45 | 3.39 | 0.636 | 400 | 0.263 | 0.064 |

Note. Variable *N* reported due to the presence of missing data.

Descriptive statistics indicated significantly higher scores for FGS for IS, $t(395)=4.121$, $p<0.001$, perfectionism, $t(394.72)=2.360$, $p=0.019$, depression, $t(395)=2.085$, $p=0.038$, and adjustment impairment, $t(394)=2.048$, $p=0.041$. Scores were significantly higher for CGS for home, $t(402.86)=-3.045$, $p=0.002$, and university place, $t(403)=-4.409$, $p<0.001$, and social belongingness, $t(400)=2.987$, $p=0.033$, and POLAR4, $t(351)=-7.613$, $p<0.001$. Small to medium effect sizes were observed for these significant differences except for POLAR4 which was a large effect size.

Missing values analysis indicated that 300 (69.12%) cases were complete and 134 (30.88%) had missing data. One area of missing data ($N=82$) was participant POLAR4 scores where participants did not provide a full, valid postcode. Expectation maximisation was conducted whereby data was used from two sociodemographic questions which assessed experiences of economic disadvantage, "*Did you experience free school meals at some point during your childhood*" and "*Did your parents receive income support at some point during your childhood?*", to impute data into missing POLAR4 scores.

Principal components analysis was used to create a single belonging composite measure, combining total scores of community, social and home and university place belongingness. This allowed all scales of belongingness to be incorporated into the analysis as a single variable. The Kaiser-Meyer-Olkin (KMO) measure verified sampling adequacy, KMO=0.64, and Bartlett's test of sphericity was significant, $\chi^2(6)=221.12$, $p<0.001$, demonstrating the suitability of the correlation matrix for factor analysis. All variables loaded on the composite from .56 to .85 (**Appendix X**). The composite was calculated using the regression method.

Multiple category sociodemographic covariate variables were recoded appropriately in line with exploration of frequencies (considering the largest categories), into dummy

dichotomous variables. Gender was recoded into cisgender man or not and cisgender woman or not; sexual orientation into heterosexual or not and bisexual or not; ethnicity into white or not, and disability into disability reported or not, ensuring that covariate variables met the requirements for conducting regression analyses. Responses for the current living situation sociodemographic covariate variable were recoded into an ordinal scale representing levels of connectedness to their home environment, ranging from 1 (least connected) to 4 (most connected).

Missing values analysis indicated that 370 (85.25%) cases were complete and 64 (14.75%) had missing data. Prior to expectation maximisation across the variables, data was filtered via syntax to ensure that any cases with less than 11 out of 17 variables complete were removed, ensuring that data was not imputed from cases with large amounts of missing data (e.g., only sociodemographic data present). Missing values analysis indicated that 370 (93.43%) cases were complete and 26 (6.57%) had missing data. Expectation maximisation was completed on remaining missing data. Missing values analysis indicated that the dataset consisted of 396 complete cases. Descriptive statistics and t-tests were completed on the final dataset (**Table 2**).

**Table 2**

*Descriptive statistics of variables by FGS status post-imputation*

| | *N* | | *M* | | *SD* | | Differences Between Groups | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Variable | FGS | CGS | FGS | CGS | FGS | CGS | *t* | df | *p* | Cohen's d |
| LIS | 214 | 182 | 19.68 | 16.65 | 7.80 | 7.36 | 3.963 | 394 | <0.001 | 0.400 |
| CPQ | 214 | 182 | 33.52 | 32.23 | 5.95 | 5.27 | 2.275 | 394 | 0.023 | 0.229 |
| Belonging Composite | 214 | 182 | -0.20 | 0.20 | 0.99 | 0.92 | -4.070 | 394 | <0.001 | -0.410 |
| POLAR4 | 214 | 182 | 2.90 | 3.79 | 1.30 | 1.18 | -7.095 | 394 | <0.001 | -0.715 |
| IUS-5 | 214 | 182 | 15.27 | 14.53 | 4.32 | 5.39 | 1.700 | 394 | 0.090 | 0.171 |
| PHQ-2 | 214 | 182 | 1.99 | 1.67 | 1.63 | 1.58 | 2.025 | 394 | 0.044 | 0.204 |
| GAD-2 | 214 | 182 | 2.72 | 2.50 | 1.87 | 1.84 | 1.211 | 394 | 0.227 | 0.122 |

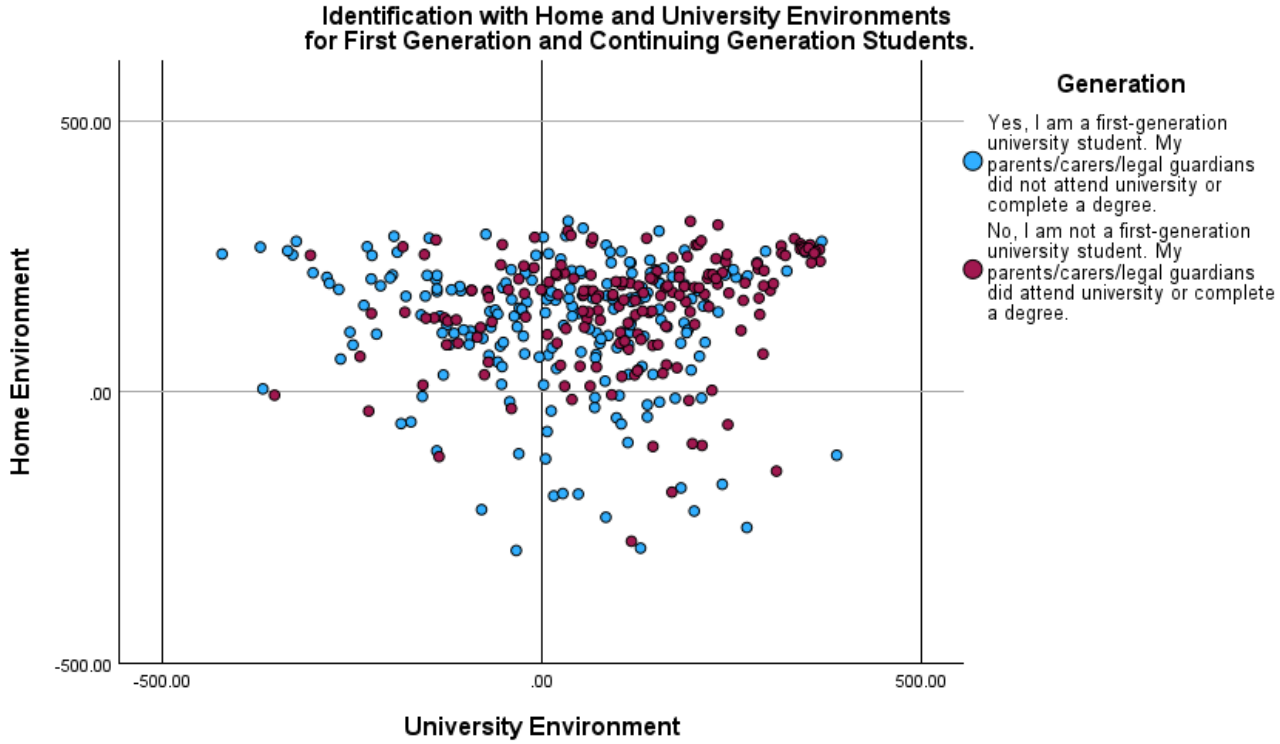
Descriptive statistics indicated significantly higher scores for FGS for IS, $t(394)=3.963$, $p<0.001$, perfectionism, $t(394)=2.275$, $p=0.023$ and depression, $t(394)=2.025$, $p=0.044$. Scores were significantly higher for CGS for belongingness, $t(394)=-4.070$, $p<0.001$, and POLAR4, $t(394)=-7.095$, $p<0.001$. Small to medium effect sizes were observed for these significant differences except for POLAR4 which was a large effect size.

A Chi-square test of independence indicated that there were not significant differences in the proportion of FGS (104 of 214; 48.6%) and CGS (76 of 182; 41.8%) meeting the GAD-2 cut-off, indicating clinically significant anxiety symptoms, $\chi^2(1, N=396)=1.86$, $p=0.17$. Significant differences were also not observed in the proportion of FGS (63 of 214; 29.4%) and CGS (44 of 182; 24.2%) meeting the PHQ-2 cut-off, indicating clinically significant depression symptoms, $\chi^2(1,N=396)=1.38$, $p=0.24$.

The x and y values from the three heatmap measures were combined to create overall coordinates of acculturation and plotted (**Figure 2**).

**Figure 2**

*Scatterplot illustrating the participant acculturation map*




Note: Upper-left=separated, upper-right=integrated, lower-left=marginalised, lower-right=assimilated.

A Chi-square test of independence showed significant differences between FGS and CGS for the separated position, $\chi^2(3, N=387)=3.90$, $p=0.000$, whereby proportionally more FGS (76 of 210; 36.2%) identified strongly with their home culture but engaged less with their university culture, relative to CGS (33 of 177; 18.6%). The assimilated position also showed significant differences, $\chi^2(3, N=387)=2.06$, $p=0.020$, whereby proportionally more FGS (24 of 210; 11.4%) identified strongly with the university culture but engaged less with their home culture, relative to CGS (10 of 177; 5.6%). Significant differences were also observed for the integrated position, $\chi^2(3, N=387)=5.06$, $p=0.000$, whereby proportionally less FGS (102 of 210; 48.6%), identified strongly with both their home and university cultures, relative to CGS (130 of 177; 73.4%). Significant differences were not observed for

the marginalised position, $\chi^2(3, N=387)=0.893$, $p=0.186$, indicating that the proportion of FGS (8 of 210; 3.8%) and CGS (4 of 177; 2.3%) who did not identify with either the home or university cultures were similar. It is important to note the discrepancy in the *N* of this Chi-squared test of independence in comparison to previous. This is because the measure of acculturation was used for descriptive purposes only and therefore, missing data was not imputed as this measure was not included in the moderated mediation model.

Distribution assessment and exploration of skewness and kurtosis values of continuous variables was completed (**Appendix X**). Values ranged between -1 and 1, indicating that data was not excessively skewed and quasi-symmetrical (Mishra et al., 2019). Normality assessment via the inspection of box plots and histograms, indicated two extreme outliers on the belonging composite measure which were winsorised, ensuring that they did not overly influence analysis. Subsequent skewness and kurtosis values were -0.28 and -0.09 respectively. Pearson correlations were conducted (**Table 3** & **Table 4**).

**Table 3**

*Correlation coefficient matrix of model variables and covariates (N=396)*

| | FGS Status | POLAR4 | Belonging | IUS-5 | LIS | CPQ | PHQ | GAD |
|---|---|---|---|---|---|---|---|---|
| Age | -0.34** | -0.13* | -0.20** | -0.05 | 0.25** | 0.05 | -0.06 | -0.08 |
| Cisgender male | -0.11* | 0.00 | -0.10* | -0.10* | 0.06 | -0.04 | 0.03 | -0.04 |
| Cisgender woman | 0.15** | 0.02 | 0.15** | 0.06 | -0.06 | 0.04 | -0.07 | 0.02 |
| Heterosexual | 0.16** | 0.14** | 0.23** | -0.19** | -0.25** | -0.15** | -0.23** | -0.26** |
| Bisexual | -0.10 | -0.12* | -0.11* | 0.12* | 0.16** | 0.07 | 0.09 | 0.18** |
| White | 0.04 | 0.01 | 0.04 | 0.04 | -0.08 | -0.06 | 0.03 | 0.08 |
| Disability | -0.05 | 0.03 | -0.18** | 0.22** | 0.17** | 0.15** | 0.22** | 0.19** |
| Connectedness | -0.16** | -0.10* | -0.12* | 0.06 | 0.27** | 0.12* | -0.05 | 0.04 |

*$p \leq 0.01$
**$p \leq 0.05$

**Table 4**

*Correlation coefficient matrix of model variables (N=396)*

| | FGS Status | POLAR4 | Belonging | IUS-5 | LIS | CPQ | PHQ | GAD |
|---|---|---|---|---|---|---|---|---|
| POLAR4 | 0.34** | | | | | | | |
| Belonging | 0.20** | 0.20** | | | | | | |
| IUS-5 | -0.09 | -0.13* | -0.22** | | | | | |
| LIS | -0.20** | -0.15** | -0.43** | 0.42** | | | | |
| CPQ | -0.11* | -0.09 | -0.17** | 0.43** | 0.37** | | | |
| PHQ | -0.10* | -0.07 | -0.43** | 0.41** | 0.34** | 0.29** | | |
| GAD | -0.06 | -0.06 | -0.38** | 0.49** | 0.37** | 0.37** | 0.67** | |

*$p \leq 0.01$
**$p \leq 0.05$

In relation to the proposed model, correlation matrices showed that IU was significantly positive correlated with psychological distress. Both IU and psychological distress were significantly positively correlated with IS and perfectionism. Similarly, POLAR4 was significantly negatively correlated with IS and IU, indicating that living in areas of lower participation in HE at age 18 before attending university was positively associated with greater IS and IU. The relationships between POLAR4 and perfectionism and psychological distress were not significant. Belonging was significantly negatively correlated with IU, IS, perfectionism and psychological distress.

PROCESS macros for SPSS (Hayes, 2022) was used to test the proposed moderated mediation model (**Figure 1**) which was initially tested with anxiety (GAD-2) as the measure of psychological distress (**Table 5**).

**Table 5**

*Moderation mediation regression model: Indirect effect of IU on anxiety via IS and perfectionism, moderated by FGS status (N=396)*

| Effect | Description | Coefficient | SE | LLCI | ULCI | Significance |
|---|---|---|---|---|---|---|
| | | Mediation | | | | |
| Direct | IUS→GAD-2 | 0.127 | 0.214 | 0.085 | 0.170 | Significant |
| Indirect | IUS→LIS→GAD-2 (FGS) | 0.015 | 0.010 | -0.002 | 0.037 | Non-significant |
| | IUS→LIS→GAD-2 (CGS) | 0.052 | 0.017 | 0.021 | 0.086 | Significant |
| | IUS→CPQ→GAD-2 | 0.027 | 0.009 | 0.010 | 0.046 | Significant |
| | | Moderation by FGS Status | | | | |
| | | $R^2$ | Denominator df | $F$ | $p$ | |
| Direct | IUS→GAD-2 | .001 | 380 | 0.361 | .548 | Non-significant |
| | | Index of moderated mediation | SE | LLCI | ULCI | |

| | | | | | | |
|---|---|---|---|---|---|---|
| Indirect | IUS→LIS→GAD-2 | 0.037 | 0.019 | 0.001 | 0.077 | Significant |
| | IUS→CPQ→GAD-2 | 0.011 | 0.018 | -0.023 | 0.047 | Non-significant |
| | | Covariates | | | | |
| | | Coefficient | SE | LLCI | ULCI | |
| Gender | Cisgender Man vs not | 0.148 | 0.500 | -0.834 | 1.130 | Non-significant |
| | Cisgender Woman vs not | 0.077 | 0.444 | -0.796 | 0.949 | Non-significant |
| Sexual Orientation | Heterosexual vs not | -0.511 | 0.253 | -1.008 | -0.015 | Significant |
| | Bisexual vs not | 0.051 | 0.299 | -0.536 | 0.638 | Non-significant |
| Ethnicity | White vs not | 0.372 | 0.221 | -0.064 | 0.807 | Non-significant |
| Disability | Disability vs not | 0.239 | 0.203 | -0.159 | 0.638 | Non-significant |
| Connectedness | | -0.000 | 0.000 | -0.001 | 0.001 | Non-significant |
| Age | | -0.045 | 0.021 | -0.086 | -0.003 | Significant |

Moderated mediation analysis shows a significant positive direct effect of IU on anxiety symptoms, which is not moderated by FGS status. However, the indirect effect of IU on anxiety through IS is moderated by FGS status whereby this indirect effect is significant for CGS but not FGS. The indirect effect of IU on anxiety through perfectionism is significant but is not moderated by FGS status. Therefore, for both FGS and CGS, there is a significant direct effect of IUS on GAD and a significant indirect effect through perfectionism. For CGS only, there is also a significant indirect effect through IS. There is strong evidence for partial mediation of the effect of IU on anxiety by perfectionism and to a lesser extent IS, and weaker evidence for moderation by FGS status. High anxiety scores are significantly associated with non-heterosexual sexual orientation and younger age. The overall model accounted for 34.4% of the variance, $F(15, 380)$, $p<0.000$. Graphs of simple slopes were developed to illustrate the significant moderation effect on the interaction between IU and IS (**Figure 3**) and IS and anxiety (**Figure 4**).

**Figure 3**

*Graph of simple slopes illustrating the significant moderation effect of FGS status on the relationship between IU (IUS) and IS (LIS)*

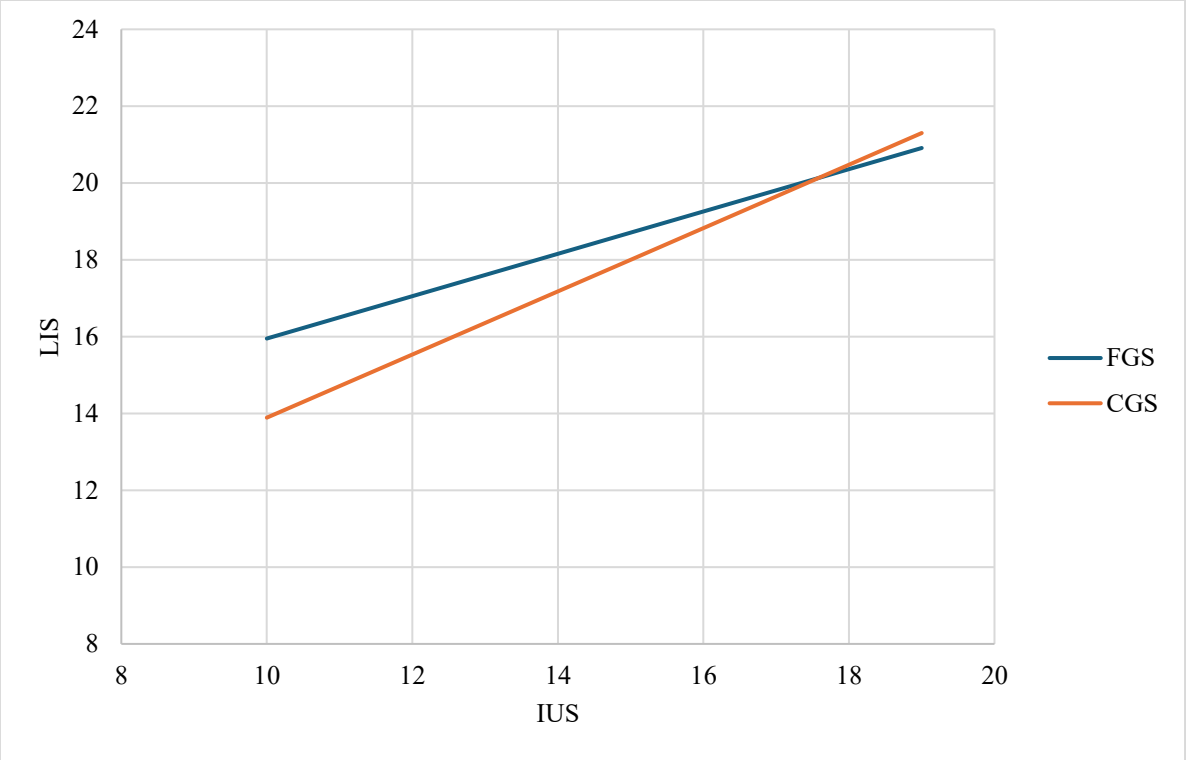
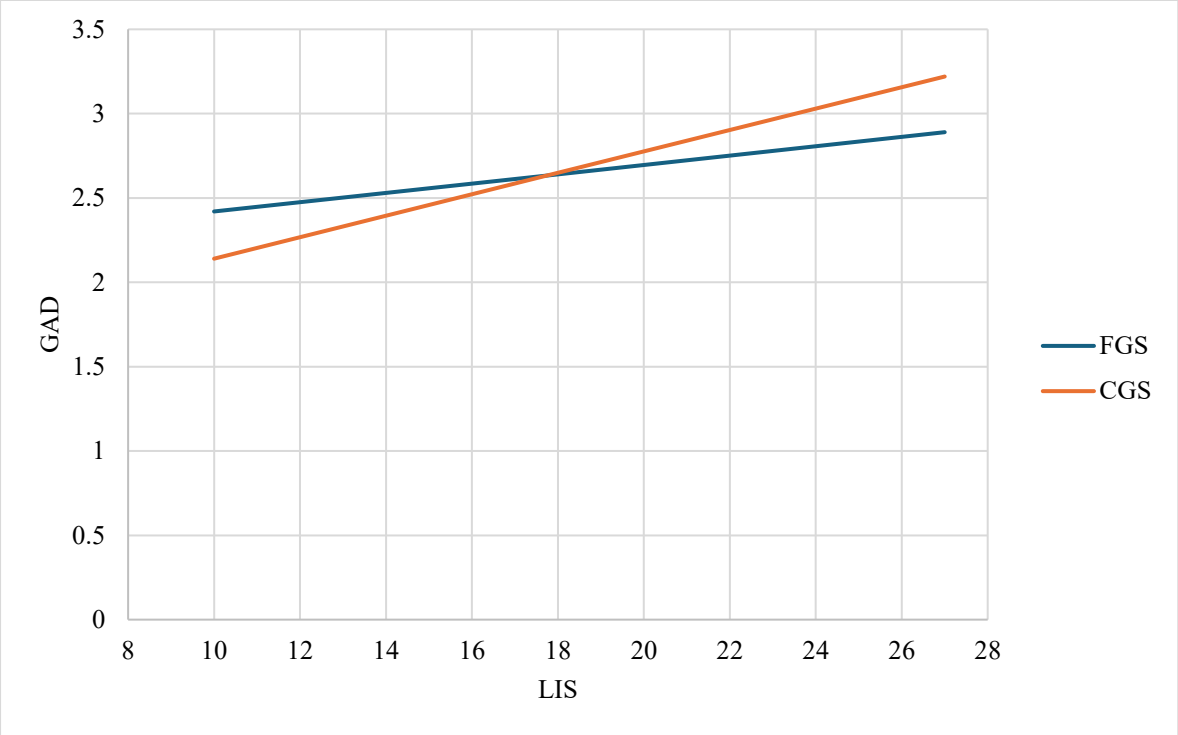


**Figure 4**

*Graph of simple slopes illustrating the significant moderation effect of FGS status on the relationship between IS (LIS) and anxiety (GAD)*




It was tested whether belonging further moderated the indirect effect of IU on anxiety, via both perfectionism and IS on the *a* paths of the model. Belonging was not a significant moderator of the interaction between IU and IS, $\Delta R^2$=0.001, $F(1, 382)$=0.332, $p$=0.565, and IU and perfectionism, Index = -0.003, SE=0.003, 95% CI [-0.010, 0.003].

It was also tested whether POLAR4 further moderated the indirect effect of IU on anxiety, via both perfectionism and IS on the *a* paths of the model. POLAR4 was not a significant moderator of the interaction between IU and IS, $\Delta R^2$=0.004, $F(1, 382)$=2.049, $p$=0.115, and IU and perfectionism, Index = 0.002, SE=0.003, 95% CI [-0.003, 0.008].

The same moderated mediation model was tested using depression (PHQ-2) as the measure of psychological distress (**Table 6**).

**Table 6**

*Moderation mediation regression model: Indirect effect of IU on depression via IS and perfectionism, moderated by FGS status (N=396)*

| Effect | Effect description | Coefficient | SE | LLCI | ULCI | Significance |
|---|---|---|---|---|---|---|
| | | Mediation | | | | |
| Direct | IUS→PHQ-2 | 0.085 | 0.020 | 0.047 | 0.123 | Significant |
| Indirect | IUS→LIS→PHQ-2 (FGS) | 0.014 | 0.010 | -0.003 | 0.033 | Non-significant |
| | IUS→LIS→PHQ-2 (CGS) | 0.054 | 0.017 | 0.026 | 0.091 | Significant |
| | IUS→CPQ→PHQ-2 | 0.015 | 0.008 | -0.001 | 0.031 | Non-significant |
| | | Moderation by FGS Status | | | | |
| | | $R^2$ | Denominator df | $F$ | $p$ | |
| Direct | IUS→PHQ-2 | 0.000 | 380 | 0.102 | 0.750 | Non-significant |
| | | Coefficient | SE | LLCI | ULCI | |
| Indirect | IUS→LIS→PHQ-2 | 0.041 | 0.019 | 0.007 | 0.082 | Significant |
| | IUS→CPQ→PHQ-2 | -0.005 | 0.016 | -0.036 | 0.028 | Non-significant |

| | | Covariates | | | | |
|---|---|---|---|---|---|---|
| | | Coefficient | SE | LLCI | ULCI | |
| Gender | Cisgender Man vs not | -0.004 | 0.455 | -0.900 | 0.891 | Non-significant |
| | Cisgender Woman vs not | -0.338 | 0.405 | -1.134 | 0.457 | Non-significant |
| Sexual Orientation | Heterosexual vs not | -0.614 | 0.230 | -1.066 | -0.161 | Significant |
| | Bisexual vs not | -0.468 | 0.272 | -1.003 | 0.067 | Non-significant |
| Ethnicity | White vs not | 0.194 | 0.202 | -0.203 | 0.591 | Non-significant |
| Disability | Disability vs not | 0.464 | 0.185 | 0.101 | 0.827 | Significant |
| Connectedness | | -0.001 | 0.000 | -0.001 | -0.000 | Significant |
| Age | | -0.026 | 0.019 | -0.064 | 0.012 | Non-significant |

Moderated mediation analysis shows a significant positive direct effect of IU on depression symptoms which is not moderated by FGS status. However, the indirect effect of IU on depression through IS is moderated by FGS status whereby this indirect effect is significantly stronger for CGS, relative to FGS. The indirect effect is only significant for CGS. The indirect effect of IU on depression through perfectionism is not significant. Therefore, for both FGS and CGS, there is a significant direct effect of IUS on depression. For CGS only, there is also a significant indirect effect through IS. High depression scores are significantly associated with non-heterosexual sexual orientation, having a disability or long-term health condition and being less connected. The overall model accounted for 28.0% of the variance, $F(15, 380)$, $p<0.000$. Graphs of simple slopes were developed to illustrate the significant moderation effect on the interaction between IU and IS (**Figure 5**) and IS and depression (**Figure 6**).

**Figure 5**

*Graph of simple slopes illustrating the significant moderation effect of FGS status on the relationship between IU (IUS) and IS (LIS)*

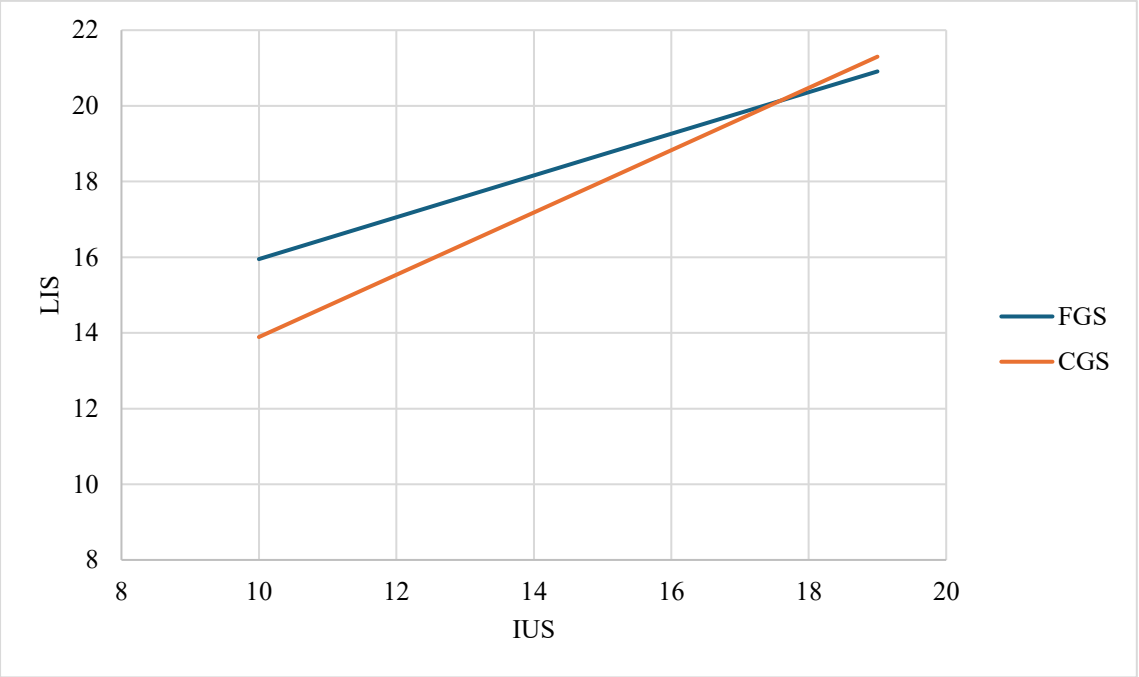
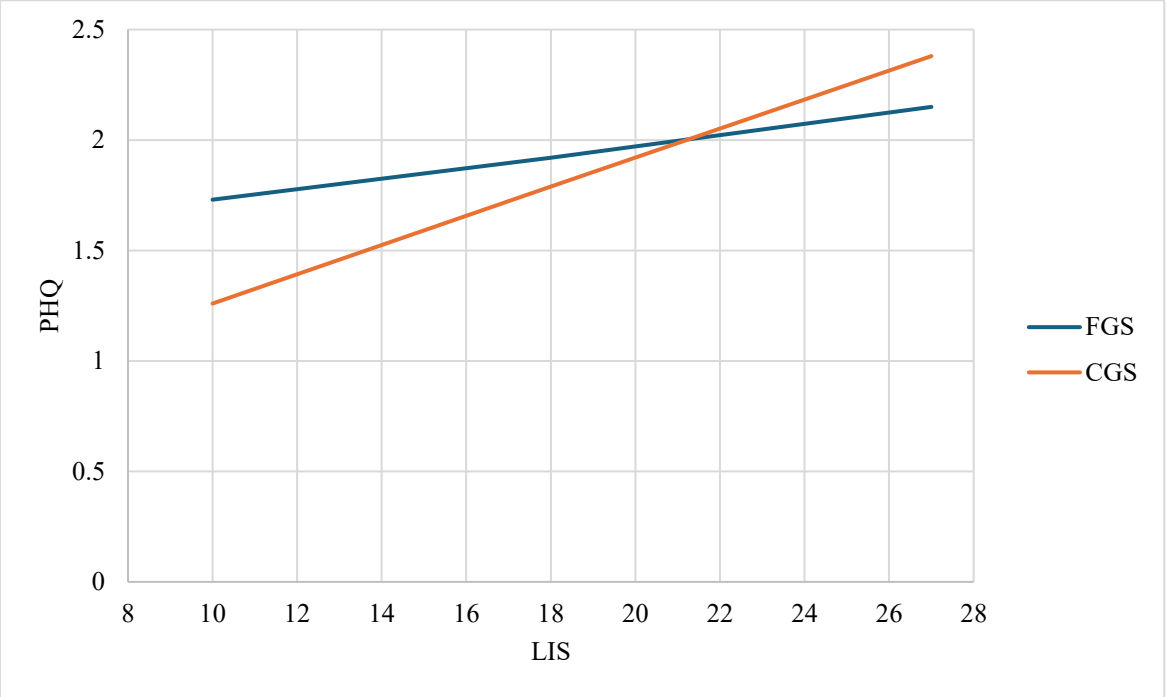


**Figure 6**

*Graph of simple slopes illustrating the significant moderation effect of FGS status on the relationship between IS (LIS) and depression (PHQ)*




It was tested whether belonging further moderated the indirect effect of IU on depression, via both perfectionism and IS, on the *a* paths of the model. Belonging was not a significant moderator of the interaction between IU and IS, $\Delta R^2$=0.001, $F(1, 382)$=0.332, $p$=0.565, and IU and perfectionism, Index = -0.002, SE=0.002, 95% CI [-0.006, 0.002].

It was also tested whether POLAR4 further moderated the indirect effect of IU on depression, via both perfectionism and IS, on the *a* paths of the model. POLAR4 was not a significant moderator of the interaction between IU and IS, $\Delta R^2$=0.004, $F(1, 382)$=2.049, $p$=0.115, and IU and perfectionism, Index = 0.001, SE=0.002, 95% CI [-0.001, 0.005].

# Discussion

This project aimed to explore how FGS status, a sense of belonging and SES interact with IU, perfectionism, IS and psychological distress. A multi-phase approach was used, and a proposed moderated mediation model was tested.

## Results summary

FGS were found to experience significantly higher levels of perfectionism and IS relative to CGS, consistent with previous literature (Morpeth-Provost et al., 2022; Stebleton & Soria, 2023). FGS also reported lower POLAR 4 scores and lower belongingness relative to CGS, replicating findings that this group are more prone to financial hardship and feel less connected to university environments (Averitt Taylor et al., 2022; Terenzini et al., 1996). More nuanced insights were tentatively provided via the acculturation measure, whereby proportionally more FGS identified with only one place, either home or university. Therefore, for FGS, the transition to university either isolates them from home, or they struggle to integrate into university. Although it is positive that few students overall identified as integrating with neither the home or university environment, proportionally more CGS identified with both home and university, indicating that less FGS adopt an integrated position and move easily between these two cultures. This is important as this integrated position, allowing individuals to enjoy the benefits of both home and university cultures, is considered the most adaptive and psychologically health approach (Berry, 1997). These findings are consistent with Gardner & Holly's (2011) suggestions that FGS can experience a unique feeling of "living in two worlds" (p.84) whereby they can struggle to feel equally connected to their home and university environments simultaneously, with potential implications for their developing cultural, social and personal identities.

It is important to note that there were no significant differences noted in the levels of IU among FGS and CGS. This contradicts the current literature which begins to hypothesise

that due to the nuanced experience of FGS, IU may be higher in this population. Therefore, although a recent systematic review identified that FGS experience greater uncertainty in comparison to CGS (Addy et al., 2025), it appears that FGS do not find uncertainty more difficult to tolerate than CGS. It is important to consider this within the context of the phase three sample. For example, a large proportion of participants (26.4% FGS; 4.2% CGS) were studying at the doctorate level. By this point in their studies, whether they are FGS or not, these students are likely to be well socialised to the university environment and processes and be skilled in navigating these. Although they are still likely to encounter uncertainty as a doctorate course will bring new processes and challenges, it is likely that they have developed skills to better equip them with navigating these and are accustomed to experiencing uncertainty. Therefore, they may be less likely to find uncertainty within the university environment intolerable. This could contribute to why FGS were not found to experience higher IU, in comparison to CGS, as the literature suggests.

The proposed moderated mediation model hypothesised that increased perfectionism and IS, and decreased levels of belongingness, would contribute to increased levels of psychological distress for FGS. However, there were no significant differences in the levels of anxiety reported by FGS and CGS. Although FGS reported significantly higher depression scores, the differences between the rates of FGS and CGS meeting the PHQ-2 cut-off for clinically significant depression symptoms was not significant. This contradicts current literature stating that rates of mental health difficulties are higher in FGS compared to CGS (Jury et al., 2015/2017; Stebleton & Soria, 2013). One explanation for this could be that the GAD-2 and PHQ-2 used in this study may lack the sensitivity required to capture nuanced differences between FGS and CGS (Kroenke et al., 2003/2007). The use of the full versions of these scales, the GAD-7 and PHQ-9, may have produced different results.

For all students, IU significantly predicted increased levels of anxiety and depression symptoms. This is unsurprising given the evidence that IU is a transdiagnostic mechanism in a range of mental health presentations (Einstein, 2014). Additionally, in the presence of IU, perfectionism significantly contributed to higher levels of depression and anxiety. Therefore, all students who experience IU may try to control uncertainty by setting rigid standards or unrealistic expectations and when they inevitably fall short of these, they experience increased anxiety symptoms. This finding partially supported H1. Disputing H2 predictions, FGS status did not significantly moderate this mediation relationship. Therefore, contradictory to the literature, experiences of perfectionism may be similar for all students. All students likely experience a pressure to perform, c9ontributing to the development of perfectionism (Madigan et al., 2019), but the source of this pressure may be different as FGS may experience an internal pressure to perform, deriving from ambitions to elevate their family (Fairley-Pittman, 2020), but CGS may experience an external pressure to duplicate or exceed their parent's performance (Bristow, Cant & Chatterjee, 2020).

Supporting H2 predictions, the moderated mediation model showed that for CGS only, in the presence of IU, IS significantly contributes to higher levels of depression and anxiety. This is contradictory to the literature indicating that IS is associated with increased stress for FGS specifically (Holden et al., 2024). This could be understood in the context of CGS being more likely to come from families with a history of success in HE (Stephens et al., 2012). Uncertainty (e.g. about their own abilities or future performance) may challenge these internalized expectations, activating imposter feelings and increasing the likelihood of psychological distress (Peteet et al., 2015). Therefore, for CGS, IS may function as a psychological mechanism that exacerbates distress when IU is high. Comparatively, FGS may appraise university as unfamiliar territory, with an acute anticipation of any structural and cultural barriers, meaning that any self-doubt is expected and normalised, rather than

equating to fraudulence, and that uncertainty is contextualised as situational, not self-defining. (Stephens et al., 2012). Therefore, although FGS were found to report higher levels of IS relative to CGS, the mediating role of imposter feelings in the relationship between IU and distress was diminished. In FGS, uncertainty distress may be more directly driven by tangible structural factors such as financial stress, social isolation, or academic preparedness, rather than fluctuations in imposter feelings. This highlights the potential importance of considering social class backgrounds in models of student mental health.

Belongingness and SES at age 18 did not additionally moderate the relationship between IU and perfectionism or IS, rejecting H3 and H4. Although FGS reported lower SES, felt they belonged less at university, and reported greater IS and perfectionism, neither SES nor belongingness influenced the strength of the indirect relationships between IU and anxiety or depression. Therefore, IU drives maladaptive thinking patterns, such as perfectionism and IS, without needing the context of SES and belongingness to amplify its effects. It could be that SES and belongingness contribute directly to psychological distress, as opposed to the development of perfectionism and IS in the presence of IU. Additionally, the limited sensitivity of the POLAR4 measure should be considered (Bell & Burns, 2021)

When interpreting the practical significance of these results, the risk of Type I or Type II error should be considered. Predetermined covariates helped to reduce the risk of Type I error. However, the analysis process involved three models for each of the two variables and although these were prespecified, the cumulative risk of Type I error increases at the study level. To address potential Type II error, a strategy was employed to reduce the loss of degrees of freedom, due to granular covariates. Although the study was statistically powered to detect small effect sizes ($f^2$=0.04; $f^2$=0.02), the presence of interactions across multiple model paths suggests that the study may have been underpowered to detect effect sizes as small as $f^2$=0.02, potentially increasing the Type II error risk.

**Clinical implications**

These findings provide insight into the student experience that may be helpful for UK universities. Primary prevention involves the delivery of programs designed for non-clinical populations who are at an increased risk of developing mental health difficulties, with the aim of promoting good physical and mental wellbeing to protect these populations from these difficulties (American Psychological Association, 2018). Although this study tells us that FGS experience increased levels of perfectionism and IS, the way that IU contributes to psychological distress through IS and perfectionism is potentially an issue for all students, particularly as the rates of clinically significant anxiety and depression among FGS and CGS were not significantly different. As part of primary prevention, universities could facilitate workshops to all students which explore perfectionism and IS and associated coping strategies. For CGS specifically, such workshops exploring IS should particularly focus on the impact of IS on anxiety and low mood and signpost to appropriate support services. The non-significant differences in rates of clinically significant anxiety and depression across FGS and CGS challenge the assumptions that demographic characteristics are alone a risk factor for mental health difficulties and instead, individual psychological traits may be more predictive of student mental health. Therefore, all students should be made aware of available support resources and services. For FGS in particular, primary prevention should involve peer networking opportunities to help this population build new relationships to increase their sense of belonging. This is important as a recent scoping review (k=21, N=68478) outlines that university belongingness is positively associated with academic outcomes (Kessel et al., 2025).

**Strengths**

Although literature has begun to discuss the links between experiences of IU, belongingness, SES, IS, perfectionism and psychological distress, this is the first study of its

kind to explore the relationships between these constructs, whilst distinguishing between FGS and CGS experiences. This provides a starting point for the development of further studies exploring the FGS experience.

Publication bias risk was reduced as this study had a peer reviewed proposal and was pre-registered on the Open Science Framework. PPIE inclusion helped shape participant documentation, ensuring accessibility and inclusivity. The three-phase process allowed for the conservative tailoring of the study in a way which enhanced recruitment, confirmed appropriateness of measures and best tested hypotheses. Expectation maximisation was used on missing POLAR4 scores. Data was imputed by using data from two additional demographic questions which are typically used in contextual admissions processes. Therefore, participant data, as opposed to sample mean scores were used.

The BQ is a novel and newly developed measure adapted from existing measures through consultation (Hall et al., 2025). Prior to its development, an adequate measure did not exist. The acculturation measure's heatmap format was developed based on long-standing theory (Berry, 1997) and research into existing acculturation measures (Geschke et al., 2010; MacLachlan et al., 2004). Phase one, and other similar studies conducted at this time, allowed both measures to be tested for validity and reliability in four different samples with 600 plus individuals before their use in phase three. Phase two additionally allowed for feedback on the acculturation measure from target audience members.

**Limitations**

The POLAR4 measure was originally developed to measure SES and continues to be used by UK university WAS (Office for Students, 2024). However, it is criticised as being an inaccurate measure of household income (Boliver et al., 2022) and for incorrectly assuming homogeneity among small geographical areas (Bell & Burns, 2021). POLAR4 was used to

allow consistency and ensure that the findings related to students currently supported by WAS. However, there was a significant amount of missing data for POLAR4 and data was imputed from other questions.

The recoding of multiple category sociodemographic covariate variables into dummy dichotomous variables allowed statistical power to be maintained as adding more covariates would decrease degrees of freedom. By doing this, the intricacies of intersectionality are not accounted for. However, collapsing to a maximum of two dichotomous variables for such complex attributes as sexual orientation or ethnicity represents a trade-off between largest possible denominator degrees of freedom versus loss of potentially important attributes. By defining the dichotomous demographic as heterosexual or not, for example, participants were not assigned to an aspect of their identity that they do not associate with, or to an 'other' category. Should a larger sample have been obtained, greater granularity would be maintained, and intersectionality could be explored in more detail.

Additionally, it is important to consider the demographic of the phase three sample. As previously outlined, this sample contained a large proportion of doctoral-level students who will assumingly be more well-socialised to the university environment, in comparison to undergraduate students in particular. This level of socialisation is likely to better protect this group of students against the difficulties that are encountered within the FGS experience and are likely, experienced as more challenging to undergraduate students who are navigating university environments for the first time. This could contribute to the fact that no significant differences were observed between levels of IU in FGS and CGS, which the literature hypothesises. Should less doctoral students have been included, these results may have been different.

**Future research**

Replication of this study with a larger sample would allow for more detailed exploration into the effects of intersectionality as covariate demographic variables would not need to be collapsed as much. Additionally, subgroups could be targeted, for example, exploring these phenomena in racially minoritised FGS. Given the POLAR4 criticisms, a different measure of SES could be trialled.

Literature outlines that FGS may experience mental health difficulties due to their context, rather than FGS status itself (Lipson et al., 2023). For example, FGS are more likely to have family responsibilities and experience financial pressures (Stebleton & Soria, 2013). Future research should establish how these experiences impact FGS.

The FGS narrative is typically difficulties-focused, leaving messages of resilience and determination absent (Lee, 2023). Given this study's findings and the strength of FGS determination highlighted in a recent systematic review (Addy et al., 2025), it is important that future research adopts a more strengths-based narrative which emphasises the ability of FGS to persist despite barriers. Positive role models, an emphasis on achievements, inclusive policies, advocacy and supportive environments are factors hypothesised to contribute to this narrative change (Lee, 2023).

**Reflection on ethical issues**

As no patient data was used in this project and the student population was of focus, ethical risks were low. However, certain methodological constraints warrant attention. The use of a cross-sectional research design means that participants experiences were captured at a single point in time, and any fluctuations in these experiences cannot be captured. Additionally, self-report measures rely on participants responding to questions in a set way, limiting their ability to express their experiences. These measures may also produce bias due

to social-desirability or misinterpretation of measure items or scales. The study's observational nature reflects the impossibility of assigning participants into FGS or CGS categories.

Addressing the ethical principle of responsibility, a decision was made to use the PHQ-2, a two-item version of the PHQ-9 which is commonly used in clinical practice, as a measure of depression. This ensured that enough, but minimal information was obtained in relation to participants mental health. Particularly, as opposed to the PHQ-9, the PHQ-2 does not include the suicidality statement "*Thoughts that you would be better off dead, or thoughts of hurting yourself in some way*". If this data would have been obtained from participants, the researcher would have needed to regularly monitor responses and act accordingly in line with a duty of care. Given that the survey is anonymous, this would have been challenging and unsafe.

In line with the ethical principal of respect, a decision was made for the focus group to be recorded via Microsoft Word sound recorder as opposed to within Microsoft Teams. This further protected participant's anonymity as only audio was recorded. Additionally, a decision was made for a second facilitator to join the researcher during the focus group for the purpose of being able to follow-up with participants should they experience distress or leave. Finally, it is important to consider how these findings could be used by others. It must be noted that others could draw inappropriate conclusions from this singular study and use them in a way which makes decisions about the care of FGS in university or how WAS are facilitated.

**Conclusions**

This study is the first of its kind to explore how the experiences of IU, perfectionism, IS, belongingness, economic disadvantage and psychological distress interact in FGS and

CGS. For all students, experiences of IU, in the presence of perfectionism, contributed to increased anxiety. Surprisingly, for CGS only, experiences of IU, in the presence of IS, contributed to increased anxiety and depression. The socialisation of CGS to success in university may contribute to increased IS in the presence of IU which exacerbates psychological distress. Recommendations of specialist workshops and appropriate and timely signposting to support services are made for UK universities. Further research is required to understand the nuance of the FGS experience and how intersectional identities may play a part.

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# Appendices

## Appendix A

### Phase one participant demographic data

| Variable | | N | % |
|---|---|---|---|
| Total Participants | | 141 | 100.0% |
| Gender | Cisgender man | 27 | 19.1% |
| | Transgender man | 0 | 0.0% |
| | Cisgender woman | 99 | 70.2% |
| | Transgender woman | 0 | 0.0% |
| | Non-binary | 2 | 1.4% |
| | Self-describe | 3 | 1.4% |
| | Prefer not to say | 4 | 2.8% |
| | Missing responses | 6 | 4.3% |
| | Total | 141 | 100.0% |
| Sexual orientation | Asexual | 0 | 0.0% |
| | Bisexual | 18 | 12.8% |
| | Gay | 7 | 5.0% |
| | Heterosexual/straight | 96 | 68.1% |
| | Lesbian | 3 | 2.1% |
| | Pansexual | 2 | 1.4% |
| | Queer | 3 | 2.1% |
| | Self-describe | 2 | 1.4% |
| | Prefer not to say | 4 | 2.8% |
| | Missing responses | 6 | 4.3% |
| | Total | 141 | 100.0% |
| Ethnicity | Asian or Asian British | 17 | 12.1% |
| | Arab or Arab British | 0 | 0.0% |
| | Black, Black British, Caribbean or African | 2 | 1.4% |
| | Mixed or multiple ethnic groups | 4 | 2.8% |
| | White | 108 | 76.6% |

| | | | |
|---|---|---|---|
| | Another ethnic group | 2 | 1.4% |
| | Prefer not to say | 0 | 0.0% |
| | Missing responses | 8 | 5.7% |
| | Total | 141 | 100.0% |
| Disability or long-term condition | Yes | 24 | 17.0% |
| | No | 102 | 72.3% |
| | Prefer not to say | 6 | 4.3% |
| | Missing responses | 9 | 6.4% |
| | Total | 141 | 100.0% |
| Current student | Yes | 6 | 4.3% |
| | No | 12 | 8.5% |
| | Missing responses | 123 | 87.2% |
| | Total | 141 | 100.0% |
| English as first language | Yes | 120 | 85.1% |
| | No | 15 | 10.6% |
| | Missing responses | 6 | 4.3% |
| | Missing responses | 0 | 0.0% |
| Country of residence | Australia | 2 | 1.4% |
| | Austria | 1 | 0.7% |
| | Spain | 1 | 0.7% |
| | UK | 126 | 95.8% |
| | USA | 2 | 1.4% |
| | Missing responses | 0 | 0.0% |
| Highest level of educational achievement | Less than secondary school | 0 | 0.0% |
| | Secondary school graduate | 0 | 0.0% |
| | A-Levels of equivalent | 37 | 26.2 |
| | 1 year degree | 9 | 6.4% |
| | 2 year degree | 3 | 2.1% |
| | 3 year degree | 28 | 19.9% |
| | 4 year degree | 8 | 5.7% |
| | Vocational qualification (e.g. Apprenticeship) | 0 | 0.0% |

| | | | |
|---|---|---|---|
| | Postgraduate diploma/Masters degree | 37 | 26.2% |
| | Professional degree | 1 | 0.7% |
| | Doctorate | 6 | 4.3% |
| | Missing responses | 12 | 8.5% |
| How many people in your home friendship group went to university? | No-one | 15 | 10.6% |
| | Some of them | 34 | 24.1% |
| | Half of them | 14 | 9.9% |
| | Most of them | 42 | 29.8% |
| | All of them | 10 | 7.1% |
| | Missing responses | 26 | 18.4% |
| Do you consider yourself to be working class? | Yes | 14 | 9.9% |
| | No | 2 | 1.4% |
| | Unsure | 1 | 0.7 |
| | Missing responses | 124 | 87.9% |
| Did you experience free school meals at some point throughout your school years? | Yes | 47 | 33.3% |
| | No | 66 | 46.8% |
| | Unsure | 12 | 8.5% |
| | Missing responses | 16 | 11.3% |
| Did your parents receive income support at some point during your childhood? | Yes | 60 | 42.6% |
| | No | 43 | 30.5% |
| | Unsure | 22 | 15.6% |
| | Missing responses | 16 | 11.3% |

## Appendix B

### Phase two participant demographic data

| Variable | | N | % |
|---|---|---|---|
| POLAR4 Score | Quintile 1 | 2 | 50 |
| | Quintile 2 | 2 | 50 |
| Gender | Male | 2 | 50 |
| | Female | 1 | 25 |
| | Non-binary | 1 | 25 |
| Type of university attending | Russell Group | 2 | 50 |
| | Post-1992 ("*polytechnic*") | 2 | 50 |

## Appendix C

### Phase three participant demographic data by FGS status pre-imputation

| Variable | | FGS | | CGS | |
|---|---|---|---|---|---|
| | | N | % | N | % |
| Total participants | | 246 | 55.8% | 191 | 43.3% |
| Gender | Cisgender man | 32 | 13.0% | 15 | 7.9% |
| | Transgender man | 1 | 0.4% | 1 | 0.5% |
| | Cisgender woman | 202 | 82.1% | 173 | 90.6% |
| | Transgender woman | 1 | 0.4% | 0 | 0.0% |
| | Non-binary | 6 | 2.4% | 2 | 1.0% |
| | Self-describe | 2 | 0.8% | 0 | 0.0% |
| | Prefer not to say | 2 | 0.8% | 0 | 0.0% |
| | Missing responses | 0 | 0.0% | 0 | 0.0% |
| Sexual Orientation | Asexual | 5 | 2.0% | 2 | 1.0% |
| | Bisexual | 46 | 18.7% | 23 | 12.0% |
| | Gay | 6 | 2.4% | 0 | 0.0% |
| | Heterosexual/straight | 158 | 64.2% | 153 | 80.1% |
| | Lesbian | 7 | 2.8% | 4 | 2.1% |
| | Pansexual | 3 | 1.2% | 1 | 0.5% |
| | Queer | 10 | 4.1% | 3 | 1.6% |
| | Self-describe | 0 | 0.0% | 0 | 0.0% |
| | Prefer not to say | 11 | 4.5% | 5 | 2.6% |
| | Missing responses | 0 | 0.0% | 0 | 0.0% |
| Ethnicity | Asian or Asian British | 24 | 9.8% | 9 | 4.7% |
| | Arab or Arab British | 1 | 0.4% | 1 | 0.5% |
| | Black, Black British, Caribbean or African | 3 | 1.2% | 1 | 0.5% |
| | Mixed or multiple ethnic groups | 8 | 3.3% | 14 | 7.3% |
| | White | 206 | 83.7% | 164 | 85.9% |
| | Another ethnic group | 3 | 1.2% | 2 | 1.0% |
| | Prefer not to say | 1 | 0.4% | 0 | 0.0% |

| | | | | | |
|---|---|---|---|---|---|
| | Missing responses | 0 | 0.0% | 0 | 0.0% |
| Disability or Long-term Condition | Yes | 56 | 22.8% | 33 | 17.3% |
| | No | 180 | 73.2% | 151 | 79.1% |
| | Prefer not to say | 10 | 4.1% | 7 | 3.7% |
| | Missing responses | 0 | 0.0% | 0 | 0.0% |
| Currently living | Home area (where you lived before starting university) and commuting to university | 76 | 30.9% | 15 | 7.9% |
| | University area with others who you knew prior to university (e.g. in halls of residence or shared accommodation) | 18 | 7.3% | 14 | 7.3% |
| | University area with others who you did not know prior to university (e.g. in halls of residence or shared accommodation) | 101 | 41.1% | 149 | 78.0% |
| | Alone in your university area | 18 | 7.3% | 9 | 4.7% |
| | Other | 27 | 11.0% | 4 | 2.1% |
| | Missing responses | 6 | 2.4% | 0 | 0.0% |
| POLAR4 | 1 | 47 | 19.1% | 8 | 4.2% |
| | 2 | 48 | 19.5% | 23 | 12.0% |
| | 3 | 37 | 15.0% | 17 | 8.9% |
| | 4 | 36 | 14.6% | 30 | 15.7% |
| | 5 | 33 | 13.4% | 73 | 38.2% |
| | Missing responses | 45 | 18.3% | 40 | 20.9% |
| English as first language | Yes | 233 | 94.7% | 181 | 95.8% |
| | No | 13 | 5.3% | 8 | 4.2% |
| | Missing responses | 0 | 0.0% | 0 | 0.0% |

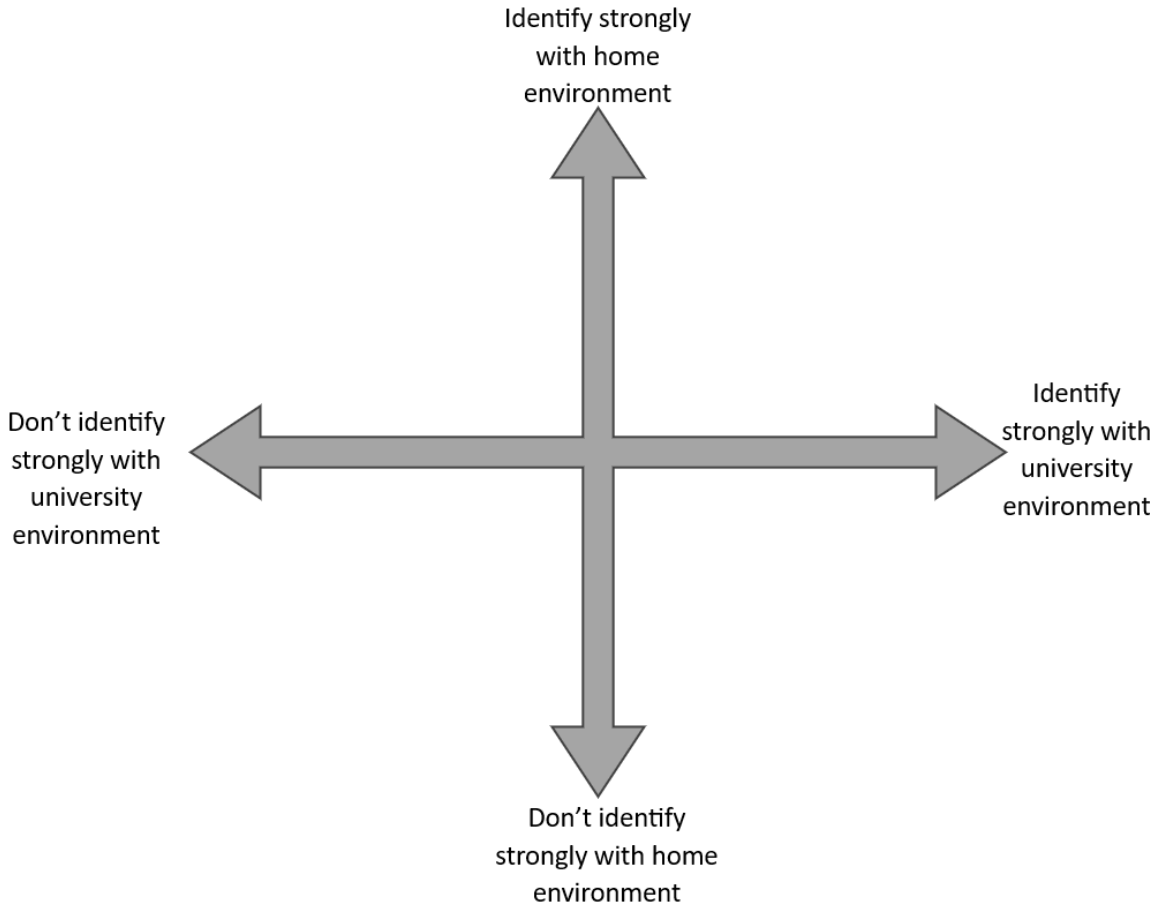
| | | | | | |
|---|---|---|---|---|---|
| Current university type | Post-1992 | 34 | 13.8% | 0 | 0.0% |
| | Russell Group | 203 | 82.5% | 189 | 100.0% |
| | Other (e.g. 'Post-1960'/'new university') | 9 | 3.7% | 0 | 0.0% |
| | Missing responses | 0 | 0.0% | 0 | 0.0% |
| Current level of university study | Undergraduate | 175 | 71.1% | 180 | 95.2% |
| | Postgraduate | 5 | 2.0% | 1 | 0.5% |
| | Doctorate | 65 | 26.4% | 8 | 4.2% |
| | Postgraduate certification/Postgraduate diploma | 0 | 0.0% | 0 | 0.0% |
| | Postgraduate certificate in education/postgraduate diploma in education | 1 | 0.4% | 0 | 0.0% |
| | Missing responses | 0 | 0.0% | 0 | 0.0% |
| Did you move to a different college or 6th form for your A-Level (or equivalent) studies? | Yes | 112 | 45.5% | 63 | 33.3% |
| | No | 128 | 52.0% | 125 | 66.1% |
| | Missing responses | 6 | 2.4% | 1 | 0.5% |
| How many people in your home friendship group went to university? | No-one | 27 | 11.0% | 6 | 3.2% |
| | Some of them | 63 | 25.6% | 24 | 12.7% |
| | Half of them | 32 | 13.0% | 21 | 11.1% |
| | Most of them | 94 | 38.2% | 98 | 51.9% |
| | All of them | 24 | 9.8% | 39 | 20.6% |
| | Missing responses | 6 | 2.4% | 1 | 0.5% |
| | Yes | 70 | 28.5% | 17 | 9.0% |

| | | | | | |
|---|---|---|---|---|---|
| Did you experience free school meals at some point throughout your school years? | No | 147 | 59.8% | 156 | 82.5% |
| | Unsure | 26 | 10.6% | 16 | 8.5% |
| | Missing responses | 3 | 1.2% | 0 | 0.0% |
| Did your parents receive income support at some point during your childhood? | Yes | 96 | 39.0% | 17 | 9.0% |
| | No | 93 | 37.8% | 153 | 81.0% |
| | Unsure | 53 | 21.5% | 19 | 10.1% |
| | Missing responses | 4 | 1.6% | 0 | 0.0% |

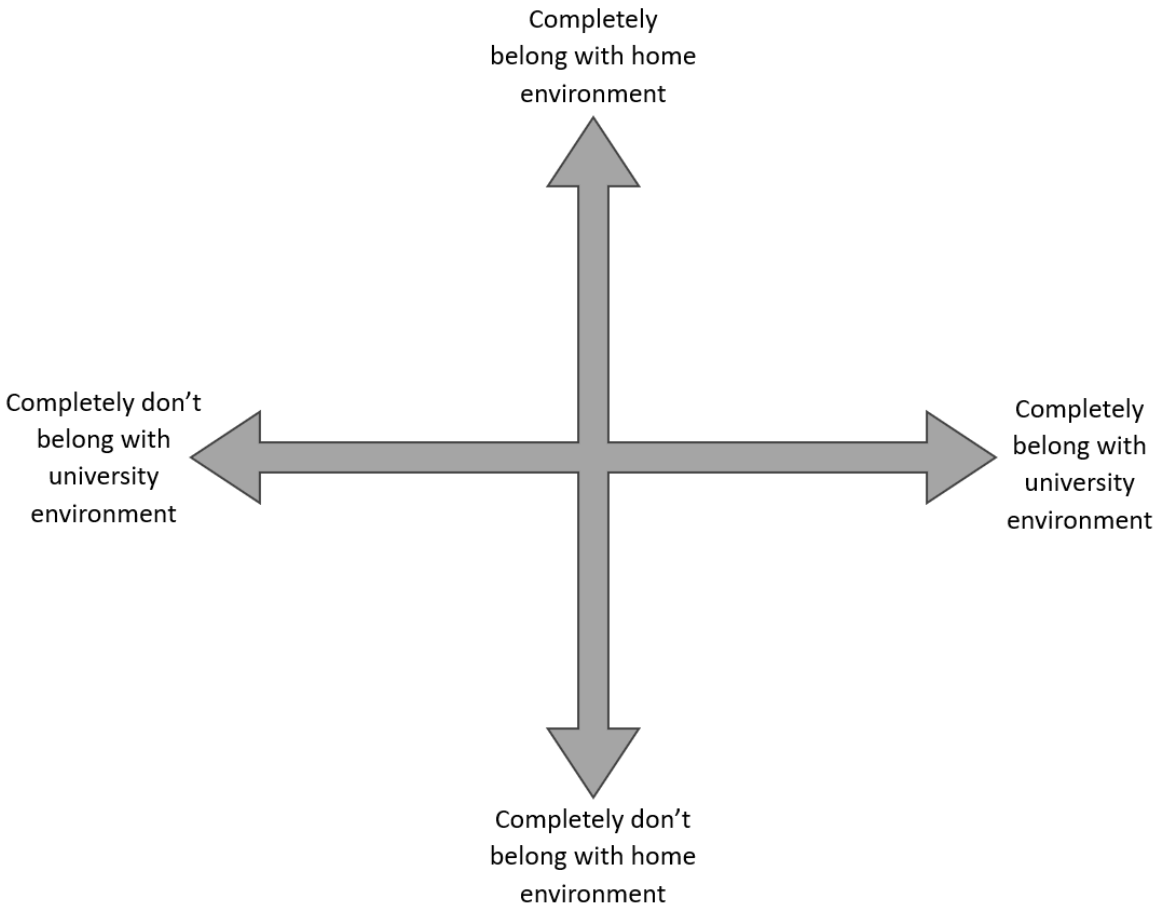
# Appendix D

## Phase one acculturation measure

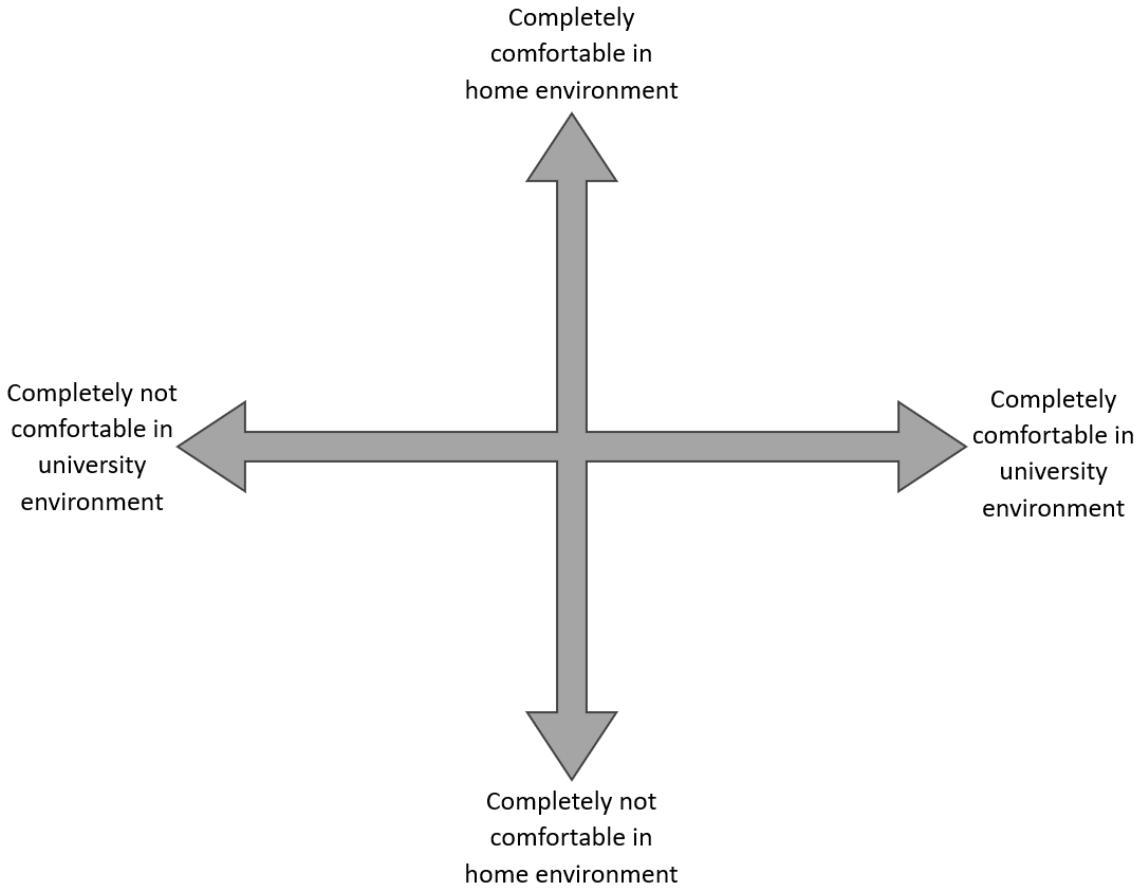
Please click on one position in the map below to indicate how strongly you feel that you **identify** with both your home environment and university environment.



Please click on one position in the map below to indicate how strongly you feel that you **belong** with both your home environment and university environment.



Please click on one position in the map below to indicate how **comfortable** you feel in both your home environment and university environment.



# Appendix E

## Belongingness questionnaire and adaptation information

Please answer these questions based on the place where you **currently live most of the time**. By place we could mean your residence, the town or city, or a combination of residence, locality or where you spend your time.

**The place is...**

_____

Please answer the questions about ${PlaceA/ChoiceTextEntryValue} using the scale:

| | Strongly disagree (1) | Disagree (2) | Somewhat disagree (3) | Neither agree nor disagree (4) | Somewhat agree (5) | Agree (6) | Strongly agree (7) |
|---|---|---|---|---|---|---|---|
| 1. I feel like I belong to or in this place (1) | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| 2. For me, this is the ideal place to live or be (2) | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| 3. I strongly value this place (3) | ○ | ○ | ○ | ○ | ○ | ○ | ○ |

Is there another place where you feel you belong **separate from your usual residence** (for example the residence of family members, another city, country or locality)?

- ○ Yes (1)
- ○ No (2)

Please name this other place where you feel you belong

_____

Please answer these questions about ${PlaceB/ChoiceTextEntryValue} using the scale:

| | Strongly disagree (1) | Disagree (2) | Somewhat disagree (3) | Neither agree nor disagree (4) | Somewhat agree (5) | Agree (6) | Strongly agree (7) |
|---|---|---|---|---|---|---|---|
| 1. I feel like I belong to or in this place (1) | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| 2. For me, this is the ideal place to live or be (2) | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| 3. I strongly value this place (3) | ○ | ○ | ○ | ○ | ○ | ○ | ○ |

This questionnaire will ask you about the way you feel **you belong in general and among people.**

| | Strongly disagree (1) | Disagree (2) | Somewhat disagree (3) | Neither agree nor disagree (4) | Somewhat agree (5) | Agree (6) | Strongly agree (7) |
|---|---|---|---|---|---|---|---|
| 1. When I am with other people, I feel included (1) | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| 2. I have close bonds with family and friends (2) | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| 3. I feel like an outsider (3) | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| 4. I feel as if people do not care about me (4) | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| 5. I feel accepted by others (5) | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| 6. Because I do not belong, I feel distant during times of celebration (e.g. festivals, holidays and seasonal events) (6) | ○ | ○ | ○ | ○ | ○ | ○ | ○ |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 7. I feel isolated from the rest of the world (7) | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| 8. I have a sense of belonging (8) | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| 9. When I am with other people, I feel like a stranger (9) | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| 10. I have a place at the table with others (10) | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| 11. I feel connected with others (11) | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| 12. Friends and family do not involve me in their plans (12) | ○ | ○ | ○ | ○ | ○ | ○ | ○ |

Please answer the following questions using the scale:

Page Break

Please answer the following questions based on the **community** (rather than a place) where you feel you **belong to or identify with the most**. By community we mean feeling a sense of belonging with other people where there is likely a set of shared values, knowledge, or assumptions.

The community may be made up of people you know or people that you haven't met yet, however if you were to meet with another member of this community you would recognise shared values, not feel the need to explain or justify your membership with that community and may sense shared knowledge or values on a being level.

- It may have a formal status such as a group, a club or a society (e.g. a dog walking group, a running club, a music society, or a local chapter of a larger organization)

- It may be a much looser network that may be geographically and socially widespread (e.g. dog walkers, runners, or people with similar interests you could come across anywhere, whether close to home or on your holidays).

- This could also be a shared sense of aspects of personal identity that are commonly referred to as diversity in its broadest sense (e.g. communities based on age, disability, gender, gender affirmation, marriage and civil partnership, pregnancy and maternity, race, religion and belief, or sexual orientation).

**The community I feel I belong to or identify with the most is**

_____

Please answer the questions about ${CommunityA/ChoiceTextEntryValue} using the scale:

| | Strongly disagree (1) | Disagree (2) | Somewhat disagree (3) | Neither agree nor disagree (4) | Somewhat agree (5) | Agree (6) | Strongly agree (7) |
|---|---|---|---|---|---|---|---|
| 1. I feel like a member of this community (1) | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| 2. When I have tried to connect with this community in the past, I have felt excluded. (2) | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| 3. There are members of this community from whom I can get support. (3) | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| 4. In the company of people in this community, I feel like I belong. (4) | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| 5. I am able to find places in this community where I feel comfortable socializing. (5) | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| 6. I feel disconnected from this community (6) | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| 7. There are places in this community where I feel understood and accepted. (7) | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| 8. There are places within this community where I don’t need to explain myself. (8) | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| 9. I feel like I have close friends in this community. (9) | ○ | ○ | ○ | ○ | ○ | ○ | ○ |

**Community belonging subscale**

Hall et al. (2025) adapted the community belonging subscale from Barr et al.'s (2016) measure of transgender community belongingness scale. Barr et al.'s (2016) scale was also adapted from Doolin & Budge's (2015) unpublished measure of lesbian community belongingness, as cited in Barr et al. (2016). The instruction was amended to allow participants to identify a community which they felt they belonged to or identified with the most and a short definition of community was added to support participants to identify this. The language of items 1-3 and 5-7 were amended to be consistent with the community participants had identified. Items 4 and 9 were also amended to refer to the community participants had identified. They were also non-reversed to improve clarity of the questions. Item 8, "*There are placed within this community where I don't need to explain myself*" was amended from "*There are places within the trans community where I can get support*" as another item in the scale referenced seeking and gaining support from members of their identified community, and this amendment also made the item meaningful to the participant's identified community.

**Social belonging subscale**

Hall et al. (2025) adapted the social belonging subscale from Malone et al.'s (2012) measure of general belongingness. An instruction was added to the measure to provide context in line with the other subscales. Items remained consistent in adaptation, except item 6, "*Because I do not belong, I feel distant during times of celebration (e.g. festivals, holidays and seasonal events)*". This was adapted from "*Because I do not belong, I feel distant during the holiday season*" in the original measure in order to increase inclusivity by including times of celebration within different cultures.

**Place belonging subscale**

Hall et al. (2025) adapted the place belonging subscale from Venables et al.'s (2012) measure of sense of place. Initial instruction was modified to allow individuals to specify a place where they currently are, and an additional place where they feel like they belong, separate from where they currently are. For the purposes of this research, these places were identified for participants as university and home respectively. The individual items were adapted as following:

- Item 1 "*I feel like I belong to or in this place*" adapted from item a "*I feel like I belong to the community where I live*". This amendment placed focus on the place people had identified and to distinguish from the community belonging subscale.
- Item 2 "*For me, this is the ideal place to live or be*" was adapted from item b "*For me, this is the ideal place to live*" and item 3 "*I strongly value this place*" was adapted from item c "*I strongly value the place where I live*". This amendment ensured that these items were applicable as the places which they identify in this context may not be where they live.

These three items were repeated so that they were responded to for both identified contexts. The original 5-point scale used was adapted to a 7-point scale to provide consistency with the other subscales.

# Appendix F

## Phase one and three additional measures

### Between Two Worlds Main Model (BTWMM)

The BTTWMM is a measure which was developed for the purpose of operationalising the uncertainty distress model (Freeston et al., 2020). This consisted of nine subscales which measure experiences of prospective uncertainty in both 'worlds', perceived threat, trust, actual uncertainty, information sources used to seek answers in both 'worlds', situational uncertainty and disruption. The 'prospective uncertainty: away' subscale consisted of five items referring to participant's experiences of prospective uncertainty at university. The 'prospective uncertainty: home' subscale consisted of five items referring to participant's experiences of prospective uncertainty at home, where they lived prior to university. The 'perceived threat' subscale consisted of three items referring to participant's experiences of threat at university. The 'trust' subscale consisted of four items referring to how much participant's feel they can trust people and systems in the university environment. The 'actual uncertainty' subscale consisted of four items referring to participant's experiences of actual uncertainties at university. The 'situational uncertainty' subscale consisted of eight items referring to how uncertain participants feel about knowing what to expect, how to act, how others perceive them, whether they belong and how bothered they are by these indicated levels of uncertainty. The 'disruption' subscale consisted of five items referring to participant's experiences of living between their life at home and university. These seven subscales required participants to answer via a seven-point Likert scale, ranging from 1 (*Strongly disagree*) to 7 (*Strongly agree*). The 'information sources: away' subscale required participants to indicate the frequency to which they use five information sources to seek answers about aspects of university life. The 'information sources: home' subscale required participants to indicate the frequency to which they use five information sources to seek answers about aspects of home life. These two

subscales required participants to answer via a seven-point Likert scale indicating duration of time, ranging from 1 (*Not at all*) to 7 (*More than 3 hours*). The title of each subscale was adapted to ensure that participants were reflecting on their experiences of either the home or university environment as appropriate. For phase three, the 'information sources' subscale was adapted to ensure it was specific to the university experience. The original subscale included the following items: "*Official sites about your community*", "*Traditional media sources (e.g., television, radio, newspapers, online websites)*", "*Social media sources (e.g., Facebook, Twitter etc.)*", "*Other sources (e.g. friends, colleagues etc.)*" and "*Alternative media sources (e.g., media sources which challenge or oppose the mainstream viewpoint*". These were adapted to: "*Official university or student union sites*", "*Traditional media sources (e.g., university or student union magazine*", "*Social media sources (e.g., university, student union or university societies Facebook, Twitter, Instagram etc.)*", "*Other sources (e.g., friends, colleagues etc.)*" and "*Alternative media sources (media sources which challenge or oppose the university viewpoint e.g., 93% Club)*".

**Intolerance of Uncertainty Behaviours in Everyday Life (IUBEL).**

The IUBEL is a 7-item scale used to measure how people respond to uncertain situations (Clifford et al., 2015). The situational version asks people to first identify and describe an uncertain situation, and then asks people whether they would use each of the behaviours. Participants were required to respond on an eight-point Likert scale, ranging from 1 (*Not at all*) to 8 (*Extremely*), to indicate how likely they are to adopt each behaviour when they feel uncertain about how to behave at home or university. Total scores range from 0-28 with higher scores indicating a higher degree of the use of uncertainty behaviours.

**Self-Concept Clarity Scale (SCCS).**

The SCSS is a reliable and valid 12-item scale used to measure whether an individual's beliefs about themselves are well-understood, consistent and stable regardless of the situation (Campbell et al., 1996). Participants were required to respond on a five-point Likert scale, ranging from 1 (*Strongly disagree*) to 5 (*Strongly agree*). Total scores range from 12-60 with higher scores indicating a lower degree of self-concept clarity.

## Appendix G

### Phase two and three gender demographic question adaptation

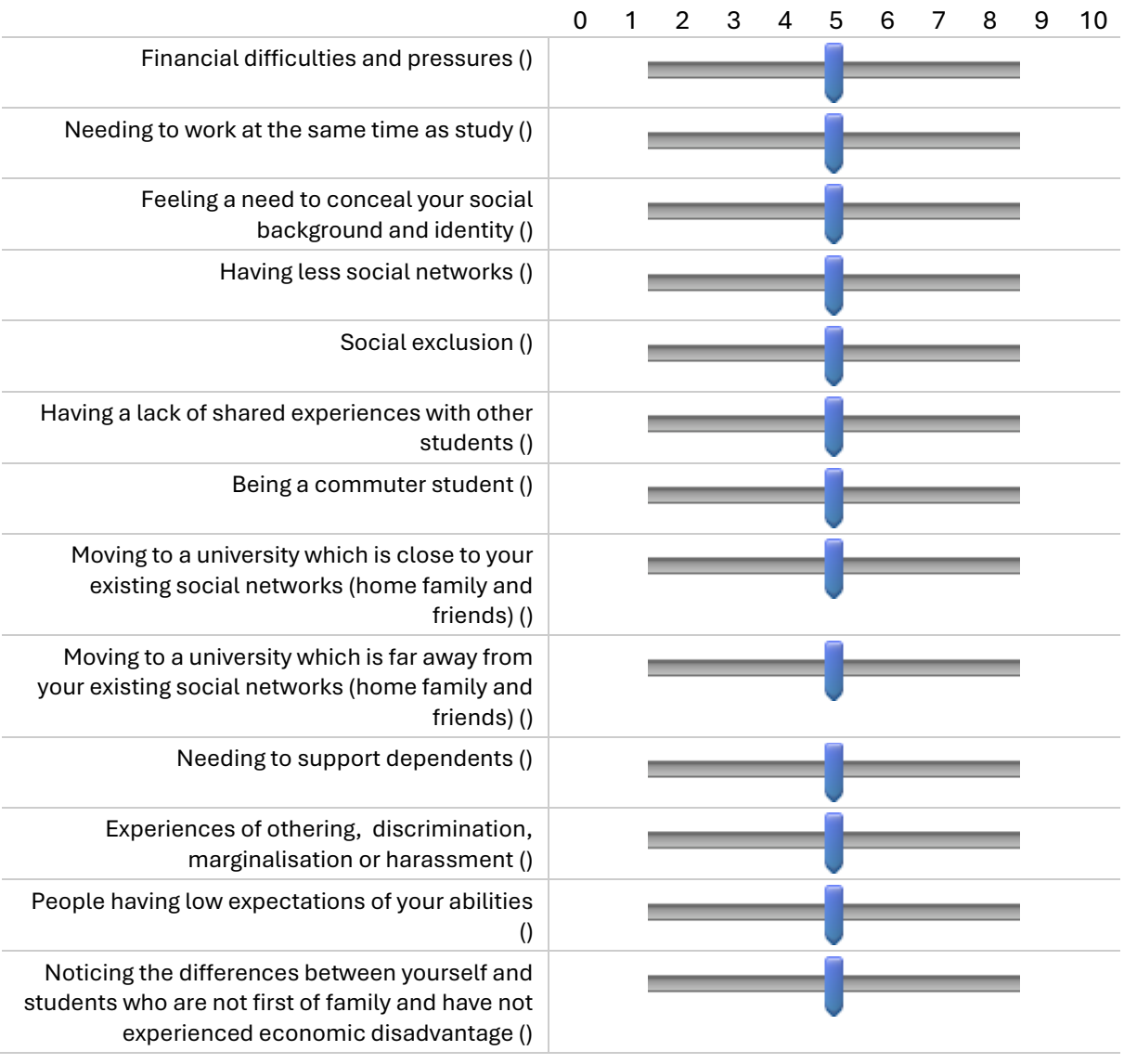
A definition of the term ‘cisgender’ was added into the gender demographic question (*where cisgender means that you identify with the sex you were assigned at birth i.e. with the sex on your birth certificate*) as feedback gained from phase one participants indicated that they did not understand this term. Additionally, three participants who chose ‘self-describe’ indicated that they were ‘male’ or ‘female’ in the free text response.

# Appendix H

## Pre-focus group survey measure

To what extent do the below factors relate to your experiences of transitioning to university as a first of family student from a background of economic disadvantage? Please rate the following on scale of 0-10: 0 = does not at all relate to my experiences of transitioning to university as a first of family student from a background of economic disadvantage. 10 = completely relates to my experiences of transitioning to university as a first of family student from a background of economic disadvantage.

| | 0 = does not at all relate to my experiences of transitioning to university as a first of family student from a background of economic disadvantage. | 10 = completely relates to my experiences of transitioning to university as a first of family student from a background of economic disadvantage. |
|---|---|---|



# Appendix I

## Phase three amendments to sociodemographic questions

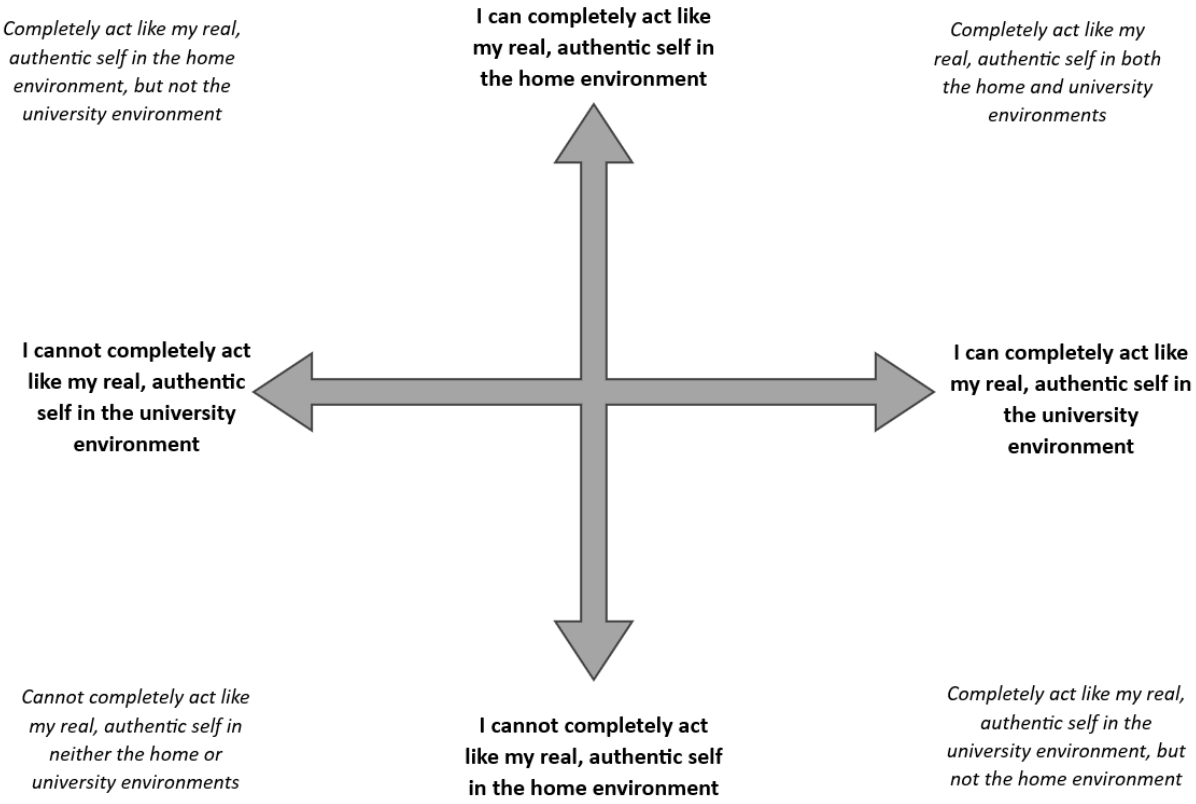
Country of residence, occupation and current student sociodemographic questions were removed as a decision was made that only current UK university students would be eligible. As available phase one data showed that participants reported starting their university studies between 1971 – 2019, participants were required to rely on memory when reflecting on their experiences of being a FGS in university. It was decided that for accurate recall, participants would be current university students. Only participants currently residing and studying in the UK were eligible to ensure that findings related to UK universities and WAS. The definition of 'cisgender' which was present in the phase two pre-focus group survey remained. The demographic question, "*Do you consider yourself to be from a working class background?*" was also removed due to feedback from focus group participants that the term 'working class' is too subjective to gain an accurate representation. Questions around FGS status, university attending, and their level of university study were added. To enable recruitment, university students, regardless of their FGS status, were eligible at this phase as FGS students may be considered a minority group in some university settings and to allow for differences between participant experiences to be explored using FGS status as a moderator. Details about the university attending and level of study would add further insight into participant experiences and influences of this.

# Appendix J

## Phase three acculturation measure

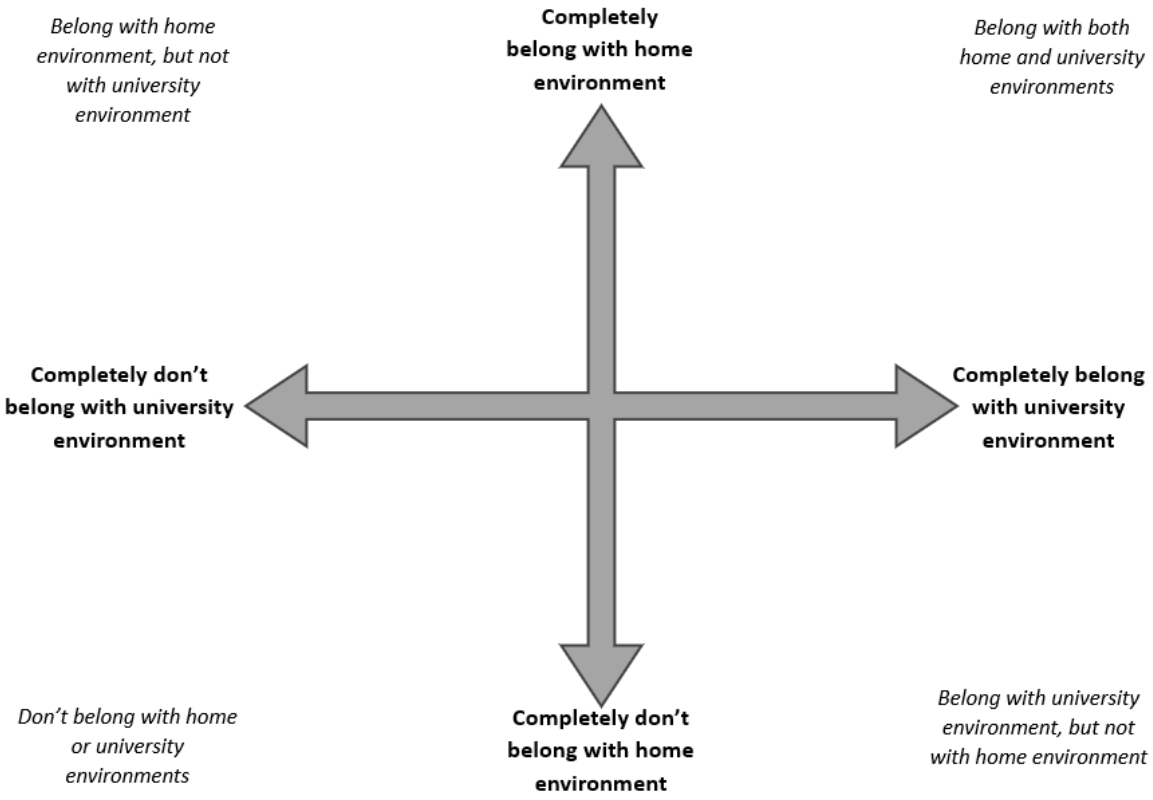
Please click on **one position** in the map below to indicate how strongly you **can act like your real, authentic self** within both your home environment and university environment.

Italicised descriptions in the four corners of the map are to support your understanding and completion.



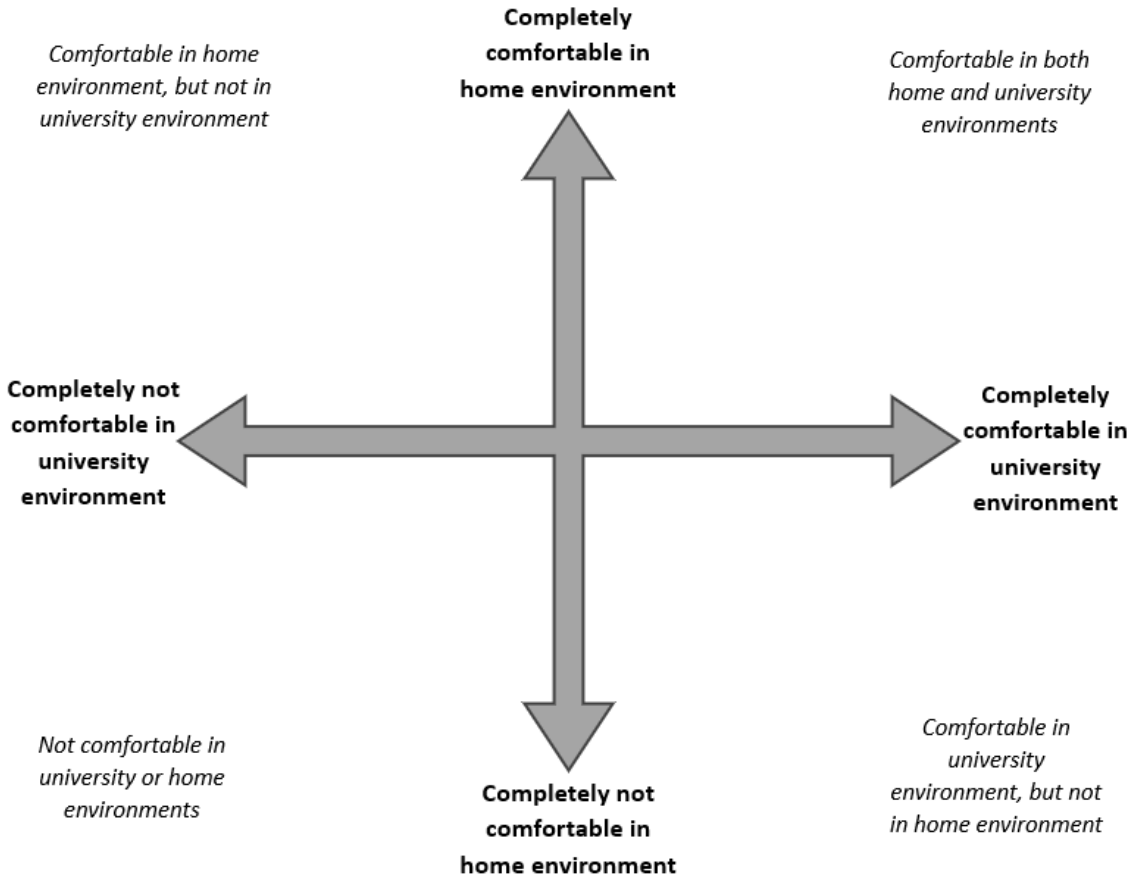
Please click on **one position** in the map below to indicate how strongly you believe that you **belong** with both your home environment and university environment.

Italicised descriptions in the four corners of the map are to support your understanding and completion.



Please click on **one position** in the map below to indicate how **comfortable** you feel in both your home environment and university environment.

Italicised descriptions in the four corners of the map are to support your understanding and completion.



# Appendix K

## Phase one participant documentation

**Information Sheet**

**Between Two Worlds**

You are invited to participate in a research study titled “Between Two Worlds”. Before you decide to participate, it is important to understand the purpose of the research and what it will involve.

The study is open to participants aged 18+.

We encourage you to read the information carefully and review the information sheet multiple times, to make an informed decision regarding your participation.

Please do not hesitate to seek further clarification or request additional information from us if any aspect is unclear. This study has been reviewed and received approval by the Faculty of Medical Sciences Research Ethics Committee, a part of Newcastle University Ethics Committee (55782/2023).

**What is the purpose of the study?**

Uncertainty refers to the unpleasant and uncomfortable nature of being unsure about something and contributes to experiences of discomfort and stress. Some people live their lives by needing to balance different life situations which can create the experience of being 'between two worlds'. Balancing two life situations can cause tension between one’s sense of identity and the external world. Balancing the different worlds can cause people to experience discomfort and stress due to the uncertainty they may experience when attempting to fit into or move between both worlds. The context of two life situations is a significant challenge for many people in modern society which requires further research and understanding. This study aims to explore the relationship of being 'between two worlds', the way people experience uncertainty, their emotions and reactions, and how they adjust and cope. This study will investigate various life situations and people choose which situation they relate to most. These include neurodiversity, second-generation immigrants, veterans, those who are first in family at university/ from a background of lower SES, and any other with a different experience of being 'between two worlds'.

**What will taking part involve?**

Demographic information will be collected at the beginning of the study. Participants will choose which life situation is reflective of their experience and be required to complete a series of questionnaires specific to their situation. If you are a student at Newcastle University, your participation will count toward the research participation scheme. For every fifty participants

who complete the survey in a specific stream, we will donate £20 to a mental health charity relevant to the stream on your behalf.

**Do I have to take part?**

No, you do not have to take part. This study is completely voluntary, and you have the right to refuse participation and withdraw from the study at any point.

**Who will know I am participating in the study?**

Nobody, data is anonymised on collection. No identifiable information will be collected.

**What will happen to the results of the research?**

After the study is completed, the results will be analysed and a research report will be written. Only group data will be discussed in the findings and individuals will not be identified. Presentations may also be given at conferences and reports may be submitted for publication.

**How do I find out more about the study?**

Should you desire additional information about the study, a summary of the findings can be sent to you when the project is completed in August 2024. If you wish to receive this, please add your e-mail address when prompted at the end of the survey.

**What are the risks and benefits of taking part?**

We hope that the findings of this study will contribute to better supporting individuals from diverse communities by addressing issues related to self-esteem, mental health, and overall wellbeing. Insights into the mechanisms which contribute to experiences of psychological distress in individuals navigating 'between two worlds' will be developed.

It is possible that thinking about your experiences of being 'between two worlds' may be upsetting. Although personal events will not be asked about in any detail, we recognise that some people may find this distressing. If you feel this may be upsetting, you may wish to

consider your participation and you are free to withdraw from the study at any point without providing a reason.

**If you feel that you require further support, the following resources may be helpful:**

**For students**

**Newcastle University Student Health and Wellbeing services:**
https://www.ncl.ac.uk/wellbeing/
+44 (0) 191 208 3333

**Student Minds**
https://www.studentminds.org.uk/findsupport.html

**General**

**Your GP**

**NHS**
https://www.nhs.uk/nhs-services/mental-health-services/

**If you live in England, you can also self-refer to an NHS psychological therapies service.**

**This website will help you find your local service.**

https://www.nhs.uk/service-search/mental-health/find-a-psychological-therapies-service/

**The Mind website contains a range of information about mental health conditions and support pathways that are available:**
https://www.mind.org.uk/information-support/

**Mental Health Foundation:**
htpps://www.mentalhealth.org.uk/explore-mental-health/getting-help-your-mental-health

**If you require more urgent support, please contact the following.**

**Samaritans 24/7 call helpline: 116 12**

https://www.samaritans.org/how-we-can-help/contact-samaritan/

**Text 'SHOUT' to 85258** https://giveusashout.org/

**Consent form**

A psychological study into uncertainty in relation to the experience of being 'between two worlds'

Please read and tick the following statements to ensure that you understand all the information given before proceeding.

- ☐ If I stop part-way through I understand that my information may still be used. (2)
- ☐ I understand that I can withdraw at any time without giving a reason. (8)
- ☐ I understand that all information I give will be kept confidential. (13)
- ☐ I understand that all of my data is anonymised. (14)
- ☐ I understand that the results of the research will be written in a report and published for others to read. (15)
- ☐ I give consent for my data to be used in future studies. (16)

---

I confirm that I am aged 18 or over.

- ○ Yes (1)
- ○ No (2)

**Please read and tick the following statement to confirm that you consent to taking part in this study.**

- ○ I have read and understood the Participant Information Sheet for this study and consent to taking part. (1)
- ○ I do not wish to participate in this study (2)

## Debrief sheet

**A psychological study into distress and uncertainty in the experience of being 'between two worlds'**

This study was an investigation of the experience of being 'between two worlds', the way people experience uncertainty, their emotions and reactions, and how they adjust and cope. Uncertainty refers to the unpleasant and uncomfortable nature of being unsure about something and contributes to experiences of discomfort and stress. Some people live their lives by needing to balance different life situations which can create the experience of being 'between two worlds'. Balancing two life situations can cause tension between one's sense of identity and the external world. Balancing the different worlds may contribute to some people experiencing discomfort and stress due to the uncertainty they may encounter when attempting to fit into or move between both worlds. The context of two life situations is a significant challenge for many people in modern society which requires further research and understanding.

Better understanding of how these tensions can affect wellbeing can inform broader society about the experience and contribute to initiatives aimed at making people feel more comfortable and more welcome. It may also help people who work with different communities

their support may be better informed about the role of uncertainty, and so further develop the types of support on offer.

We know that responding to some of the questions in this survey may be distressing for some people, we appreciate you giving your time to help us understand this in more detail in spite of these feelings.

**If you have any queries or feedback on this study, you can contact the team at the following address and email:**

Professor Mark Freeston Address: School of Psychology Faculty of Medical Sciences Newcastle University Dame Margaret Barbour Building, Wallace Street, Newcastle upon Tyne NE2 4DR Email: mark.freeston@newcastle.ac.uk

Please note that although this email account will be monitored, it will not be monitored regularly enough to respond to someone who is experiencing distress. If you are experiencing distress, please seek local support.

**If you feel that you require further support, the following resources may be helpful:**

**For students:**

Newcastle University Student Health and Wellbeing services: https://www.ncl.ac.uk/wellbeing/ + 44 (0) 191 208 3333

Student Minds: https://www.studentminds.org.uk/findsupport.html

**General:**

Your GP

Mind: https://www.mind.org.uk/information-support/ Rethink Mental Illness https://www.rethink.org/

NHS: https://www.nhs.uk/nhs-services/mental-health-services/

If you live in England, you can also self-refer to an NHS psychological therapies service.

This website will help you find your local service. https://www.nhs.uk/mental-health/social-care-and-your-rights/how-to-access-mental-health-services/

**If you require more urgent support, please contact the following:**

Samaritans 24/7 call helpline: 116 123 https://www.samaritans.org/how-we-can-help/contact-

samaritan/?gad_source=1&gclid=EAIaIQobChMIp76TjNPGgwMVO5SDBx2D4gPeEAAYASAAEgLjJfD_BwE

Text 'SHOUT' to 85258 https://giveusashout.org/

CALM helpline 5pm to midnight 0800 585858 Campaign Against Living... | Campaign Against Living Miserably (CALM) (thecalmzone.net)

***If you wish to download this information please click on the following link:*** General support resource

The purpose of this project was to explore the experiences of first generation students from backgrounds of low SES. We are interested in the way people experience uncertainty, their emotions and reactions, and how they adjust and cope and particularly, how a sense of belonging, striving for perfection, and feeling like an imposter may contribute to these experiences when in university environments. As someone with lived experience of this, your views and contributions are very valuable to this project.

This research aims to gain an in-depth understanding into the experiences of this population in order to make recommendations to university environments on how to better support this population to reach their potential during their university journey, including reducing the risk of emotional distress and drop-out.

**There are a number of different organisations which offer support to first-generation students from lower socio-economic backgrounds.**

Newcastle University PARTNERS programme: https://www.ncl.ac.uk/partners/

upReach: https://upreach.org.uk/students

**If you feel that you require further support, please contact the following.**

Newcastle University Student Health and Wellbeing services:
https://www.ncl.ac.uk/wellbeing/ + 44 (0) 191 208 3333

Student Minds: https://www.studentminds.org.uk/findsupport.html

Your GP

**If you require more urgent support, please contact the following.**

Samaritans 24/7 call helpline: 116 123 https://www.samaritans.org/

Text 'SHOUT' to 85258 https://giveusashout.org/

If you wish to download this information please click this link: Support Organisations

# Appendix L

## Phase two participant documentation

### Information Sheet

**Project title:** Perfectionism, IS, intolerance of uncertainty (IU) and psychological wellbeing in first-generation university students from a background of economic disadvantage: the influence of a sense of belonging.

**Invitation and brief summary**

You are being invited to take part in a research study. Before you decide whether you wish to take part it is important that you understand why this research is being done and what your participation will involve. Please read this information carefully and discuss it with others if you wish. If you have any further questions, please contact us on the details below.

**What is the purpose of this research?**

This research aims to explore the experiences of intolerance of uncertainty (difficulty managing negative feelings associated with uncertainty) and psychological distress within first generation students from backgrounds of economic disadvantage. Particularly, how a sense of belonging (feeling like you fit into a community or group), perfectionism and IS (doubting your skills or achievements when surrounded by people in similar high achieving positions to you) impacts these experiences when in university environments. Widening access schemes like the Newcastle University PARTNERS program are successful in supporting this population to access university. However, this population continues to face higher drop-out rates and poorer mental wellbeing in comparison to students who are not first-generation and have not experienced economic disadvantage.

This research aims to gain an in-depth understanding into the experiences of this population. With more detailed understanding, recommendations can be made to university environments about how to better support this population to reach their potential, including reducing the risk of emotional distress and drop-out.

As the widening access agenda rightly continues to gain pace, equal consideration needs to be given to how we can continue to increase the diversity of the student population. To do this, spaces must be more inclusive and welcoming for people from marginalised and disadvantaged backgrounds.

**Why have I been asked to take part?**

You have been asked to take part as you identify as being a university student who is the first member of their family to access higher education and have experienced economic disadvantage.

**What will I be asked to do?**

You will be asked to complete a short online survey before taking part in a focus group. This will include your postcode at age 18 before starting university, used to calculate your POLAR4 score (a standardised measure of SES) to determine eligibility. Participants are

eligible to take part in the focus group if their postcode before starting university is within quintiles 1 or 2. Additional demographic information (age, gender and whether you are a commuter or resident student) will be asked. If you would prefer not to answer some, or all questions, there will be an option to select 'prefer not to say'. Responses will be anonymised, will not be shared in the focus group and will be collated to gain an overall description of the participants in this study. You will also be asked to rate how much you feel that a number of experiences have influenced your experiences of transitioning to university which will inform the focus group discussions.

Following this, you will be asked to take part in a focus group with other students of similar backgrounds. This will last for approximately 1 hour and the date, time and location (face-to-face or online) will be negotiated between consenting and eligible participants. The focus group will involve group discussions about how different experiences within the survey have influenced your experiences of belongingness and uncertainty within university environments.

The focus group will be facilitated by Chelsea Addy who is a Trainee Clinical Psychologist at Newcastle University and is employed by Cumbria, Northumberland, Tyne and Wear NHS Foundation Trust. Chelsea also identifies as a first-generation student and has experienced economic disadvantage.

**What information will be collected and who will have access to the information collected?**

The focus groups will be recorded to allow the researcher to identify themes between participant's responses, but recordings will not be shared outside of the research team. Participants will be anonymous and non-identifiable as each participant will be allocated a participant number. This data will be stored securely on a password protected and encrypted computer, in line with the Data Protection Act 2018 and General Data Protection Regulation (GDPR). Your information will only be accessed by the research team.

**What are the possible benefits of taking part?**

We hope that participating in this study will provide a useful reflective space to consider the potential impact of your background on your experiences within higher education.

More broadly, it is hoped that this research will develop an understanding of how being a first-generation student from a background of economic disadvantage impacts on an individual's sense of belonging and experiences of uncertainty within higher education. Once this understanding is developed, it is anticipated that recommendations can be made to higher education environments and widening access initiatives of how best to support this population. Therefore, participants will be using their own lived experience to contribute to new research, as well as recommendations for supporting this population.

Participants will be provided with a £15 Amazon e-voucher for their time and commitment. The process of providing e-vouchers to participants will commence after the focus groups have taken place. Should the focus group take place face-to-face, participants will also receive refreshments.

**What are the possible disadvantages or risks of taking part?**

We recognise that some people can find it difficult to talk about their own lived experiences and can feel a level of discomfort with this, although this is not the case for everyone. Details will be provided on how to contact the researcher, as well as access other services for support after taking part in the research.

**What if I decide I no longer wish to take part?**

You can choose to withdraw your participation or information from this project up to two weeks after the focus group by contacting the researcher. Following this period, it may not be possible to withdraw your information as the results may have already been analysed.

**Who is the sponsor and data controller for this research?**

Newcastle University is the sponsor for this study based in the United Kingdom. Newcastle University will be using information from you to undertake this study and will act as the data controller for this study. This means that Newcastle University is responsible for looking after your information and using it properly.

The lawful basis for carrying out this study under GDPR is Task in the Public Interest, (Article 6,1e) as research is cited as part of the University's duties.

Your rights to access, change or move your information are limited, as Newcastle University need to manage your information in specific ways for the research to be reliable and accurate. If you withdraw from the study, Newcastle University will keep the information about you that has already been obtained. To safeguard your rights, the minimum personally identifiable information will be used.

**Has the study received ethical approval?**

This study has received ethical approval from Newcastle University's Research Ethics Committee (UREC) on 12.03.2024 (44061/2023).

**What will happen to the results of the study?**

The results of this study will be available in a report which should be completed approximately six months after the study ends (around Autumn 2025). You will receive feedback throughout the study about your results and we will share a final summary of the study with you should you wish. We hope that the research findings will be presented in academic journals, conferences within the UK and in other formats for non-academic audiences. It will not be possible to identify participants from the reports or publications, so your name or any identifiable information will not be included in the final report.

**Who is the researcher I can contact if I have any further questions?**

Chelsea Addy (c.addy3@newcastle.ac.uk)

## Consent Form

**Project title:** Perfectionism, IS, intolerance of uncertainty (IU) and psychological wellbeing in first-generation university students from a low socio-economic (SES) background: the influence of a sense of belonging.

**Researchers:** Chelsea Addy, Dr Sarah Thwaites & Professor Mark Freeston

Thank you for your interest in taking part in this research. Please read and initial each of the following statements to indicate your understanding and consent.

| | |
|---|---|
| I have been provided with the information sheet and have read and understand the information provided. | |
| I have had opportunity to consider the information and discuss this with the research team to have any of my questions answered. | |
| I agree to being audio/video recorded on an encrypted device. | |
| I understand the confidentiality processes and the rules about my personal information. | |
| I understand that I can withdraw my participation from the study up to two weeks after the focus groups have taken place without giving a reason. I understand that after this two-week period, I will be unable to withdraw as analysis will have taken place. | |
| I understand that if I choose to withdraw from the study within the two week time frame, any anonymised data collected from me up until that point can still be used in the study. | |
| I give consent for the researchers to use my anonymised data for further studies, if appropriate. | |
| I understand that the results of the research will be written up in a report and may be published for others to read. | |
| I agree to participate in the research study. | |

| **Participant** | **Researcher** |
|---|---|
| **Name:** | **Name:** |
| **Signature:** | **Signature:** |
| **Date:** | **Date:** |

## Debrief Sheet

**Project title:** Perfectionism, IS, intolerance of uncertainty (IU) and psychological wellbeing in first-generation university students from a low socio-economic (SES) background: the influence of a sense of belonging.

Thank you for your participation in this research project. The purpose of this project was to explore the experiences of intolerance of uncertainty and psychological distress within first generation students from backgrounds of low SES. Particularly, how a sense of belonging, perfectionism and IS impacts these experiences when in university environments. As someone with lived experience of this, your views and contributions are very valuable to this project.

Should you have any further questions, or wish to withdraw from this research, please contact Chelsea Addy via c.addy3@newcastle.ac.uk. If you wish to withdraw, please make this contact up to two weeks after the focus group has taken place. After this time, it may not be possible to remove your information as the research may already be analysed, presented or published.

Should you feel that you require further support. There are a number of different organisations which offer support specifically to first-generation students from lower socio-economic backgrounds.

- Newcastle University PARTNERS program:
  https://www.ncl.ac.uk/partners/
- upReach:
  https://upreach.org.uk/students

Alternatively, the following services can also require further support to the student population more widely.

- Newcastle University Student Health and Wellbeing Services:
  https://www.ncl.ac.uk/wellbeing/
  +44 (0) 191 208 3333
- Newcastle University Nightline Service:
  https://nusu.co.uk/support/welfare-centre/5/nightline
- Student Minds:
  https://www.studentminds.org.uk/findsupport.html
- Your GP

If you feel that you require more urgent support, please contact the following.

- Newcastle University Urgent Support page:
  https://www.ncl.ac.uk/wellbeing/our-support/urgent-help/
- Samaritans 24/7 call helping:
  116 123
  https://www.samaritans.org/how-we-can-help/contact-samaritan/?gad_source=1&gclid=EAIaIQobChMIp76TjNPGgwMVO5SDBx2D4gPeEAAYASAAEgLjJfD_BwE
- Text 'SHOUT' to 85258
  https://giveusashout.org/
- CALM helpline 5pm to midnight
  0800 585858
  https://www.thecalmzone.net/what-we-stand-for

This project will be written-up as a requirement for the Doctorate in Clinical Psychology at Newcastle University. You can request a summary of these findings by contacting Chelsea Addy via c.addy3@newcastle.ac.uk.

## Resource list

**'Between Two Worlds': First of family students from a background of lower SES. Focus Groups**

**If you have any queries or feedback on this study, you can contact the team at the following address and email:**

Professor Mark Freeston
Address: School of Psychology Faculty of Medical Sciences Newcastle University Dame Margaret Barbour Building, Wallace Street, Newcastle upon Tyne NE2 4DR
Email: mark.freeston@newcastle.ac.uk

Please note that although this email account will be monitored, it will not be monitored regularly enough to respond to someone who is experiencing distress. If you are experiencing distress, please seek local support.

**There are a number of different organisations which offer support to first-generation students from lower socio-economic backgrounds.**

- Newcastle University PARTNERS programme: https://www.ncl.ac.uk/partners/
- upReach: https://upreach.org.uk/students

**If you feel that you require further support, please contact the following.**

- Newcastle University Student Health and Wellbeing services: https://www.ncl.ac.uk/wellbeing/
  + 44 (0) 191 208 3333
- Student Minds: https://www.studentminds.org.uk/findsupport.html
- Your GP

**If you require more urgent support, please contact the following.**

- Samaritans 24/7 call helpline:
  116 123
  https://www.samaritans.org/how-we-can-help/contact-samaritan/?gad_source=1&gclid=EAIaIQobChMIp76TjNPGgwMVO5SDBx2D4gPeEAAYASAAEgLjJfD_BwE
- Text 'SHOUT' to 85258
  https://giveusashout.org/
- CALM helpline 5pm to midnight
  0800 585858
  Campaign Against Living... | Campaign Against Living Miserably (CALM) (thecalmzone.net)

## Appendix M – Phase two focus group topic guide

## Appendix M

## Phase two focus group topic guide

**Introductions and house keeping**

- Everyone introduce name, university studying at, course studying, level of study and year of study.
- This research is part of my doctorate in clinical psychology qualification.
- I am interested in looking at experiences of perfectionism, imposter syndrome, intolerance of uncertainty and psychological wellbeing in first generation students from a background of economic disadvantage with a particular focus on how this impacts an individual's sense of belonging within their environment.
- Focus group is scheduled to last a maximum of 90 minutes and will be audio recorded only via sound recorder within MS Word. This will be saved securely into the Newcastle University One Drive with only the research team being able to access.
- You will all be in receipt of a £15 Amazon e-voucher on completion of the focus group as a thank you for your time and efforts.
- Ground rules
    - Confidentiality and not sharing things outside of the space.
    - Using the raise hand function when you wish to speak.
    - Safe space for people to share their experiences – listening and appreciating others' opinions.
    - Sharing what feels comfortable for you.
    - Appreciate that some people's experiences can bring up different things for people – if need to take time out, Hannah (co-facilitator) will follow up with you.
- This focus group will inform the next phase of the research which will be an online survey.
- I have three things I want to think about and get people's opinions on:
    - How we ask questions about particular demographics.
    - You all completed a pre-focus group survey rating the impact of different experiences on your identity. I am keen to explore some of those majority rated experiences more, particularly how they linked to uncertainty and belonging.
    - The accessibility of a particular measure.

**How we ask about particular demographics**

- Definition of first-generation student?
- Thoughts on the use of 'working class' as a demographic question/concept? How would you define this?

**Feedback on heatmaps**

- Share 3 heatmaps on screen (identify, comfort and belonging)
- Are the heatmaps accessible? Would you understand how to answer this?
- Do the concepts behind the 3 heatmaps make sense? How would you define each of the three concepts?

- Are 3 heatmaps needed or can all be conceptualised within 1? Any ideas on what this could look like?

**Majority rated experiences**

- Top three experiences which were rated as having the biggest impact on their identity:
    1. Noticing the differences between yourself and university students who are not the first member of their family to attend university and not from a background of economic disadvantage.
    2. Financial difficulties and pressures.
    3. (JOINT) – Having a lack of shared experiences with other students and having less social networks.
- How did this experience impact you?
- How did you cope with this experience?
- Did the situation get better or worse? How?
- How did the experience relate to your sense of belonging within the university system/environment?
- How did this experience relate to 'not knowing'?
- How did this experience impact how you approached new situations?

**Closing reflections**

- Thank you for participation.
- Any questions?
- Will now be in receipt of £15 amazon e-voucher – check participants email addresses for this to be sent to.

**Email participants the debrief sheet and resource list**

# Appendix N

## Phase three participant documentation

**Information Sheet**

**Between Two Worlds: The experiences of first-generation UK university students from a background of economic disadvantage.**

You are invited to participate in a research study titled "Between Two Worlds: The experiences of first-generation UK university students from a background of economic disadvantage". Before you decide to participate, it is important to understand the purpose of the research and what it will involve.

The study is open to ***all current UK university students aged 18+ regardless of whether they identify as a first-generation student or as being from a background of economic disadvantage***.

We encourage you to read the information carefully and review the information sheet multiple times, to make an informed decision regarding your participation. Please do not hesitate to seek further clarification or request additional information from us if any aspect is unclear. This study has been reviewed and received approval by the Faculty of Medical Sciences Research Ethics Committee, a part of Newcastle University Ethics Committee (51722/2023).

**What is the purpose of the study?**

Uncertainty refers to the unpleasant and uncomfortable nature of being unsure about something and contributes to experiences of discomfort and stress. Some people live their lives by needing to balance different life situations which can create the experience of being 'between two worlds'. Balancing two life situations can cause tension between one's sense of identity and the external world. Balancing the different worlds can cause people to experience discomfort and stress due to the uncertainty they may experience when attempting to fit into or move between both worlds. The context of two life situations is a significant challenge for many people in modern society which requires further research and understanding. This study aims to explore the relationship of being 'between two worlds', the way people experience uncertainty, their emotions and reactions, and how they adjust and cope. This study will specifically investigate the experiences of first-generation UK university students who have experienced a background of economic disadvantage.

**What will taking part involve?**

Demographic information will be collected at the beginning of the study. You will then be asked to complete a series of questionnaires to better understand your experiences of belonging, uncertainty, IS, perfectionism, mental wellbeing and ultimately, living 'between two worlds'.

If you are an Newcastle University student, your participation will count towards the research participation scheme. A donation of £100 will be made to The Access Project, a non-profit organisation which helps to support young people from under-resourced backgrounds to access universities and achieve social mobility, on behalf of participants completing the survey.

**Do I have to take part?**

No, you do not have to take part. This study is completely voluntary, and you have the right to refuse participation and withdraw from the study at any point during its completion and up to four weeks after completion. When you commence the survey, you will be provided with a unique ID number which you should make a note of. Should you wish to withdraw your participation after completing the survey, please contact the researcher and quote this unique ID number. This will allow the researcher to identify and subsequently delete your responses from the study. You have up to four weeks following survey completion to withdraw.

**Who will know I am participating in the study?**

Nobody, data is anonymised on collection. No identifiable information will be collected.

**What will happen to the results of the research?**

After the study is completed, the results will be analysed and a research report will be written. Only group data will be discussed in the findings and individuals will not be identified. Presentations may also be given at conferences and reports may be submitted for publication.

**How do I find out more about the study?**

Should you desire additional information about the study, a summary of the findings can be sent to you when the project is completed in August 2025. If you wish to receive this, please add your email address when prompted at the end of the survey.

**What are the risks and benefits of taking part?**

We hope that the findings of this study will contribute to better support for first-generation UK university students from a background of economic disadvantage by addressing issues related to mental health, and overall wellbeing. Insights into the mechanisms which contribute to experiences of psychological distress in these individuals living 'between two worlds' will be developed. It is possible that thinking about your experiences of being 'between two worlds' may be upsetting. Although personal events will not be asked about in any detail, we recognise that some people may find this distressing. If you feel this may be upsetting, you may wish to consider your participation. You are free to withdraw from the study at any point and up to four weeks after completion without providing a reason.

**If you feel that you require further support, the following resources may be helpful:**

**Specifically for first-generation students**

**Newcastle University PARTNERS programme:**

https://www.ncl.ac.uk/partners/

**upReach:**

https://upreach.org.uk/students/

**93% Club:**

https://www.93percent.club/

**The Access Club:**

https://theaccessproject.org.uk/?gad_source=1&gclid=CjwKCAjwmaO4BhAhEiwA5p4YL-eUsJ5kpWUZZqYCl9aToAHzGisMXCAlP_7R_UHpvWgWkKbcuSF43xoClmgQAvD_BwE

**For students**:

**Newcastle University Student Health and Wellbeing services:**
https://www.ncl.ac.uk/wellbeing/
+44 (0) 191 208 3333

**Student Minds**
https://www.studentminds.org.uk/findsupport.html

**General**:

**Your GP**

**NHS**

https://www.nhs.uk/nhs-services/mental-health-services/

**If you live in England, you can also self-refer to an NHS psychological therapies service.**

**This website will help you find your local service.** https://www.nhs.uk/service-search/mental-health/find-a-psychological-therapies-service/

**The Mind website contains a range of information about mental health conditions and support pathways that are available:**
https://www.mind.org.uk/information-support/

**Mental Health Foundation:**
htpps://www.mentalhealth.org.uk/explore-mental-health/getting-help-your-mental-health

**If you require more urgent support, please contact the following.**

**NHS Crisis Mental Health Support: 111, option '2'**

**Samaritans 24/7 call helpline: 116 12**

https://www.samaritans.org/how-we-can-help/contact-samaritan/

**Text 'SHOUT' to 85258**

https://giveusashout.org/

CALM helpline 5pm to midnight: **0800 585858**

https://www.thecalmzone.net/

***If you wish to download this information please click on the following link: Information Sheet***

**Consent form**

A psychological study exploring the experiences of first-generation UK university students from a background of economic disadvantage in relation to the experience of being 'between two worlds'

Please read and tick the following statements to ensure that you understand all the information given before proceeding.

☐ If I stop part-way through I understand that my information may still be used. (2)

☐ I understand that I can withdraw within 4 weeks of completing the survey without giving a reason. (8)

☐ I understand that all information I give will be kept confidential. (13)

☐ I understand that all of my data is anonymised. (14)

☐ I understand that the results of the research will be written in a report and published for others to read. (15)

☐ I give consent for my data to be used in future studies. (16)

I confirm that I am aged 18 or over.

- ○ Yes (1)
- ○ No (2)

I confirm that I am a current UK university student.

- ○ Yes (1)
- ○ No (2)

**Please read and tick the following statement to confirm that you consent to taking part in this study.**

- ○ I have read and understood the Participant Information Sheet for this study and consent to taking part. (1)
- ○ I do not wish to participate in this study (2)

## Debrief Sheet

**Between Two Worlds: The experiences of first-generation UK university students from a background of economic disadvantage.**

This study was an investigation into the experiences of being 'between two worlds' for first-generation UK university students from a background of economic disadvantage. We are interested in the way people experience uncertainty, their emotions and reactions, and how they adjust and cope and particularly, how a sense of belonging, striving for perfection, and feeling like an imposter may contribute to these experiences when in university environments. Your lived experiences, views and contributions are very valuable to this project.

This research aims to gain an in-depth understanding into the experiences of this population in order to make recommendations to university environments on how to better support this population to reach their potential during their university journey, including reducing the risk of emotional distress and drop-out.

We know that responding to some of the questions in this survey may be distressing for some people, we appreciate you giving your time to help us understand this in more detail in spite of these feelings.

**If you have any queries or feedback on this study, you can contact the principal investigator at the following address and email. Should you wish to withdraw from the**

**study, please contact the principal investigator and quote your unique ID number within 4 weeks of completing the survey.**

Chelsea Addy

Address: School of Psychology Faculty of Medical Sciences Newcastle University Dame Margaret Barbour Building, Wallace Street, Newcastle upon Tyne NE2 4DR
Email: c.addy3@newcastle.ac.uk

*Please note that although this email account will be monitored, it will not be monitored regularly enough to respond to someone who is experiencing distress. If you are experiencing distress, please seek local support.*

**If you feel that you require further support, the following resources may be helpful:**

**Specifically for first-generation students:**

Newcastle University PARTNERS programme: https://www.ncl.ac.uk/partners/

upReach: https://upreach.org.uk/students/

93% Club: https://www.93percent.club/

The Access Project:
https://theaccessproject.org.uk/?gad_source=1&gclid=CjwKCAjwmaO4BhAhEiwA5p4YL-eUsJ5kpWUZZqYCl9aToAHzGisMXCAlP_7R_UHpvWgWkKbcuSF43xoClmgQAvD_BwE

**Specifically for students:**

Newcastle University Student Health and Wellbeing services: https://www.ncl.ac.uk/wellbeing/ + 44 (0) 191 208 3333

Student Minds: https://www.studentminds.org.uk/findsupport.html

**More general support:**

Your GP

NHS https://www.nhs.uk/nhs-services/mental-health-services/

If you live in England, you can also self-refer to an NHS psychological therapies service. This website will help you find your local service.

https://www.nhs.uk/service-search/mental-health/find-a-psychological-therapies-service/

The Mind website contains a range of information about mental health conditions and support pathways that are available: https://www.mind.org.uk/information-support/

Mental Health Foundation: htpps://www.mentalhealth.org.uk/explore-mental-health/getting-help-your-mental-health

**If you require more urgent support, please contact the following:**

NHS Crisis Mental Health Support: Call 111, option 2

Samaritans 24/7 call helpline: 116 123 https://www.samaritans.org/how-we-can-help/contact-

samaritan/?gad_source=1&gclid=EAIaIQobChMIp76TjNPGgwMVO5SDBx2D4gPeEAAYASAAEgLjJfD_BwE

Text 'SHOUT' to 85258 https://giveusashout.org/

CALM helpline 5pm to midnight 0800 585858 Campaign Against Living... | Campaign Against Living Miserably (CALM) (thecalmzone.net)

***If you wish to download this information please click on the following link: Debrief Sheet***

# Appendix O

## Ethical approval documentation

### Phase one ethical approval

Ethics Form Completed for Project: Between two worlds Mark Freeston

Policy & Information Team, Newcastle University <noreply@limesurvey.org>
Tue 30/01/2024 13:08
To:Mark H Freeston <mark.freeston@newcastle.ac.uk>

⚠ External sender. Take care when opening links or attachments. Do not provide your login details.

Ref: 42046/2023

Thank you for submitting the ethical approval form for the project 'Between two worlds' (Lead Investigator: Mark Freeston). Expected to run from 01/02/2024 to 31/08/2024.

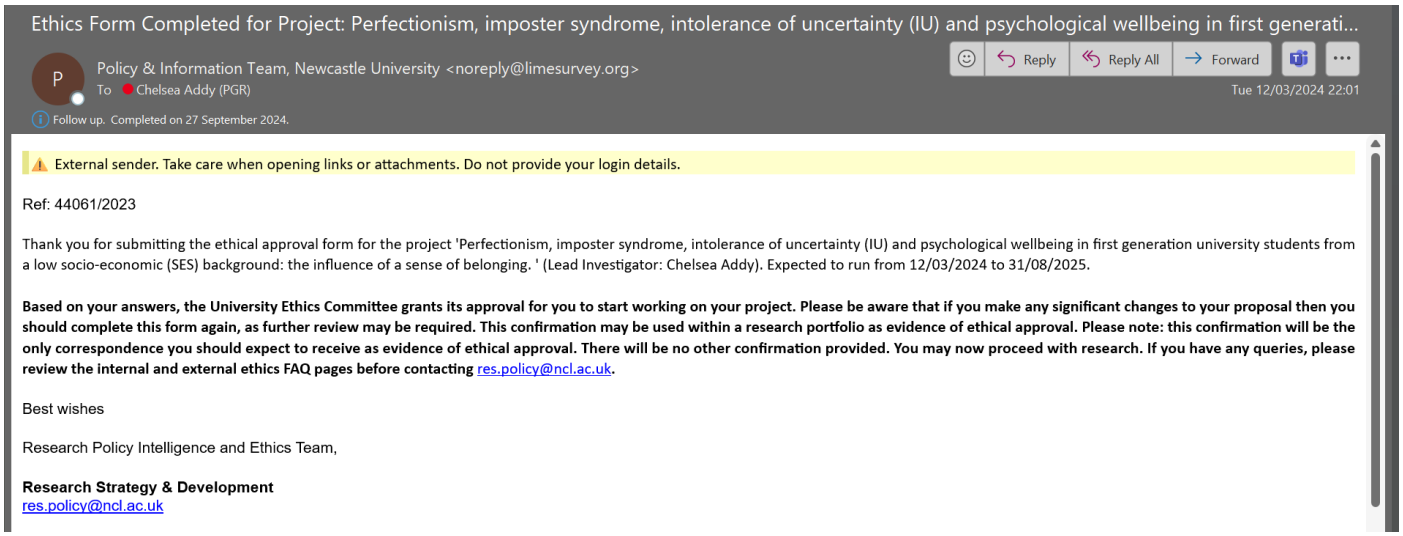
**Based on your answers, the University Ethics Committee grants its approval for you to start working on your project. Please be aware that if you make any significant changes to your proposal then you should complete this form again, as further review may be required. This confirmation may be used within a research portfolio as evidence of ethical approval. Please note: this confirmation will be the only correspondence you should expect to receive as evidence of ethical approval. There will be no other confirmation provided. You may now proceed with research. If you have any queries, please review the internal and external ethics FAQ pages before contacting res.policy@ncl.ac.uk.**

Best wishes

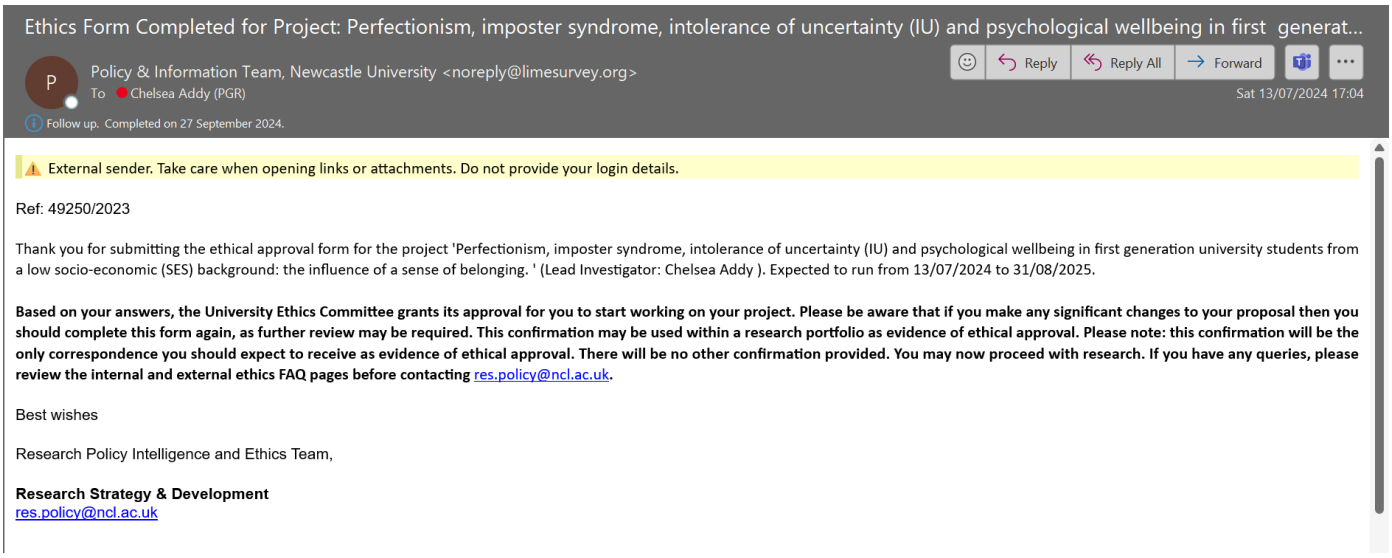
Research Policy Intelligence and Ethics Team,

**Research Strategy & Development**
res.policy@ncl.ac.uk

### Phase two ethical approval



## Phase two amendment ethical approval



Ethics Form Completed for Project: Perfectionism, imposter syndrome, intolerance of uncertainty (IU) and psychological wellbeing in first generat...

Policy & Information Team, Newcastle University <noreply@limesurvey.org>
To Chelsea Addy (PGR)
Reply | Reply All | Forward
Sat 13/07/2024 17:04
Follow up. Completed on 27 September 2024.

External sender. Take care when opening links or attachments. Do not provide your login details.

Ref: 49250/2023

Thank you for submitting the ethical approval form for the project 'Perfectionism, imposter syndrome, intolerance of uncertainty (IU) and psychological wellbeing in first generation university students from a low socio-economic (SES) background: the influence of a sense of belonging. ' (Lead Investigator: Chelsea Addy ). Expected to run from 13/07/2024 to 31/08/2025.

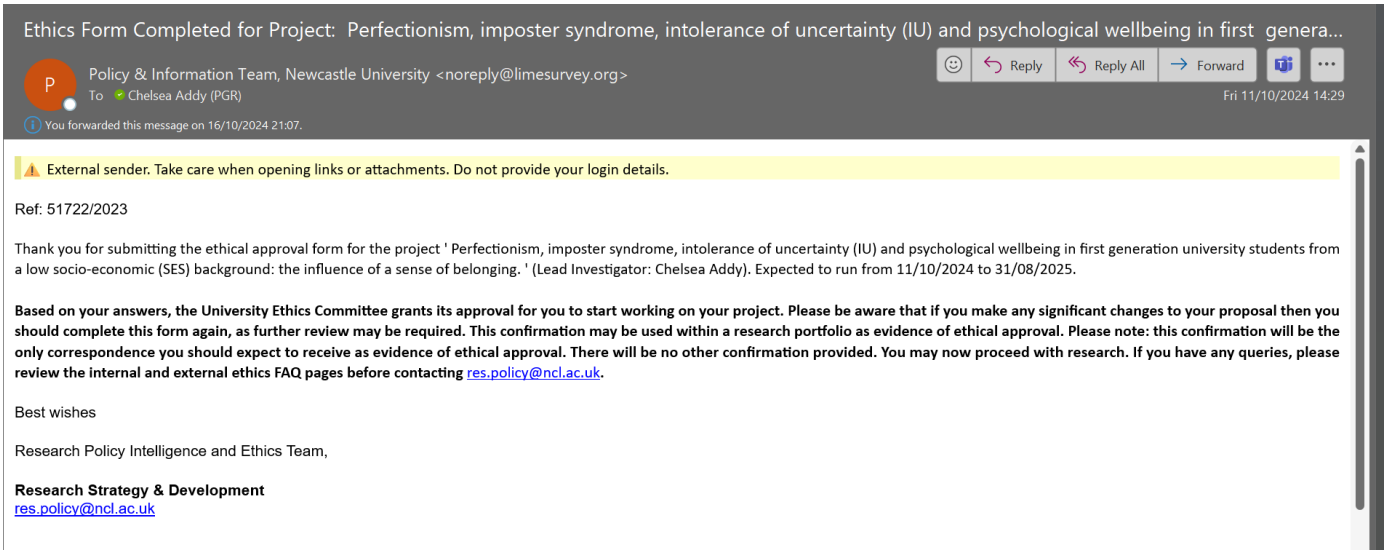
**Based on your answers, the University Ethics Committee grants its approval for you to start working on your project. Please be aware that if you make any significant changes to your proposal then you should complete this form again, as further review may be required. This confirmation may be used within a research portfolio as evidence of ethical approval. Please note: this confirmation will be the only correspondence you should expect to receive as evidence of ethical approval. There will be no other confirmation provided. You may now proceed with research. If you have any queries, please review the internal and external ethics FAQ pages before contacting** res.policy@ncl.ac.uk.

Best wishes

Research Policy Intelligence and Ethics Team,

**Research Strategy & Development**
res.policy@ncl.ac.uk

## Phase three ethical approval



Ethics Form Completed for Project: Perfectionism, imposter syndrome, intolerance of uncertainty (IU) and psychological wellbeing in first genera...

Policy & Information Team, Newcastle University <noreply@limesurvey.org>
To Chelsea Addy (PGR)
Reply | Reply All | Forward
Fri 11/10/2024 14:29
You forwarded this message on 16/10/2024 21:07.

External sender. Take care when opening links or attachments. Do not provide your login details.

Ref: 51722/2023

Thank you for submitting the ethical approval form for the project ' Perfectionism, imposter syndrome, intolerance of uncertainty (IU) and psychological wellbeing in first generation university students from a low socio-economic (SES) background: the influence of a sense of belonging. ' (Lead Investigator: Chelsea Addy). Expected to run from 11/10/2024 to 31/08/2025.

**Based on your answers, the University Ethics Committee grants its approval for you to start working on your project. Please be aware that if you make any significant changes to your proposal then you should complete this form again, as further review may be required. This confirmation may be used within a research portfolio as evidence of ethical approval. Please note: this confirmation will be the only correspondence you should expect to receive as evidence of ethical approval. There will be no other confirmation provided. You may now proceed with research. If you have any queries, please review the internal and external ethics FAQ pages before contacting** res.policy@ncl.ac.uk.

Best wishes

Research Policy Intelligence and Ethics Team,

**Research Strategy & Development**
res.policy@ncl.ac.uk

# Standard Operating Procedure: Risk Protocol

**Project title:** Perfectionism, imposter syndrome (IS), intolerance of uncertainty (IU) and psychological wellbeing in first-generation university students from a low socio-economic (SES) background: the influence of a sense of belonging.

## Who is this SOP for?

The research team on this project.

## Purpose of this SOP

This SOP explains the different ways we define risk and the procedure you should follow if risk is indicated. Identified risks are unlikely to occur within the research project and risks are unlikely to be higher than those experienced in everyday life.

## Potential risk issues

1. Participant distress
2. Information and support seeking
3. Discovery of information that needs to be acted on
4. Data breach
5. Harassment and cyber bullying

## Responding to risk issues

1. Participant distress – the following procedures will be followed if this occurs:
    - Participants will not be exposed to risk or distress which is greater than what is expected to occur in everyday life.
    - All participants will be provided with a debrief sheet which will be embedded within the survey. This will contain signposting to relevant services for support, including crisis services.
    - If participants contact the researcher seeking further support, the research supervisors will be notified.
    - If concerns are raised in respect of a participant's safety, university safeguarding procedures will be adhered to.
    - When the researcher is unclear whether there is an obligation to act, the research team will liaise with university safeguarding to seek advice.
2. Information and support seeking – the following procedures will be followed if this occurs:
    - Participants will be directed to (via an embedded debrief sheet) appropriate sources of support specific to being a first-generation student, the student population more widely and crisis services:
        - Newcastle university PARTNERS program
        - upREACH
        - Newcastle university student health and wellbeing services
        - Student Minds
        - GP
        - Samaritans
        - SHOUT text line
        - CALM

- If the lead researcher receives an email from participants seeking further support, the research supervisor will be notified.
- If concerns are raised in respect of a participant's safety, university safeguarding procedures will be adhered to.
- When the researcher is unclear whether there is an obligation to act, the research team will liaise with university safeguarding to seek advice.

3. Discovery of information that needs to be acted on – the following procedures will be followed if this occurs:
    - The lead researcher will share the concerns with the research supervisors and university safeguarding procedures will be followed as necessary.
4. Data breach – the following procedures will be followed if this occurs:
    - Any data breach will be reported to the research supervisors and the university IT and data control services.
5. Harassment and cyber bullying – the following procedures will be followed if this occurs:
    - The lead researcher will share the concerns with the research supervisors and university safeguarding procedures will be followed as necessary.

**Phase one risk assessment**

**Newcastle University - Risk Assessment**

| | |
|---|---|
| **Project title** | Between Two Worlds |
| **Description of work activity** | **Researchers: Mark Freeston (supervisor); Tino Gundoza and Maddie Cooper (UG Dissertation), Emily-Rose Cross and Sean Gan (UG Professional Placement), Maryam Perez and Chelsea Addy (DClinPsy trainee)**<br><br>This is a single-group cross-sectional study using mediation moderation analyses or similar investigating the relationship between the experience of living in/moving between two life situations and psychological adjustment.<br>• The study will be completed online via Qualtrics where the participants will complete questionnaires.<br>• Several situations will be investigated with both common and tailored questions.<br>o First in family at university from low SES<br>o Second generation immigrants<br>o Veterans of the armed forces in civilian life<br>o People identifying as neurodivergent in a neurotypical world<br>o Other self-defined worlds<br>• Questionnaires will be used to measure each of the different variables.<br>• Support information will be tailored to each situation.<br>• Separate hypotheses are addressed by each of the researchers, but the risks and ethical issues remain the same. |

| | | | |
|---|---|---|---|
| | The study will use snowball sampling; no gatekeepers (defined as a person who could influence or coerce a potential participant) will be involved – only a link to the survey will be distributed by anyone sharing the invitation advertised on social media and NU-related participant pools. Participants may be recruited overseas, but 1) the researchers remain in the UK, 2) the data is held in the UK, 3) the conditions of participation are those active in the UK/EEA and respect the same ethical standards, 4) the data is of a type that would be unlikely to be considered sensitive in other places (i.e., not contentious topics in other locations; personal experiences of a psychological nature only).<br><br>Ethical approval ref no.:…… | | |
| **Unit name** | School of Psychology | **Location** | Online |
| **Assessor** | Mark Freeston | **Approver (Manager / Responsible person)** | Mark Freeston |
| **Date of assessment** | 20/11/2023 | **Review Date (2 years)** | 20/11/2024 |

| | **Hazards** | **Risks**<br><br>**(Who might be harmed & how?)** | **Controls**<br><br>**(Write as a series of sequenced bullet points: How to prevent, how to mitigate, how to address if risk happens)** |
|---|---|---|---|
| **1** | Distress – completing questionnaires about anxiety, mood, worries, stress, etc. | • Participants might experience psychological distress while complementing questionnaires related to anxiety, mood, worries and discrimination. | • Inform participants of what the study is about and the possibility of distress.<br>• Ensure participants are aware they can leave the study at any time from the point of entering. |

| | | | |
|---|---|---|---|
| | | • If such situations or experiences are personally salient, they may become distressed at the nature of questionnaire items. | • Use the "Request response" function in Qualtrics rather than the "Force response" function. Ensure participants are fully debriefed upon completion of the study.<br>• Provide participants with information on available psychological services that have been checked out for credibility and helpfulness.<br>• Signpost them to relevant support lines and addresses<br>• Ensure participants have accessible help lines and psychological services. |
| **2** | Distress – specific experiences/finding out about a problem. | • Participants may score highly on psychopathology measures, relating to anxiety and depression and suspect they have a problem. | • Provide participants with information on available psychological services that have been checked out for credibility and helpfulness.<br>• Signpost them to relevant support lines and links<br>• Ensure participants have accessible help lines and links to psychological services. |
| **3** | Distress – causing offence | • Participants may be offended by the language used or topics discussed in the study. | • Assess the issue, seek advice as to wording.<br>• Mitigate any offence caused using tact and empathy.<br>• Apologise for any offence caused.<br>• Consider feedback for how to word better. |
| **4** | Burden – fatigue, strain, bodily discomfort | • The length and number of questionnaires may cause fatigue. | • Include short versions of measures when appropriate. |

| | | | |
|---|---|---|---|
| | | | • Highlight the participants right to participate and withdraw at anytime.<br>• Remind participants to take a break. |
| **5** | Confidentiality and anonymity | • Participants personal demographic information could identify them. | • Will use secure databases (Qualtrics Uni account)<br>• Will use University email.<br>• No identifiable personally identifiable information will be recorded (e.g. e-mail) unless absolutely required; if collected, collect/store separately.<br>• All devices and databases used will be password locked. |
| **6** | Information and support seeking | • Participants may want to know more about the topic and seek further information.<br>• Participants may seek support relating to topics. | • Study will include a detailed debrief sheet and participants information sheet.<br>• Provide links to literature about the topic.<br>• Provide standardized information only, not personalised support. |

| | | | |
|---|---|---|---|
| **7** | Data breach | • There is potential for data breach and leaks of participants personal information.<br>• Risk of university personal information leaks | • Do not collect personally identifiable information unless absolutely required.<br>• Separate e-mail addresses in a separate file.<br>• Using secure survey tool Qualtrics through the university account to keep data safe.<br>• Do not record personally identifiable information such as names so if this risk was to happen, there would be less harm.<br>• All devices and databases used will be password locked.<br>• Report breach to University Data Controller and HoS immediately.<br>• Follow all advice promptly.<br>• |
| **8** | Discovery of information that needs acting on. | • Researchers may discover information about the participants, that may be a risk to themselves. | • Provide clear instructions about the study's focus in the informed consent process.<br>• Reduce collection of information that may need acting on – e.g. minimal text boxes.<br>• If participant contacts research team, follow standard operating procedures:<br>o Inform supervisor.<br>o Seek safeguarding advice as appropriate. |

| | | | |
|---|---|---|---|
| | | | ○ Follow advice. |
| **9** | Cyberstalking | • Online nature of the study may pose a risk to researchers' personal information.<br>• Researchers may receive unwanted emails or experience online harassment/stalking. | • Using secure university email for any correspondence with participant<br>• Using a professional social media account with no links to personal information/relationships<br>• Ensure the survey platform has safeguards against abusive comments.<br>• Monitor participant comments for harmful content and promptly remove or report abusive users.<br>• Follow SOPs<br>○ Inform supervisor.<br>○ Supervisor replies to individual with a demand to desist.<br>○ Supervisor seeks advice from University Security<br>○ Acts on advice<br>○ Supervisor informs other members of team.<br>• Provide researcher with support and resources if the hazard were to occur. |

| | | | |
|---|---|---|---|
| **10** | Abuse/trolling | • Online nature of the study may pose a risk to researchers' personal information.<br>• Researchers may receive unwanted emails or be abused online. | • Using secure university email for any correspondence with participant<br>• Using a professional social media account with no links to personal information/relationships<br>• Ensure the survey platform has safeguards against abusive comments.<br>• Monitor participant comments for harmful content and promptly remove or report abusive users.<br>• Follow SOPs<br>o Inform supervisor.<br>o Supervisor replies to individual with a demand to desist.<br>o Supervisor seeks advice from University Security<br>o Acts on advice<br>o Supervisor informs other members of team.<br>• Provide researcher with support and resources if the hazard were to occur. |

| **Additional Controls (is there anything you need to plan for?)** | **Who** | **Target Date** | **Completion Date** |
|---|---|---|---|
| No additional controls are required. | - | Click or tap to enter a date. | Click or tap to enter a date. |

| **Emergency procedures** |
| --- |
| Risks involved: There are no significant risks identified as the survey design, participant information and method of recruitment have been designed to minimize all the risks identified above.<br><br>Control measures: No additional controls are necessary other than the ones mentioned in the mitigation strategies above. Progress of data collection will be monitored throughout the data collection period and should any participant queries/concerns be raised these will be immediately evaluated by the research team. |

Signature of Responsible Person (Double click on the signature box below)

X _____

**Phase two risk assessment**

## Focus Group Risk Assessment

| | | | |
|---|---|---|---|
| **Project title** | Perfectionism, IS, intolerance of uncertainty (IU) and psychological wellbeing in first-generation university students from a low socio-economic (SES) background: the influence of a sense of belonging. | | |
| **Description of activity** | Focus Group | | |
| **School** | School of Psychology, Newcastle University | **Location** | Online via Microsoft Teams or face-to-face. This will be negotiated with consenting participants. |
| **Assessor** | Chelsea Addy (c.addy3@newcastle.ac.uk) | **Supervisors** | Professor Mark Freeston (mark.freeston@newcastle.ac.uk)<br>Dr Sarah Thwaites (sarah.thwaites@newcastle.ac.uk) |
| **Date of assessment** | 13.07.2024 | | |

| | **Hazards** | **Risks** | **Controls** |
|---|---|---|---|
| **1** | Distress – completing pre—focus group questionnaire and engaging in focus groups. | As participants will have lived experience of the research population, there is potential for participants to experience difficult feelings when completing the pre-focus group questionnaire or discussing their experiences within focus groups. | • Clear information sheet which outlines the purpose of the research, as well as what is expected of participants.<br>• Before the focus group commences, participants will be given a brief summary outlining the proposed discussions.<br>• Questions asked of participants are highly unlikely to prompt content which is distressing or greater risk than what would be experienced in their everyday lives.<br>• No obligation to share reflections in focus group; optional contributions; permission to take a break/leave.<br>• A second individual will be present with the lead researcher for the facilitation of the focus groups. The role of the second individual will be to check-in with any participants who require |

| | | | |
|---|---|---|---|
| | | | time out or experience emotional distress. This second individual will be a member of the DClinPsy programme who will also be from a similar background to that of the lead researcher and participant population.<br>• Participants will be given the additional opportunity to speak to the researcher separately after the focus group should they experience any emotional distress and will be signposted to areas for further support if required.<br>• All participants will be provided with a debrief sheet with researcher contact details should they wish to speak with the researcher at a later date, as well as signposting to services for further support should it be required. |
| **2** | Confidentiality and anonymity | Participants may hold concerns about disclosing personally identifiable information. They will also be attending a focus group with other participants. | • Participants will be provided with an information sheet which clearly outlines confidentiality and data management processes.<br>• All participants will remain anonymous within the presentation of data and write-ups as their names will be replaced with participant numbers.<br>• Group rules of maintaining confidentiality will be introduced and emphasised within the focus groups.<br>• Focus groups will take place via MS Teams. These will be audio recorded using 'sound recorder' within MS Word. This will automatically save the audio recording and transcription within the Newcastle University One Drive. Recordings and transcriptions will only be accessed by researchers and the audio |

| | | | |
|---|---|---|---|
| | | | recording will be deleted following transcription.<br>• Email addresses will be collected from participants attending the focus group to allow for debrief information to be shared. Emails will be deleted before the end of the research study.<br>• All survey data will be collected anonymously and extracted data will be password protected.<br>• Anonymised data files will be stored according to NU research data policies.<br>• Data repositories will not be required for focus group data as the purpose of the focus group is to inform the next phase of the study and the data will not be required for future studies.<br>• All participants will have the right to withdraw from the research up to two weeks after the focus group.<br>• All participants will be given a debrief sheet at the end of the focus group reminding them about their right to withdraw up to two weeks after the focus group. |
| **3** | Information and support seeking | Participants may seek advice or further support from researchers after engaging in the study. | • Participants will be provided with a debrief sheet with researcher contact details and will also be signposted to services for further support should they require this.<br>• Participants will be signposted to areas of support and standard operating procedures will be followed. |
| **4** | Discovery of information that needs to be acted on | Participants may disclose personal information which raises concerns about their safety. | • The researcher will alert their supervisors and standard operating procedures will be followed as appropriate. |

| | | | |
|---|---|---|---|
| | | | • Participants will be signposted to the appropriate areas for support as required. |
| **5** | Data breach | Data may be subject to hacking or malware. This poses harm to participants as personal data will be collected (such as demographics). | • A GDPR complaint survey system will be used for the pre-focus group survey.<br>• Participant IP addresses and geographical location will not be collected.<br>• All data will be stored within Newcastle University servers (such as One Drive).<br>• All documents containing participant data will be password protected.<br>• All data will only be accessed by the research team for specifically research purposes and will not be shared wider.<br>• In the event of a data breach, the lead researcher will inform their supervisors and the head of the School of Psychology. |

**Phase three risk assessment**

## Online Survey Risk Assessment

| | | | |
|---|---|---|---|
| **Project title** | Perfectionism, IS, intolerance of uncertainty (IU) and psychological wellbeing in first-generation university students from a low socio-economic (SES) background: the influence of a sense of belonging. | | |
| **Description of activity** | Online survey | | |
| **School** | School of Psychology, Newcastle University | **Location** | Online via Qualtrics |
| **Assessor** | Chelsea Addy (c.addy3@newcastle.ac.uk) | **Supervisors** | Professor Mark Freeston (mark.freeston@newcastle.ac.uk) Dr Sarah Thwaites (sarah.thwaites@newcastle.ac.uk) |
| **Date of assessment** | 27.09.2024 | | |

| | **Hazards** | **Risks** | **Controls** |
|---|---|---|---|
| **1** | Distress – completing questionnaires. | As some participants will have lived experience of the research population, there is potential for participants to experience difficult feelings when completing questionnaires or discussing their experiences. | • Clear information sheet which outlines the purpose of the research, as well as what is expected of participants.<br>• Questions asked of participants are highly unlikely to prompt content which is distressing or greater risk than what would be experienced in their everyday lives.<br>• No forced responses.<br>• All participants will be provided with a debrief sheet which contains signposting to relevant support services, including crisis services. |
| **2** | Burden | The online survey will contain multiple questionnaires. Participants may tire or be exposed to risks from using an electronic device (such as eye strain, headache, tiredness). | • Participants will have the right to withdraw (choosing to stop completion of the survey) at any point.<br>• Participants can break at any point while completing the survey. |

| | | | |
|---|---|---|---|
| | | | • The survey will include the minimum number of questionnaires required in their shortest form possible. |
| **3** | Confidentiality and anonymity | Participants may hold concerns about disclosing personally identifiable information. | • All participants will remain anonymous within the presentation of data and write-ups as their names will be replaced with participant numbers.<br>• All survey data will be collected anonymously and extracted data will be password protected.<br>• Anonymised data files will be stored and archived according to NU research data policies.<br>• All participants will have the right to withdraw from the online survey up to four weeks after completion. |
| **4** | Information and support seeking | Participants may seek advice or further support from researchers after engaging in the study. | • Participants will be provided with a debrief sheet which will contain signposting to support services.<br>• Standard operating procedures will be followed. |
| **5** | Data breach | Data may be subject to hacking or malware. This poses harm to participants as personal data will be collected (such as demographics). | • A GDPR complaint survey system will be used.<br>• Participant IP addresses and geographical location will not be collected.<br>• All data will be stored within Newcastle University servers (such as One Drive).<br>• All documents containing participant data will be password protected.<br>• All data will only be accessed by the research team for specifically research purposes and will not be shared wider. |

| | | | |
|---|---|---|---|
| | | | • In the event of a data breach, the lead researcher will inform their supervisors, head of the School of Psychology. |

**Phase two data management plan**

**Plan Overview**

*A Data Management Plan created using DMPonline*

**Title:** Perfectionism, IS, intolerance of uncertainty (IU) and psychological wellbeing in first-generation university students from a low socio-economic (SES) background: the influence of a sense of belonging.

**Creator:** Chelsea Addy**Principal Investigator:** Chelsea Addy

**Contributor:** Professor Mark Freeston, Dr Sarah Thwaites

**Affiliation:** Newcastle University

**Template:** DCC Template

**Project abstract:**

This study aims to explore the relationship between intolerance of uncertainty and psychological distress in first-generation students from low socio-economic backgrounds. Particularly how perfectionism, IS and a sense of belonging influence this relationship. Although schemes like the Newcastle University PARTNERS program are successful in supporting this population of student to access university, this population continues to experience higher drop-out rates and greater psychological distress in comparison to students who are not first-generation and are not from low socio-economic backgrounds. It is hoped that this research can make recommendations on how to better support this at-risk population to reach their potential during their university journey. As the widening access agenda rightly continues to gain pace, equal consideration needs to be given to how we can continue to increase the diversity of the student population, as well as how we can ensure these spaces are more inclusive and welcoming for people from marginalised and disadvantaged backgrounds.

The project will consist of two phases and this first phase will be to conduct focus groups with participants from this population to explore their experiences of belonging and uncertainty distress. The later second phase will consist of an online survey (ethical approval will be sought for this phase following the completion of the first phase and a further data management plan developed).

**ID:** 136226

**Start date:** 22-10-2023

**End date:** 31-07-2025

**Last modified:** 13-07-2024

**Perfectionism, IS, intolerance of uncertainty (IU) and psychological wellbeing in first-generation university students from a low socio-economic (SES) background: the influence of a sense of belonging.**

**Data Collection**

**What data will you collect or create?**

To determine eligibility, participants will firstly provide their name and postcode, at age 18 prior to attending university, via a brief Qualtrics survey.

Pre-focus group survey data will be collected anonymously from eligible and consenting participants online via a brief Qualtrics survey. These responses will be downloaded into Excel files and stored within the secure Newcastle University server.

Focus groups will take place via MS Teams. Data will be collected via an audio recording using 'Sound Recorder' within MS Word. Audio recording and transcription will be saved securely

within the Newcastle University One Drive and will only be accessed by the researchers. Following transcription, audio recording will be deleted.

**How will the data be collected or created?**

Participants will be recruited through Newcastle University channels, including the PARTNERS program, and social media platforms, such as Twitter and relevant Facebook groups.

Consenting participants will be sent an online link to the Qualtrics survey for them to enter their name and postcode, at age 18 before starting university, to determine their eligibility for participation.

Focus groups will take place via MS Teams with consenting and eligible participants. Data will be collected via an audio recording using 'Sound Recorder' within MS Word. Audio recording and transcription will be saved securely within the Newcastle University One Drive and will only be accessed by the researchers. Following transcription, audio recording will be deleted.

**Documentation and Metadata**

**What documentation and metadata will accompany the data?**

A standard operating procedure will be maintained.

Participant information sheet, consent form and debrief sheets will be available.

Qualtrics survey, survey responses and the focus group topic guide will be available.

**Ethics and Legal Compliance**

**How will you manage any ethical issues?**

This research does not include patient data, therefore Health Research Authority (HRA) ethical approval is not needed.

Participant information sheets and consent forms will be provided to allow participants to give their informed consent to participate. Here, participants will be informed of their right to withdraw, and this will be stated again on a participant debrief sheet.

The participant debrief sheet will include contact details for the researcher as well as signposting to appropriate services for further support should participants experience emotional distress.

This study will also be reviewed by Newcastle University's research ethics committee.

**How will you manage copyright and Intellectual Property Rights (IPR) issues?**

Data for this project will be owned by Newcastle University.

**Storage and Backup**

**How will the data be stored and backed up during the research?**

All project data will be stored within Newcastle University's secure server (OneDrive) which is backed up daily and each back up is retained for 90 days.

No data repositories will be required as the focus group data will be used to inform measure development and the second phase of the study. Focus group data will not be required for any future studies.

**How will you manage access and security?**

Security and access will be managed by Newcastle University's secure server (One Drive). Data files will only be accessed primarily by the lead researcher and by the research team when necessary.

**Selection and Preservation**

**Which data are of long-term value and should be retained, shared, and/or preserved?**

Data (participant demographics, focus group transcripts and survey responses) will be held on the Newcastle University secure server. The principal investigator will be working towards a Doctorate until the summer of 2025 and will revisit the data for analysis once the data collection period is over.

**What is the long-term preservation plan for the dataset?**

No data repositories will be required as the focus group data will be used to inform measure development and the second phase of the study. Focus group data will not be required for any future studies.

**Data Sharing**

**How will you share the data?**

Data will be shared with my supervisors (the research team) to assist in data analysis. Data will be shared within the Newcastle University secure server.

**Are any restrictions on data sharing required?**

The principal investigator and supervisors will require use of the data for the remainder of the Doctorate research project.

Consent for the use of focus group data in future studies will not be required or sought as the purpose of focus group data is to inform measure development and the next phase of the study only.

**Responsibilities and Resources**

**Who will be responsible for data management?**

The principal researcher will be responsible for data management.

**What resources will you require to deliver your plan?**

N/A.

**Phase three data management plan**

**Plan Overview**

*A Data Management Plan created using DMPonline*

**Title:** Perfectionism, IS, intolerance of uncertainty (IU) and psychological wellbeing in first-generation university students from a low socio-economic (SES) background: the influence of a sense of belonging.

**Creator:**Chelsea Addy

**Principal Investigator:** Chelsea Addy

**Contributor:** Dr Sarah Thwaites, Professor Mark Freeston

**Affiliation:** Newcastle University

**Template:** DCC Template

**Project abstract:**

This study aims to explore the relationship between intolerance of uncertainty and psychological distress in first-generation students from low socio-economic backgrounds. Particularly how perfectionism, IS and a sense of belonging influence this relationship. Although schemes like the Newcastle University PARTNERS program are successful in supporting this population of student to access university, this population continues to experience higher drop-out rates and greater psychological distress in comparison to students who are not first-generation and are not from low socio-economic backgrounds. It is hoped that this research can make recommendations on how to better support this at-risk population to reach their potential during their university journey. As the widening access agenda rightly continues to gain pace, equal consideration needs to be given to how we can continue to increase the diversity of the student population, as well as how we can ensure these spaces are

more inclusive and welcoming for people from marginalised and disadvantaged backgrounds. The project is multi-phasal. This first phase involved a pilot survey and the second phase involved a focus group with participants from this population to explore their experiences of belonging and uncertainty distress. This third and final phase involves an online survey for which ethical approval will be sought via Newcastle University Ethics.

**ID:** 160001

**Start date:** 22-10-2023

**End date:** 31-08-2025

**Last modified:** 10-10-2024

**Perfectionism, IS, intolerance of uncertainty (IU) and psychological wellbeing in first-generation university students from a low socio-economic (SES) background: the influence of a sense of belonging.**

**Data Collection**

**What data will you collect or create?**

Data will be collected online via Qualtrics and will be largely quantitative, with the exception of some brief qualitative information for some demographic questions.

Demographic data will be collected from participants including age, gender, sexual orientation, language, ethnicity, disability, educational achievement, first-generation student status, postcode at age 18, university attending and level of study, parental occupation, free school meal status, parental income support status, current living situation, information about college/6th form attendance and information about friends attendance at university.

Questionnaire data will be collected from participants and will include experiences of belonging, being their authentic self and comfort in both university and home environments, IS, perfectionism, belongingness, experiences of living between two worlds, uncertainty and intolerance of uncertainty, self-concept, worry, anxiety, depression and adjustment disorder.

**How will the data be collected or created?**

Data will be collected within Qualtrics. Data will be stored within Qualtrics and following data collection, it will be downloaded and imported into Excel and SPSS for data analysis. Data files will be stored securely within the Newcastle University server.

**Documentation and Metadata**

**What documentation and metadata will accompany the data?**

A standard operating procedure will be maintained.

Participant information sheet, consent form and debrief sheets will be available within the online survey.

**Ethics and Legal Compliance**

**How will you manage any ethical issues?**

This research does not include patient data, therefore Health Research Authority (HRA) ethical approval is not needed. Participant information sheets and consent forms will be embedded within the online survey to allow participants to give their informed consent to participate. Here, participants will be informed of their right to withdraw (stop completing the survey and withdraw their data up to 4 weeks after completion of the survey). The participant debrief sheet will include contact details for the researcher as well as signposting to appropriate services for further support should participants experience emotional distress. This study will also be reviewed by Newcastle University's research ethics committee

**How will you manage copyright and Intellectual Property Rights (IPR) issues?**

Data for this project will be owned by Newcastle University.

**Storage and Backup**

**How will the data be stored and backed up during the research?**

All project data will be stored within Newcastle University's secure server (OneDrive) which is backed up daily and each back up is retained for 90 days.

**How will you manage access and security?**

Security and access will be managed by Newcastle University's secure server (One Drive). Data files will be password protected and will only be accessed by the lead researcher and supervisors.

**Selection and Preservation**

**Which data are of long-term value and should be retained, shared, and/or preserved?**

Data (participant demographics and survey responses) will be held on the Newcastle University secure server for 10 years. The principal investigator will be working towards a Doctorate until the summer of 2025 and will revisit the data for analysis once the data collection period is over. Foreseeable research uses may be applicable.

**What is the long-term preservation plan for the dataset?**

Data will be preserved within the Newcastle University Library repository. There will be no cost to sharing data within this repository.

**Data Sharing**

**How will you share the data?**

Data will be shared with research supervisors to assist in data analysis. For this purpose, data will be shared via the Newcastle University secure server.

**Are any restrictions on data sharing required?**

The principal investigator and research supervisors will require use of the data for the remainder of the Doctorate research project. This data may be shared in the future and if so, this will be shared via the Newcastle University Library repository.

**Responsibilities and Resources**

**Who will be responsible for data management?**

The principal researcher will be responsible for data management.

**What resources will you require to deliver your plan?**

N/A

# Appendix P

## Phase one skewness and kurtosis values for survey variables

**Table P1**

*Skewness and kurtosis values before winsorising outliers*

| Variable | Skewness | Kurtosis |
|---|---|---|
| LIS | -0.23 | -1.15 |
| CPQ | -0.18 | -0.96 |
| Place A Belonging | -0.51 | 0.03 |
| Place B Belonging | -1.1 | 2.15 |
| Social Belonging | -0.40 | -0.98 |
| Community Belonging | -1.28 | 2.79 |
| Acculturation: Identity (X axis) | -0.55 | -0.01 |
| Acculturation: Identity (Y axis) | 0.85 | -0.15 |
| Acculturation: Belonging (X axis) | -0.84 | 0.54 |
| Acculturation: Belonging (Y axis) | 0.41 | -0.18 |
| Acculturation: Comfort (X axis) | -0.52 | -0.17 |
| Acculturation: Comfort (Y axis) | 0.66 | -0.26 |
| UB | -0.37 | -0.96 |
| IUS-5 | -0.05 | -0.96 |
| PSWQ | -0.50 | -1.23 |
| PHQ-2 | 0.19 | -1.22 |
| GAD-2 | -0.33 | -1.30 |
| IADQ1 | -0.25 | -1.38 |
| IADQ2 | 0.04 | -1.27 |

| | | |
|---|---|---|
| SCC | 0.56 | -0.76 |
| BTW PU Away | -0.22 | -1.07 |
| BTW PT | -0.28 | -0.75 |
| BTW Trust | 0.67 | 0.83 |
| BTW AU | -0.79 | 0.32 |
| BTW IS Away | -0.27 | -1.26 |
| BTW SIU | -0.00 | -0.85 |
| BTW Disrupt | -0.56 | -0.25 |
| BTW PU Home | 0.78 | 0.30 |
| BTW IS Home | 0.35 | 0.13 |

**Table P2**

*Skewness and kurtosis values after winsorising outliers*

| Variable | Skewness | Kurtosis |
|---|---|---|
| Place A Belonging | -0.35 | -0.48 |
| Place B Belonging | -0.48 | -0.16 |
| Community Belonging | -0.60 | -0.47 |
| BTW Trust | 0.36 | -0.42 |
| BTW AU | -0.24 | -0.31 |

# Appendix Q

## Phase one identified extreme outliers

**Table Q1**

*Identified extreme outliers*

| Variable | Extreme outliers (N) |
|---|---|
| Place A Belonging | 2 |
| Place B Belonging, | 1 |
| Community Belonging | 3 |
| BTW Trust | 1 |
| BTW AU | 1 |

## Appendix R

## Phase one reliability analysis of variables

**Table R1**

*Reliability analysis of variables*

| Variables | Cronbach's Alpha |
|---|---|
| LIS | 0.92 |
| CPQ | 0.82 |
| Place A Belonging | 0.84 |
| Place B Belonging | 0.63 |
| Social Belonging | 0.94 |
| Community Belonging | 0.91 |
| UB | 0.81 |
| IUS-5 | 0.79 |
| PSWQ | 0.94 |
| PHQ-2 | 0.86 |
| GAD-2 | 0.93 |
| IADQ1 | 0.96 |
| IADQ2 | 0.94 |
| SCC | 0.84 |
| BTW PU Away | 0.82 |
| BTW PT | 0.88 |
| BTW Trust | 0.95 |
| BTW AU | 0.73 |
| BTW IS Away | 0.69 |

| | |
|---|---|
| BTW SIU | 0.96 |
| BTW Disrupt | 0.91 |
| BTW PU Home | 0.72 |
| BTW IS Home | 0.71 |
| Acculturation | 0.82 |

## Appendix S

## Phase one Pearson correlation coefficient matrix for study variables

**Table S1**

*Pearson correlation coefficient matrix for study variables*

| | LIS | CPQ | PAB | PBB | SB | CB | IUS-5 | PHQ | GAD |
|---|---|---|---|---|---|---|---|---|---|
| LIS | | | | | | | | | |
| CPQ | 0.52** (101) | | | | | | | | |
| PAB | -0.71 (94) | -0.09 (95) | | | | | | | |
| PBB | 0.01 (52) | 0.02 (52) | -0.316* (51) | | | | | | |
| SB | -0.53** (94) | -0.34** (95) | 0.07 (93) | -0.16 (52) | | | | | |
| CB | -0.19 (84) | -0.01 (84) | -0.06 (82) | 0.20 (47) | 0.35** (84) | | | | |
| IUS-5 | 0.29* (70) | 0.45** (70) | 0.10 (69) | -0.13 (40) | -0.52** (70) | -0.07 (68) | | | |
| PHQ | 0.41** (70) | 0.14 (70) | 0.04 (69) | 0.03 (40) | -0.55** (70) | -0.11 (68) | 0.47** (70) | | |
| GAD | 0.39** (70) | 0.37** (70) | -0.10 (69) | 0.06 (40) | -0.51** (70) | 0.01 (68) | 0.66** (70) | 0.51** (70) | |

*$p \leq 0.01$
**$p \leq 0.05$
Note. Variable *N* reported due to the presence of missing data. Pairwise Ns are in parentheses.

## Appendix T

### Phase two focus group discussions

Regarding the terms ‘first-generation student’ and ‘first of family student’, the consensus amongst participants was that both terms were acceptable, and the definition was the first member of their immediate family or household to attend university. It was decided that the term ‘first-generation student’ would remain and a definition from the current literature would be added. The consensus around the demographic question concerning working class status was that the term was too subjective. They felt that definitions are variable, such as “*having less privilege*”, “*struggling for money*”, “*needing to work harder*”, “*having less opportunities*”, or being “*socially and economically deprived*”. Some described experiences where peers had described themselves as being working-class when it was evident that they were not. It was decided that this question would be removed from the survey as it may not provide an accurate representation of participant’s economic background.

The three heatmaps used within the pilot survey were shared with participants and they were asked for their feedback around the accessibility of the measure and how they understand each concept. Regarding the general presentation of the heatmap (the use of an X and Y axis scale), participants felt that some individuals may struggle to understand how to complete this and consider two different items (home and university) at once. They suggested that two Likert scales could be used instead. Despite this feedback, a decision was made to keep the heatmap measure due to results from the pilot survey indicating that this measure was accessible to them, as well as the fact it showed good reliability. Regarding the belonging and identify heatmaps, participants were unsure on the differences between these two concepts and felt that they were synonyms on some level, meaning that they would provide the same answer for both heatmaps. One participant also commented that the imposter

syndrome that they experience may make it particularly difficult for them to answer the identify heatmap and generally, a preference was shown for the belonging heatmap. Participants did not have any difficulties with the comfort heatmap and felt that they would be able to complete this with ease. Therefore, a decision was made to remove the identify heatmap and change this to a heatmap which measured behaviour. This meant that the three heatmaps covered thoughts, feelings and behaviour, in line with a cognitive behavioural model.

## Appendix U

## Phase two pre-focus group survey results

**Table U1**

*Means and ranges of factor ratings to participants experiences of transitioning to university as FGS' from backgrounds of economic disadvantage.*

| Factor relating to experiences of transitioning to university as a FGS from a background of economic disadvantage | Mean | Range |
|---|---|---|
| Being a commuter student | 8.75 | 7-10 |
| Noticing the differences between yourself and students who are not first of family and have not experienced economic disadvantage | 8.75 | 7-10 |
| Financial difficulties and pressures | 8.25 | 5-10 |
| Having a lack of shared experiences with other students | 7.50 | 6-9 |
| Having less social networks | 7.25 | 3-9 |
| Moving to a university which is far away from your social networks (home family and friends) | 6.50 | 2-10 |
| People having low expectations of your abilities | 6.25 | 3-10 |
| Feeling a need to conceal your social background and identity | 5.75 | 4-8 |
| Social exclusion | 5.75 | 2-10 |
| Needing to work at the same time as study | 4.25 | 0-10 |
| Experiences of othering, discrimination, marginalisation or harassment | 4.00 | 1-8 |
| Needing to support dependents | 3.75 | 1-5 |
| Moving to a university which is closer to your existing social networks (home family and friends) | 3.25 | 0-7 |

## Appendix V

## Focus group themes, codes and frequencies

**Table V1**

*Focus group themes with associated codes, example quotes and frequency counts*

| Theme | Code | Example Quote | Frequency Count |
|---|---|---|---|
| 1. Financial difficulties | Finances take up headspace | "*I'd only just started and was already like budget counting*" | 4 |
| | Financial impact of being a commuter student | "*I have to travel an hour to uni now once a week and I mean that's £20 out of my pocket straight away*" | 4 |
| | Financial difficulties limit opportunities | "*I'm just coming home for my elective, staying at home so I'm not gonna be paying any rent, probably my mum's gonna feed me, like because I'm paying rent in Newcastle. But like the amount of people who erm where you planning for your elective? Oh why? Like we're going to Australia*" | 8 |
| | Experiences of financial difficulties teaches you life lessons | "*I think background has helped me be quite resourceful with money*" | 2 |
| 2. Not knowing | Not knowing what you don't know | "*just so many things I hadn't considered that would even be going to become an issue I feel*" | 1 |
| | Difficulties tolerating not knowing | "*I'm screwed like other people have a… buffer… where they can cope with not knowing. But if I don't get like the funding I need or the help I need, there's no second chance*" | 1 |

| | | | |
|---|---|---|---|
| | Not knowing what to expect | "*perception of university being only what you see on TV and films, to me, university was just sitting in a lecture hall because that's all they showed*" | 4 |
| | Lack of knowledge about university environment or processes | "*just not having a clue on where to go and especially doing it alone was a lot harder I feel*" | 2 |
| | Having no-one to turn to | "*if you're the first to go to uni everything's new and you can't ask your parents for help*" | 2 |
| 3. Navigating uncertainty and disconnection | Perfectionism | "*I have to make sure everything is not so much perfect, but everything is done to a standard in which I feel like I'm expected by other people to reach*" | 3 |
| | Over-preparing | "*I tend to over-compensate and I always have. I kind of over prepare for what I think my deficiencies are like where I've missed. So I kind of like study up on… structures that I have to navigate in advance*" | 4 |
| | Trying to fit in | "*before going to university where I thought all the posh people would know opera. I don't really like opera. But I went to like loads of operas for no reason*" | 2 |
| | The PARTNERS scheme | "*before I started at Newcastle I became part of the PARTNERS programme, so I did get a lot of extra support because of the disadvantaged background*" | 4 |
| | Finding others from similar backgrounds | "*I found that people from same backgrounds tended to stay together*" | 5 |
| | Need to prove yourself | "*I've been told that I'm arrogant and I'm like, well, yeah, because I come from a background where it's about defying the odds repeatedly*" | 2 |

| | | | | |
|---|---|---|---|---|
| 4. | Belongingness | A lack of a sense of belonging | "*I don't normally feel like I belong like with the people at university*" | 4 |
| | | Noticing differences between yourself and students who are not from a background of economic disadvantage or are not the first member of their family to attend university | "*freshers was definitely that very big difference and where you could tell who was from backgrounds where their parents could support them and those who weren't*" | 8 |
| | | Not fitting in | "*I already started having issues I suppose, and you know that didn't fit in*" | 1 |
| | | Difficulties relating to others | "*reference points from my childhood still make it very clear that I was raised in poverty and it comes up repeatedly*" | 11 |
| | | Financial difficulties impacting opportunities for developing friendships | "*I think my whole time at uni I did one social event and that's in my freshers in first year*" | 2 |
| 5. | Systemic factors | Assumptions about people from a background of economic disadvantage | "*like working class people, we do have communication sessions that's like, how to deal with these people like, how to explain things in a way they'll understand*" | 6 |
| | | Assumptions about the SES of university students | "*they continually are like and now you have to remember when you're talking to a patient from a lower socio-economic background and there's an assumption that that's different to you*" | 6 |
| | | Universities don't consider financial implications for their students | "*my electives been moved to January next year, so like what it means is instead of your elective being in summer, now its in January, you'll be paying double rent because you'll be paying your rent for the January term of uni and your elective*" | 8 |

| | | | |
|---|---|---|---|
| | Systemic influence on belonging and not knowing | "*I have had a problem with the structures that are there that made me feel like I don't belong*" | 5 |
| | People not being aware of the PARTNERS scheme | "*a lot of people I know who could have gotten into it, didn't know about [PARTNERS]*" | 1 |
| | Parental attitudes | "*my mum wasn't supportive. She was very against me going to uni as she said, she didn't see the point in me [laughs] getting into tonnes of debt for a job that might not even pay that much*" | 1 |
| | Post-1992 universities better promote a sense of belonging | "*I feel a lot more welcome there*" | 4 |
| 6. Impact on identity and wellbeing | Stress | "*It does cause a lot more stress being a commuter student, I will admit*" | 3 |
| | Anxiety | "*I really over check and if I don't do that then I'll get so much anxiety over it*" | 2 |
| | Jealousy | "*sometimes I am jealous of those from more affluent backgrounds, especially those who haven't really got any gratitude for what they have*" | 1 |
| | Sadness | "*that's just quite sad to see [connection to home life] go*" | 3 |

| | | | |
|---|---|---|---|
| | IS | "*I still wonder whether I earnt that and I do belong there*" | 4 |
| | Living 'between two worlds' | "*but do you ever feel like you've reached halfway into like a world that you're not really a part of, and in the same time lost what you had*" | 6 |
| | A desire to advocate for and help others | "*I'm hoping that as my like family and extended family grow on, I can be that person who can offer advice to other people who want to go to university, which is something I've never had. And I think just having that would make the experience for other people so much less intimidating*" | 4 |
| | Resilience | "*I'm very glad to have the experience of the struggles that I've had in my home life. I mean, there's been a lot of pain [laughs] and it's made me a lot more resilient for university. I don't think I could have gotten though a lot of university if I didn't have those experiences. It has made me a lot more resilient, and it has helped a lot*" | 2 |

## Appendix W

## Belongingness questionnaire subscale loading values

**Table W1**

*Loading values of belongingness questionnaire subscales on to overall belonging composite*

| Variable | Belonging composite |
|---|---|
| Home place belonging | 0.56 |
| University place belonging | 0.56 |
| Social belonging | 0.85 |
| Community belonging | 0.76 |

## Appendix X

## Phase three skewness and kurtosis values variables pre-winsorising

**Table X1**

*Phase three skewness and kurtosis values of variables pre-winsorising*

| Variable | Skewness | Kurtosis |
|---|---|---|
| LIS | 0.31 | -0.94 |
| CPQ | 0.28 | -0.07 |
| Belonging composite | -0.33 | 0.11 |
| IUS-5 | -0.64 | -0.61 |
| PHQ-2 | 0.75 | -0.07 |
| GAD-2 | 0.34 | -0.93 |

# Appendix Y

## Research Project Sign-Off Sheet

NEWCASTLE UNIVERSITY

DOCTORATE IN CLINICAL PSYCHOLOGY

Research Course: Sign off Sheet for Completion of Research Projects

**June 2021**
**This version supersedes any previous version**
**Produced by M. H. Freeston on behalf of research tutor team**

Completing the research process is an essential part of professional conduct in research in line with HCPC, BPS and University guidelines. It fulfils the ethical, scientific, research and financial governance obligations of the researcher and maintains the reputation of science and research and of the organizations who finance, sponsor, approve or host the research. This includes archiving and data storage, ensuring any specific undertakings that have been given to participants or other people who have collaborated have been met, informing the various bodies that have approved, sponsored or indemnified the study, completing all financial arrangements, returning all equipment and materials used in the study, transferring a copy of all materials and data to the supervisor.

With their resubmission to the internal examiner (usually at the time of amendments except for those who have received a straight pass at Viva), trainees must submit the following checklist as an appendix where they indicate the steps taken to close down the study in line with good practice. The student is required to sign this checklist. Documentary evidence may also be included (e.g. end of study debrief, letters to bodies, etc.). The checklist and the documentary evidence will be the final appendix in the thesis.

The internal examiner will verify that the checklist has been completed and signed before allowing final submission of bound copies. It is only when bound copies have been submitted that the trainee will appear on the pass list.

If there are reasons for delay (e.g. further data collection):

1. Discuss with your supervisor which steps can be completed and which will be deferred.
2. Indicate on the checklist which actions will be deferred and who will hold responsibility for completion.
3. Include a separate plan showing these actions, who will be responsible, and likely dates of completion.
4. Inform any relevant body (e.g. ethics, sponsors, etc.) if the responsibility has been transferred to a different person.
5. Indicate who has been informed of the transfer.
6. Ensure that the person/people who will be responsible for any actions sign the plan.
7. Include the plan with your checklist at submission to internal examiner.

Note it is the signature of the trainee that confirms these steps have been completed and is **considered a professional act**. It is possible that the completion of some/all of these actions may be audited at some stage. Please do not sign the checklist in anticipation of steps that have not yet been completed.

NEWCASTLE UNIVERSITY
DOCTORATE IN CLINICAL PSYCHOLOGY
*RESEARCH COURSE: SIGN OFF SHEET FOR RESEARCH PROJECTS*

| | Please tick if it does not apply | Please tick if completed. If not ticked, please provide an explanation | **Trainee name:** | **Chelsea Addy** |
|---|---|---|---|---|
| | | | **Project title:** Living 'between two worlds': a doctoral thesis exploring the psychological experiences and mental health of first-generation university students | |
| | | | *Please add date for each action Please provide brief comment as necessary.* | |
| In line with participant consent, raw and electronic data where consent has been subsequently withdrawn has been dealt with appropriately (e.g. removed) and communicated in writing to the supervisor with responsibility for data keeping. | **X** | | Date completed: 22.07.2025<br>No requests to withdraw received from participants. | |
| In line with participant consent, where permission to use data in future studies has been asked for and not been granted, this has been appropriately identified in data bases (e.g. properly labelled) and communicated in writing/document to the supervisor with responsibility for data keeping. | **X** | | Date completed: 08.08.2025<br>All participants provided their consent for their data to be used in future studies.<br>Thesis supervisor (Professor Mark Freeston) are collaborators on the phase two and three Qualtrics survey (now closed but containing data).<br>Both pre-imputed and post-imputed datasets, as well as focus group pre-survey data, have been shared via email to Professor Freeston. Professor Freeston remains the data guardian and will therefore be responsible for archiving this. | |
| In line with your approved data management plan/ethical approval, the informed consent forms and contact details are<br>a) securely stored in a separate place from any other data, or<br>b) securely destroyed, as the case may be. | **X** | **X** | Date completed: 22.08.2025<br>Focus group consent forms have been emailed to Professor Freeston as guardian for archival.<br>Participants who requested a summary of the project findings gave their email address within a separate Qualtrics survey. A summary has been | |

| | | | |
|---|---|---|---|
| | | | shared with participants and the Qualtrics survey containing these email addresses has been deleted. |
| In line with your approved data management plan/ethical approval, IDs or codes linking personal data to other data have been securely destroyed. | | **X** | Date completed: 08.08.2025<br>Participant IP addresses were deleted when data was exported from Qualtrics for data analysis purposes. |
| In line with your approved data management plan/ethical approval, recruitment logs and other documents containing personally identifiable information have been securely destroyed. | | **X** | Date completed: 08.08.2025<br>Focus group consent forms received from participants who were later determined to not be eligible to participate have been deleted.<br>Focus group recruitment log has been deleted.<br>Focus group consent forms from eligible participants have been emailed to Professor Freeston as data guardian for archiving. |
| In line with your approved data management plan/ethical/HRA/sponsors approval, the raw data (e.g. questionnaires, test sheets, data collection logs) have been<br>a) pseudonymized,<br>b) properly labelled and<br>c) appropriate arrangements for their storage have been made;<br>d) indications for date of destruction are clearly indicated | | **X**<br>**X**<br>**X**<br>**X** | Date completed: 08.08.2025<br>Raw data is anonymised and has been shared with Professor Freeston as data guardian. Professor Freeston is responsible for data archival. |

| | Please tick if it does not apply | Please tick if completed. If not ticked, please provide | *Please add date for each action*<br>*Please provide brief comment as necessary.* **:** |
|---|---|---|---|
| Any concerns about participants, adverse effects, follow-up with participants due to distress, concerns raised by participants, disagreements/ incidents that could lead to participant complaint, etc., have been discussed with supervisors, suitably recorded in an appropriate manner, addressed (if required), and signalled (if necessary) to the appropriate ethics and governance frameworks, including the Course and the sponsors. | **X**<br>**X** | | Date completed: 22.07.2025<br>No concerns about or from participants have been raised throughout the project. |

| | | | |
|---|---|---|---|
| Any correspondence about these matters has either been archived (and pseudon/anonymized if necessary)<br>or destroyed as appropriate<br>Please seek guidance about what is appropriate. | X | | |
| Participants have been debriefed as laid out in Ethics approval. | | X | Date completed: 22.07.2025<br>For phases one and three of the project, debrief sheets and resource lists were embedded within the Qualtrics survey for participants to access.<br>For phase two of the project, debrief sheets and resource lists were emailed to participants following the focus group. |
| Participants have received a lay summary of the results of the study if requested or originally announced. | | X | Date completed: 25.07.2025<br>Lay summary of project findings has been emailed to participants who requested this and provided their email address within Qualtrics to do so. |
| Gatekeepers and others facilitating access to participants have been thanked and, wherever relevant, sent a copy of the lay summary. | X | | Date completed: 22.07.2025<br>No identified gatekeepers of the project. |
| Participants and/or institutions, groups, organizations that have facilitated access have received the announced vouchers/course credits/reimbursements and/or the prize draw has been completed. | | X | Date completed: 22.07.2025<br>Phase one – donation made to the Access Project (not-for-profit organisation) on behalf of participants.<br>Phase two – participants reimbursed with a £15 Amazon e-voucher.<br>Phase three – donation made to the Access Project (not-for-profit organisation) on behalf of participants. |
| Contact details for gatekeepers have been provided to supervisors. | X | | Date completed: 22.07.2025<br>No identified gatekeepers of the project. |
| All study advertisements have been removed from websites or other postings. | | X | Date completed: 22.07.2025<br>No active advertisements on websites that I am aware of as recruitment occurred through email distribution lists. Recruitment |

| | | | |
|---|---|---|---|
| | | | posters removed that were placed round Newcastle University campus. |

| | Please tick if it does not apply | Please tick if completed. If not ticked, please provide | *Please add date for each action*<br>*Please provide brief comment as necessary.* |
|---|---|---|---|
| ***Note: At least one final report should be completed for each project.***<br>*As a minimum a final report should indicate a) title, b) number, c) statements to the effect that study has been completed, no/some adverse incidents were noted, all obligations toward participants and gatekeepers have been completed, and all data and study materials have been securely destroyed/archived according to the data management plan, d) contact person (normally supervisor) for any further correspondence about the study.*<br>*Some organizations have specific reporting requirements – see their websites/information.*<br>***If no final report has been submitted, please indicate clearly why not.*** | | | |
| NHS Ethics Committee has received, as required, progress and final reports about the study. | **X** | | Date completed: 22.07.2025<br>Name of person contacted: N/A<br>NHS Ethics was not sought for this project. |
| University Ethics Committee has received, as required, a final report about the study. | | **X** | Date completed: 08.08.2025<br>Name of person contacted: fmsethics@newcastle.ac.uk |
| Other approving body or Ethics Committee (e.g. charitable organization) has received a final report about the study. | **X** | | Date completed: 22.07.2025<br>Name of person contacted: N/A<br>No other approving body or Ethics Committee involved in the project. |
| Relevant R & D Departments or other sponsoring organizations have received a final report about the study. | **X** | | Date completed: 22.07.2025<br>Name of person contacted: N/A<br>No R&D departments or sponsoring organisations are involved in the project. |
| HRA site file has been completed and archived according to sponsoring organizations wishes. | **X** | | Date completed: 22.07.2025<br>Name of person contacted: N/A<br>No HRA site file was required for this project. |

| | Please tick if it does not apply | Please tick if completed. If not ticked, please provide an explanation | *Please add date for each action*<br>*Please provide brief comment as necessary.* |
|---|---|---|---|
| All project related costs have been appropriately been dealt with and outstanding financial issues with the Course, supervisors, or funders have been resolved (e.g. copy costs, travel expenses, vouchers, materials, etc.). | | **X** | Date completed: 08.08.2025<br>Confirmation received from Doctorate Director that all expenses (phase one, two and three) have been actioned. |
| Doctorate Director informed that all project related expenses have been claimed<br>Employer's representative that all project related expenses have been claimed | **X** | **X** | Date completed: 08.08.2025<br>Confirmation received from Doctorate Director that all expenses (phase one, two and three) have been actioned.<br>Date completed: 22.07.2025<br>No employer representative involved. |
| Funding bodies have received any required progress and final reports about the study. | **X** | | Date completed: 22.07.2025<br>No funding body involved in the project. |
| Any test materials (including unused recording sheets if purchased), manuals, programs, software belonging to the Course, supervisors, University or other sources or purchased for the study have been returned to the appropriate organization/person. | **X** | | Date completed: 22.07.2025<br>No test materials used for this project. |
| Any equipment (including recording devices, storage media, mobile phones, sim cards, credit, software, books, manuals, etc.) that belongs to the Course, supervisors, University or other sources or purchased for the study have been returned to the appropriate organization/person.<br>*(add additional items as needed)* | **X** | | Item: N/A<br>Returned to: N/A<br>Date returned: N/A<br>Item: N/A<br>Returned to: N/A<br>Date returned: N/A |

| | | | |
|---|---|---|---|
| If literature review has been registered on PROSPERO or other data base, status has been updated including closing it down if there is no intention to publish. Note who holds registration (trainee or supervisor) | | X | Review Registration Number: https://doi.org/10.17605/OSF.IO/GM3DH<br>Status: Registered – Active. Final copy of systematic review uploaded with note outlining that this has now been completed, along with any amendments.<br>Who holds registration? Trainee<br>Updated on: 22.08.25 |

| | Please tick if it does not apply | Please tick if completed. If not ticked, please provide an explanation | *Please add date for each action*<br>*Please provide brief comment as necessary.* |
|---|---|---|---|
| All correspondence concerning the study (e-mails, .pdfs or image files, or paper documents that have been scanned) has been handed over to the supervisors in either/both hard media and/or as an electronically transferred zip file. This includes approvals (peer, ethics, funding agencies), extensions to approvals, amendments, registrations, letters of support or permission, etc. | | X | Date completed: 22.08.2025<br>All documents have been shared to Professor Mark Freeston in a zip file via email. |
| All study materials in electronic form have been handed over to the supervisors in either/both<br>hard media (CD/DVD; flash drive) and/or as<br>an electronically transferred zip file.<br>This includes: project proposals, ethics applications, requests for amendments, protocols, invitation/ recruitment materials, information sheets, consent forms, questionnaires, tasks and induction materials developed for the study including those on various platforms (e.g. E-Prime, Matlab, Qualtrics, apps, etc.), SOPS, debriefing materials, etc. | X | X | Date completed: 22.08.2025<br>All documents have been shared to Professor Mark Freeston in a zip file via email. |
| Final copies of the electronically saved raw data, transformed data, and syntax files been handed over to the supervisors in either/both | | | Date completed: 22.08.2025<br>All documents have been shared to Professor Mark |

| | | | |
|---|---|---|---|
| hard media and/or as an electronically transferred zip file. | **X** | **X** | Freeston in a zip file via email. |
| Final electronic copies of thesis as well as the project presentation power point have been sent to supervisors. | | **X** | Date completed: 22.08.2025<br>All documents have been shared to Professor Mark Freeston in a zip file via email. |
| If appropriate, data has been archived (along with all meta-data) in NU's Data Repository. | | **X** | Date completed: 08.08.2025<br>Professor Mark Freeston remains data guardian and all data/files shared via email zip-file. |
| Other: N/A | **X** | | Date completed: N/A |

__C.Addy_____ 22.08.2025

*Signature* *Date*

*Updated By M. H. Freeston, June 2021*.