Quantifying Belonging and Mattering: The Experience of Allied Health Undergraduate Students in University and on Clinical Placement

By

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Abstract

Student belonging is well-researched, with links identified between a sense of belonging in students, and student experience, satisfaction, and student persistence. Mattering is a lesser researched area and is the individual student's perception that they are noticed and valued. This research aims to determine levels of belonging and mattering across the academic and the clinical environment in undergraduate allied health professional students. This research explores how these levels of belonging and mattering vary across student demographics and correlate with grade outcome.

A non-experimental, correlational, quantitative study was undertaken, using a cross-sectional survey and student academic records. Quantitative questionnaires were distributed to undergraduate students enrolled on allied health programmes at one UK university. The questionnaires included questions relating to student demographics and utilised four previously validated Likert scales measuring feelings of mattering in the university environment (Elliott et al., 2004); feelings of mattering in the clinical placement environment (Elliott et al., 2004); feelings of belonging in the university environment (Yorke, 2016) and feelings of belonging in the clinical placement environment using the Belongingness Scale – Clinical Placement Experience (BS-CPE) (Levett-Jones et al., 2009a). Participants were also asked for their student identification number to obtain their academic attainment for the year.

264 completed questionnaires were analysed, with 256 participants providing access to their academic records. Analysis showed a positive correlation between belonging and mattering in both the university and clinical placement environments. Students who had seriously considered dropping out had significantly lower scores for all four scales, and there was a statistically significant relationship between the ethnicity of the student and feelings of mattering and belonging in the clinical environment. There was a small but statistically significant correlation between the student's perception of mattering at university and their average grade achieved for the year. The Spearman correlation coefficient = 0.141, $p<0.025$. This was the only scale that had a statistically significant relationship with grade outcome.

This research demonstrates a relationship between feelings of student mattering and grade outcome, and feelings of belonging and mattering may impact on the student's intention to persist. For students attending clinical placement as part of their studies, attention needs to be given to supporting students to feel that they belong in the clinical placement environment and that they matter to clinical staff and their peers during placements. Interventions at an individual level to increase a student's sense of mattering may positively impact their academic grades.

Dedication

For my mum, the woman who kept me safe, believed in me, and always offered unconditional love and support.

Not all heroes make it to the end.

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My heartfelt gratitude goes to my supervisors, Julia and Ann-Marie for their advice, guidance, and encouragement as I completed this thesis. Their suggestions have, I hope, made this thesis a much better version than it would have been. I must also thank Philip for providing statistical advice and resources, without which I would have definitely gone wrong somewhere.

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And finally, I want to thank the menagerie of pets that have kept me company. By constantly lying on my laptop Ed the cat provided a wonderful game of 'find the random letters', and whilst I hope I have removed them all, if you see a random 'q' you will know who put it there.

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Abbreviations

AHPA	Allied Health Professions Australia
AHPF	Allied Health Professions Federation
ASSIA	Applied Social Sciences Index and Abstracts
BERA	British Educational Research Association
BES	Belongingness Scale
BES-R	Belongingness Scale - Revised
BMA	British Medical Association
BME	Black and minority ethnic
BS-CPE	Belongingness Scale – Clinical Placement Experience
BTEC	Business and Technology Education Council
CINAHL	Cumulative Index to Nursing and Allied Health Literature
CLEI	Clinical Learning Environment Inventory
CLES+T	Clinical Learning Environment Supervision and nurse Teacher
CoR	College of Radiographers
Dip HE	Diploma of Higher Education
EAL	English as an Additional Language
EC	Extenuating Circumstances
ERIC	Education Resource Information Centre
FAEC	Faculty Academic Ethics Committee
GBS	General Belongingness Scale
GDPR	General Data Protection Regulation
GPA	Grade Point Average
GTER	Gross Tertiary Enrolment Rate
HCPC	Health and Care Professions Council

HE	Higher Education
HEA	Higher Education Academy
HEE	Health Education England
HEFCE	Higher Education Funding Council for England
HEI	Higher Education Institution
HEPI	Higher Education Policy Institute
HESA	Higher Education Statistics Agency
IES	Institutional Experience Survey
MCAR	Missing Completely at Random
MP	Mattering on Clinical Placement
MTOQ	Mattering to Others Questionnaire
MU	Mattering at University
NHS	National Health Service
NMC	Nursing and Midwifery Council
NSNA	National Student Nurses Association
NSS	National Student Survey
NSSE	National Survey of Student Engagement
ODP	Operating Department Practitioners
OfS	Office for Students
ONS	Office for National Statistics
PGCE	Postgraduate Certificate in Education
PIS	Participant Information Sheet
PMQ-PE	Perceived Mattering Questionnaire – Physical Education
PSS-10	Perceived Stress Scale
RAISE	Researching, Advancing and Inspiring Student Engagement
RAU	Resilience at University

RePAIR	Reducing Pre-registration Attrition and Improving Retention
RSA	Resilience Scale for Adults
SB	Sense of Belonging
SCoR	Society and College of Radiographers
SLC	Student Loans Company
SOBI	Sense of Belonging Instrument
SOBI-A	Sense of Belonging Instrument - Antecedents
SOBI-P	Sense of Belonging Instrument – Psychological experience
SPSS	Statistical Package for the Social Sciences
SSI	Student Satisfaction Inventory
TEF	Teaching Excellence and Student Outcomes Framework
UCAS	Universities and Colleges Admissions Service
UK	United Kingdom
UKAT	UK Advising and Tutoring
UNESCO	United Nations Educational, Scientific and Cultural Organization
U.S.	United States of America
VLE	Virtual Learning Environment
VMS	Valid Mean Substitution

Chapter 1 Introduction

1.1 Introduction

Pre-registration allied healthcare education is a topic that receives media and political interest in the United Kingdon (UK) due to the direct impact of student recruitment and retention on staffing levels within the National Health Service (NHS). Pre-registration courses are those educational courses that lead to a qualification which is a condition of inclusion in the register maintained by the Health and Care Professions Council (HCPC) or the Nursing and Midwifery Council (NMC) (Education England, 2018), the majority of which are undergraduate. All pre-registration allied healthcare courses such as therapeutic radiography share an additional element within their studies of the requirement to attend clinical placement. The number of students recruited onto undergraduate pre-registration health courses are limited by the number of student placements that can be safely supervised in the clinical setting (Foster, 2021). Within pre-registration healthcare education it is imperative to align the numbers of enrolled students with available placements to allow students to benefit fully from the course, but also to retain as many students as possible to ensure that the NHS is able to maintain workforce staffing levels to meet current and future demands (HEE, 2018)

Attrition is defined as "the number of individuals that leave a programme of study before it has finished" (AdvanceHE, 2018), and 'retention' refers to students remaining in one Higher Education Institution (HEI) and completing their programme of study (AdvanceHE, 2018). Whilst attrition rates within pre-registration health courses will have a unique impact on the future NHS workforce, attrition across the sector has a financial impact on HEIs as student tuition fees made up approximately 50% of the income source for HEIs in the UK in 2015/16 (Hubble and Bolton, 2018). Attrition is also costly for the student involved, due to the lost time in applying and enrolling on an unsuitable course that delays entry and financial earnings from their eventual career, and many students will also be liable for tuition fees for study that was not completed (Which?, 2019).

Within the UK, 9.4% of UK domiciled full-time first-degree students who enrolled into higher education (HE) in the academic year of 2019/20 are projected to neither obtain an award nor transfer to another Institution. In comparison, full-time therapeutic radiography courses within England due to complete in 2014/15 had a final attrition level of 34.2%, midwifery had a level of 28.91% and adult nursing 31.75% (HEE, 2018). Whilst these figures relate to attrition across the full three years rather than the first year, they are significantly higher than the national average for full-time study and are not unusual for pre-registration healthcare courses.

Behind the data and statistical landscape are the human ambitions, connections and relationships of students. During 2008-2011 the 'What works? Student retention and success programme' was initiated and funded by the Paul Hamlyn Foundation and the Higher Education Funding Council for England (HEFCE). The final report (phase one) concluded that belonging is critical to student retention and success, and belonging was a key idea from the research in relation to academic engagement (Thomas, 2012). Belonging can be defined as "*the experience of personal belonging in a system or environment so that persons feel themselves to be an integral part of that system or environment*" (Hagerty et al., 1992). Research has identified links between belonging and student attrition or considerations of dropping out (Ahn and Davis, 2023; Pedler et al., 2022; Russell and Jarvis, 2019; Suhlmann et al., 2018) and relationships between a sense of belonging and student grade outcome have also been reported (Aker and Şahin, 2022; Cwik and Singh, 2022; Khalandi, 2021). Ahn and Davis (2023) found that healthcare students within the UK reported the lowest levels of belonging to the university and this may contribute to the lower retention rates of healthcare students in comparison to the national average. However, whilst links are suggested in current literature, statistical correlations have not been undertaken in UK allied health undergraduate students.

The requirement for allied healthcare education students to complete a clinical placement means that investigations into feelings of belonging within the academic environment will not fully consider the wider experience of the healthcare student. The concept of belonging may be complex due to the additional placement experiences that students receive, as staff-student relationships on clinical placement can impact on the student's sense of belonging (Levett-Jones et al., 2008). Research into experiences of clinical placements have found links between a student's sense of belonging on placement, and satisfaction with their placement experience (Borrott et al., 2016; Levett-Jones and Lathlean, 2009; Sedgwick and Rougeau, 2010) and it would be reasonable to consider that this may impact on retention in a similar way as belonging in the academic setting, although this is unresearched in current literature. Additionally, clinical placements can influence healthcare students future employment decisions and feeling part of the team in addition to having effective support and preparation are crucial to a positive learning experience (Pearce et al., 2022).

When analysing the literature around belongingness on clinical placement, qualitative research discusses the impact around staff interaction with students (Levett-Jones et al., 2008) and feelings of invisibility (Sedgwick et al., 2014) and are described as feelings of mattering which are distinct to feelings of belonging. Mattering is defined as "*a belief that one makes a difference in the lives of others"* (Elliott et al., 2005). People matter because: others attend to them (awareness), invest in them (importance) or look to them for resources (reliance) (Elliott et al., 2004). Mattering differs to belonging in that perceptions of mattering occur through an individual's interpretations of others' behaviours

towards them, whereas belonging is more group orientated (Dixon and Kurpius Robinson, 2008). It is possible for an individual to feel that they belong to a group, but they don't matter to the people within that group, and vice-versa. The perception of mattering is extremely important and is an essential personal motivator (Elliott et al., 2004). Dixon and Kurpius Robinson (2008) found that social support from college friends was a significant predictor of their sense of mattering to the American college environment, and the students who felt supported and felt as if they mattered to the college environment experienced less academic stress. Dixon and Kurpius (2008) found that there is a positive correlation between a sense of mattering and self-esteem in University undergraduates, and in addition students' perception of their mattering in combination with self-esteem and academic stress accounted for almost half of the variance in depression. Tovar (2013) in their doctoral study found mattering to have a moderate to strong influence on engagement, socio-academic integration, belonging and intention to persist, and these findings allow us to consider the possibility that academic engagement can suffer in students who feel that they do not matter to their peers or academic tutors.

1.2 Research gap

Currently, we know that retention rates of undergraduate allied health students such as therapeutic and diagnostic radiography are significantly lower across the UK than the national average (HEE, 2018). There is also a body of research that suggests correlations between retention and a student's sense of belonging (Pedler et al., 2022; Russell and Jarvis, 2019; Thomas, 2012). For healthcare courses within HE, students are expected to undertake a socialisation process during their training, to become comfortable and competent in the clinical environment. Whilst research has been undertaken to investigate students' satisfaction and sense of belonging on clinical placement (Borrott et al., 2016; Levett-Jones and Lathlean, 2009; Sedgwick and Rougeau, 2010), and research has also been undertaken to investigate students' sense of belonging in academia (Read et al., 2003; Rowe et al., 2023; Slaten et al., 2016; Wilson et al., 2015), there is currently no research that brings these together and considers the relationship, if any, between a student's sense of belonging across the two environments.

Belonging and mattering are closely entwined concepts with a sense of mattering central to student engagement and learning (Flett, 2018), and whilst there is growing evidence of the importance of belonging in education (Khalandi, 2021; Thomas, 2012), the importance of a student's perception of mattering is not fully explored. There is currently no research that explores the relationship between belonging and mattering across not just the academic but also the clinical placement environment for undergraduate allied health students.

As outlined earlier, allied health courses struggle with higher-than-average attrition rates (HEE, 2018), and considering any relationship between belonging, mattering and the grade outcome of students, and feelings of 'drop-out' will provide an insight into factors that can affect student performance. Bringing all these separately researched areas together has not yet been achieved. Investigating the factors that may ultimately impact attrition and retention within pre-registration healthcare education will enable HEIs to better understand the student experience and the unique challenges faced by healthcare students.

1.3 Aims and Objectives

The aim of this research is to determine levels of belonging and mattering across the academic and the clinical environment in undergraduate allied health professional students. This research will further explore how these levels of belonging and mattering vary across student demographics and correlate with student grade outcome.

The research objectives are:

1. To explore levels of student belonging across a range of demographics within undergraduate allied health professional students, in both the university and the clinical environment.
2. To explore undergraduate allied health professional students' feelings of mattering, across a range of demographics, in both the university and the clinical environment
3. To investigate correlations between levels of belonging and mattering across both the university and clinical placement environments, in undergraduate allied health professional students.
4. To investigate correlations between feelings of belonging and mattering and grade outcome in undergraduate allied health professional students.

1.4 Research Philosophy

Educational research is varied, and many different paradigms are used to investigate problems and increase understanding of the discipline. A research paradigm is an accepted model of researching phenomena and a set of principles used as a way of pursuing knowledge (Cohen et al., 2018). The research paradigm determines how the members of research communities view both the phenomena and the research methodology that should be used to study the phenomena (Tuli, 2010). Research paradigms address three fundamental questions; the ontological question, the epistemological question and the methodological question (Punch, 2009). Ontology relates to the interpretation of the nature of reality (Wahyuni, 2012), epistemology questions the relationship between the researcher and the

knowledge to be gained (Punch, 2009), and methodology considers the methods that can be used for studying the reality or answering the question (Punch, 2009), all of which will now be outlined.

1.4.1 Ontology

Within ontology, there are two core positions, that of realism and irrealism (Fryer, 2020). Realism is the view that there is one reality, and this reality exists independent to perceptions or theories, and is the same reality perceived by all (Maxwell, 2012). Irrealism is the view that there is no singular reality, and multiple realities exist dependent on the perceptions of the observer and the context and beliefs that the observer applies. Maxwell (2012) quotes Edward Sapir's statement that "the worlds that different societies live in are different worlds, not simply the same world with different labels attached".

The researcher's position is one of realism, in that personal attitudes and attributes inhabit a true reality that can be measured independently of the 'knower' of that attitude (Guyon et al., 2018). This research will consider and build upon existing measurements of belonging and mattering, and this measurement is not possible unless a position of realism is taken.

1.4.2 Epistemology

Within epistemology there are also two extreme core positions, that of objectivist and subjectivist (Fryer, 2020), with the researcher's epistemological position being subjectivist. These two positions could both be argued to be appropriate in researching the concepts of belonging and mattering and there is an element of intersubjectivity in the knowledge of these constructs. An objectivist approach assumes that knowledge is objective, observable and independent of the values and beliefs of the researcher (Holden and Lynch, 2004). A subjectivist approach believes that researcher bias is inevitable and observations are determined by what the researcher sees according to their background, interests, beliefs and resources (Holden and Lynch, 2004). Subjectivists focus on the meaning of phenomena, rather than it's measurement (Holden and Lynch, 2004). The constructs of belonging and mattering have been determined predominantly using validated quantitative scales, however, the concepts of belonging and mattering are not numerical, and the validated measurements are representations of the construct, not the reality of the construct itself (Guyon et al., 2018). Attributes relating to belonging and mattering are inferred through the prism of individual perspectives and experiences, and the impact that these beliefs have had on the development of the constructs of belonging and mattering must be acknowledged.

1.4.3 Philosophical position

Bringing together the core ontological and epistemological approaches provides a framework for three different philosophical positions (Fryer, 2020).

Table 1.1 Philosophical Positions

	Realism	**Irrealism**
Objectivist	Positivism	*N/A
Subjectivist	Critical Realism / Post-positivism	Constructivism / Interpretivism

*A philosophical position encompassing objectivity and irrealism is nonsensical, as it is not possible to produce objective knowledge from multiple realities created from subjective views (Fryer, 2020).

Within positivism, knowledge is considered to be objective, generalisable, replicable and useful for determining cause-effect relationships (Wellington, 2015). A positivist research approach will utilise quantitative methods and uses scientific process to develop knowledge (Punch, 2009), assuming that events occur due to universal laws (Fryer, 2020). As the researcher's background is one of science and precise measurement, there is a natural inclination towards a positivist quantitative approach. However, it must be acknowledged that belonging and mattering are human feelings and there is a limit to the amount of precision in their measurement.

The interpretive (constructivist) research approach considers reality to be a human construct (Wellington, 2015) and concentrates on the meanings brought to situations and behaviour (Punch, 2009). Reality is constructed from people's perceptions of it and is therefore subjective (Wahyuni, 2012), and so an interpretivist approach will focus on the experiences of groups of people (Fryer, 2020). Post-positivism (critical realism) belongs in the positivist camp as knowledge remains objective and generalisable, but frames this in a context of dynamic social structures. Data is objective but interpreted through cultural experience (Wahyuni, 2012).

This study draws on the research paradigm of a post-positivist (critical realism) approach. The approach aims to describe the relationship between belonging, mattering and grade outcome, and ascertain any relationships, whilst acknowledging that the data will be interpreted through the cultural experience and upbringing of the researcher, with the epistemology focussed on explaining within the context of the situation within which data collection took place (Wahyuni, 2012). The post-positivist approach acknowledges both the individual perspectives of participants as well as the social structures that impact upon each participant and the effect these have on decisions and mindsets (Fryer, 2020).

1.5 Thesis outline

This chapter has introduced the background and research problem for this study and stated the subsequent aim and objectives that intend to be achieved. The philosophical position of the

researcher in undertaking this study has also been explained. A reflection relating to the personal background and experiences of the researcher will follow that illustrates the researcher's personal connection to this research. This reflection will form a part of each chapter to detail the personal journey of undertaking this research and acknowledge the perspectives and individual challenges of the researcher. Chapter two will provide a review of the literature relating to the main themes of this research of student retention; belonging; mattering, grade outcome and clinical placements. Chapter three will provide an explanation of the research design and measurement instruments to be utilised within this research, in addition to the methods and ethical considerations. The approach to data analysis is explained in chapter four, followed by the analysis of results and findings in chapter five. Chapter six provides a discussion of findings, followed by the concluding chapter seven that acknowledges the limitations of this research whilst outlining the contribution to knowledge, impact on practice, and bringing together the study with final recommendations.

1.6 Reflection / Positionality

As a HCPC registered therapeutic radiographer, I have worked within HE since 2004, educating students for the therapeutic radiography and diagnostic radiography professions. I now work as an associate professor leading the faculty Academic Development Department that supports students in their studies and the development of their academic skills. As an undergraduate student I struggled through my pre-registration qualification in BSc (Hons) Radiography (Therapy) due to a variety of different challenges. I was the first person in my family to attend University, and so approached the application process with minimal guidance and maximum ignorance. I struggled to select a course, and after turning down a place to study criminology and psychology due to the lack of appealing employment opportunities, I took a year out and found therapeutic radiography in the Universities and Colleges Admissions Service (UCAS) prospectus. I was lucky enough to be offered a place at the University of Hertfordshire, having failed to secure an interview at my chosen Institution. With hindsight my application and personal statement did not offer the preparation and knowledge of the profession that admission tutors look for when recruiting to allied health courses. During my studies I lived in private accommodation with my partner and so became a commuter student for the entirety of the three years. This hindered the social interactions that I could have benefitted from with my peers and combining that with the clinical placement requirements of my course, and the need to work part-time to fund my studies I did not encounter a traditional student experience. 'Traditional' students in UK higher education are often considered to be White British, middle- or upper-class young people whose parents were university educated. Traditional students are expected to transition from public or 'decent' state schools with the required A-Levels and study full-time without dependants or

family responsibilities. Non-traditional students are therefore students who do not meet these criteria, such as those first in their family to progress to university, people from lower socio-economic backgrounds or minority ethnic groups, vocational and work-based learners, part-time learners and care leavers (Nicholson, 2022). Non-traditional students are likely to have limited knowledge of the workings of HE and may live at home with partners or parents whilst undertaking employment during their studies (Holton, 2018). I class myself as having been a non-traditional student due to being the first in my family to attend university, coming from a lower socio-economic background and working part-time throughout my studies.

Whilst I enjoyed my academic studies, and progressed reasonably well through the course, I did not fully enjoy my time on clinical placement. I enjoyed working with patients and the day-to-day job of a therapeutic radiographer but did not feel valued or respected by the clinical staff. There were many days when I questioned my role within the team and whether it mattered if I was there or not. The staff took little interest in me and my life outside of the clinical environment. After the first year I gave serious thought to my options, and whether continuing with therapeutic radiography was the right course of action. However, after having already taken a year out and not having any ideas of what I could do instead, I persevered and considered the possibility of completing a teacher training postgraduate certificate in education (PGCE) after I graduated.

This experience has made me take an empathetic nature to the students that I now educate, and I take an understanding approach to those with imperfect personal statements, doubts about their studies or dissatisfaction with their placement. There are many times when colleagues have stated that a particular student does not have what it takes to be successful, and their rationale could easily have applied to me at a similar stage in my life. However, I was successful, and I strive to give other students the chance to be too. I have a natural interest in the student experience and their feelings of belonging and mattering to their peers and colleagues. I also acknowledge that higher education has changed in many ways since I was an undergraduate student, I am aware that my own experience may impact on my interpretation of the literature and what the data may mean. I hope to limit bias through the acknowledgment of my own experience and with discussion of the research with my supervisors.

Chapter 2 Literature Review

2.1 Introduction

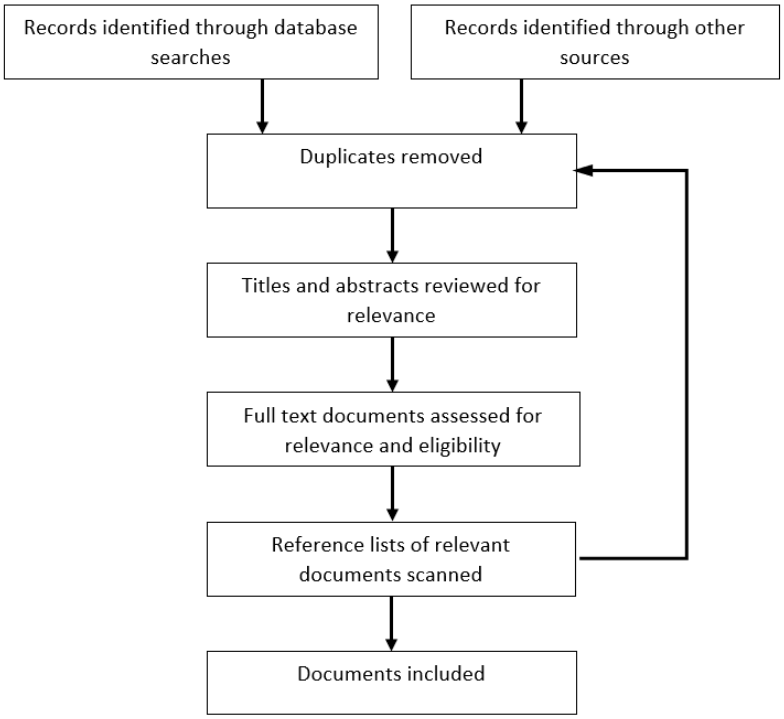
A literature review was undertaken to develop an understanding of the higher education (HE) landscape, specifically issues facing allied health professionals on pre-registration undergraduate courses, and how the concepts of belonging and mattering may impact the student.

This chapter will outline the search strategy used and present a discursive analysis of current knowledge within the literature by themes of higher education; UK higher education; allied health; education for health professionals and clinical placements; student attrition / retention; student achievement; student satisfaction; belonging; mattering and the use of correlations. This chapter will conclude with a summary of the main findings within the literature, identification of the gaps in knowledge and a reflective account.

2.2 Search strategy

An initial scoping review of the literature was undertaken at the beginning of the project to understand current research and identify areas of the literature that warrant further exploration. This search was initially within the last 5 years, beginning in 2008 when the research was originally planned. Historical literature has been included from the 1940s onwards to consider the development of the concepts of belonging and mattering. As the research has progressed the literature has been updated to consider more recent sources. Only sources that were available in full-text English have been included and where research has been plentiful sources within the UK were considered more relevant. The databases used to undertake the review included Applied Social Sciences Index and Abstracts (ASSIA), Australian Education Index, British Education Index, Cumulative Index to Nursing and Allied Health Literature (CINAHL), Education Abstracts, Education Resource Information Centre (ERIC), Medline, PubMed, PsychArticles and PsycInfo, PsychHub, Research into Higher Education Abstracts, ScienceDirect and Scopus. Google Scholar was also used. This review was repeated during the project and again during final write-up to identify recent literature, and those found were incorporated into the final literature review. Whilst an initial structured literature review was conducted, this was widened to include sources identified in reference lists, sources identified during networking and conference attendance, and additional material found in website searching or from colleagues' recommendations. The flow diagram, figure 2.1 below details the phases of the literature search.

Figure 2.1 Phases of literature search



The search was sectioned into four elements: higher education for allied health professionals, belonging, mattering, undergraduate grade outcome. Table 2.1 details the keyword used in the search.

Table 2.1 Keywords used in literature search

	Keywords	Inclusion criteria
Higher education for allied health professionals	Higher Education OR University OR Undergraduate OR Students OR Education OR Academic OR Academia OR Retention AND Pre-Registration OR Health OR NHS OR Clinical	Documents available in English Full text available
Belonging	Belong OR Belonging AND Higher Education OR University OR Students OR Education OR Undergraduate OR Academic OR Academia OR Learning OR Retention OR Pre-Registration OR Placement OR Clinical OR Health	Documents available in English Full text available
Mattering	Matter OR Mattering AND	

	Higher Education OR University OR Students OR Education OR Undergraduate OR Academic OR Academia OR Learning OR Retention OR Pre-Registration OR Placement OR Clinical OR Health	
grade outcome	Academic achievement OR Success OR Outcomes OR Grades OR Progression OR Completion OR Learning AND Higher Education OR University OR Students OR Education OR Undergraduate OR Retention	

The search identified a wealth of research into student belonging in the university environment, with a small amount focused on the clinical environment. There was a lack of research that compared belonging across the university and the clinical placement environment. In comparison there was a much smaller amount of research into mattering. Research undertaken into the grade outcome of students was plentiful but research that specifically linked this to either belonging or mattering was limited. There was no research found that brought these three elements together. The search relating to the HE landscape was predominantly focused on policy, political debates, and opinion pieces.

A review and analysis of the literature identified within each of the themes will now follow.

2.3 What is Higher Education?

Historically the purpose of HE has been to educate students, broaden their horizons, advance knowledge through research to improve the conditions of wider society and to develop leaders ready for a life of public service. Universities embrace critical thought and academic freedom allows the right to freely research, teach and speak out in an academic setting (Barnett, 2004). Universities have been a place for cultivating universal knowledge, rather than providing vocational training (Chan, 2016), and assist in the construction of a rational society (Barnett, 2004). In society the family desire for upward mobility focuses on formal education as a pathway to professional work, and occupational status can be as strong a motivator as financial income (Marginson, 2016). This drives a growth in the participation of HE as once HE is embedded as a route to middle class life and social demand is normalised, the expansion of HE gathers momentum. It is easier to create educational rather than employment opportunities and so the state plays a role in the first growth of mass HE, establishing sites and funding tuition and living costs in order to build social demand (Marginson, 2016). The UNESCO Gross Tertiary Enrolment Rate (GTER) is increasing rapidly by 1% per year. In 1971 9.9% of

the world population of school leavers enrolled in tertiary education and GTER exceeded 15% in 19 countries. In 2013 32.9% of school leavers entered HE and the GTER exceeded 15% in 102 countries and 50% in 51 countries. The worldwide participation in HE now constitutes one-third of the school leaver age group (Marginson, 2016). Whilst high participation HE is more socially inclusive than elite HE, there is a limit to the number of socially advantaged positions available after graduating from HE. Populations are socially stratified, HE is stratified and outcomes are stratified, with students from affluent families dominating high value positions (Marginson, 2016).

In the 1960s UK HE was presented as a public good by governments and underpinned by state funding seeking to equalise the participation of all citizens. Governments have since shifted funding of HE away from the state and on to students as customer beneficiaries and this has driven the marketisation of HE and the rise of the student as a consumer (Naidoo and Williams, 2015) alongside the transformation of HE from an elite to a mass system (Barnett, 2004). The erosion of public funding and the expectation of individuals to contribute to its costs has shifted the benefit of HE from a public good to a private good as an individual paying for their education will expect to graduate prepared with the knowledge and skills required for society's future workforce needs. The current purpose of HE is to acquire new knowledge and prepare an individual for the workforce (Chan, 2016). Within the UK HEIs are significantly diverse between themselves, from research-led internationally respected universities to community colleges that conduct no research, and not all HEIs are universities (Barnett, 2004).

Whilst universities are relatively free from state interference and set their own priorities, admission criteria and sense of purpose, increased societal funding has opened universities up to greater direction from the government. Funding and regulatory frameworks assume that measuring and comparing academic activity will enhance their functioning (Naidoo and Williams, 2015). Universities now operate as a corporate industry with economic goals and market-oriented values (Chan, 2016).

Other changes within HE are, globalisation; arrival of digital technologies; competition and agendas of participation, access and equal opportunities (Barnett, 2004). Traditionalists criticise a loss of standards and purity of mission with HE, whilst others voice concerns that as the university develops strategies to respond to knowledge economy, accountability, and efficacy that the separateness that marked the university from the wider world and provided discursive space for an oppositional voice is being diminished. Universities have become corporate, run as businesses and taken on the agenda, values and principles of the wider society (Barnett, 2004).

Comparing the public and personal purposes of HE may help to understand the disconnect between HEIs and graduates. If institutions and students do not have aligned goals there is likely to be disappointment on both sides (Chan, 2016).

2.4 UK Higher Education landscape and policy

To explore student feelings of belonging and mattering, it is important to consider the wider environment of HE that the students experience, and the policy that impacts this. Within the UK, Universities are classified as 'not for profit institutions serving households', although this is currently under review, with the Office for National Statistics (ONS) considering where Universities should sit in the private sector UK accounts (Gravatt, 2023). In 2021/22 there were 285 HE providers in the UK (Universities UK, 2023), and the numbers of students studying in undergraduate HE have steadily risen, with 2,042,310 undergraduate students in UK HE in 2021/22 in comparison to 1,541,225 studying in 2000/01 (HESA, 2023). Student numbers saw a brief 6.6% decline in 2012/13 (Bolton, 2014) due to a cap set by HEFCE on student numbers, but this cap was increased the following year and scrapped in 2015/16 leading to a recovery and continued increase in the number of students entering HE (Bolton, 2014). Applications for undergraduate study in the UK are also increasing, with 681,880 applications made to UCAS in 2021, in comparison to 616,520 in 2012 (UCAS, 2023). This expansion may impact on the quality of education (Burgess et al., 2018), which is an important consideration when exploring student feelings of belonging, mattering as well as student success.

However, despite increased numbers of students participating in HE, this participation is not evenly distributed across the population. Students from lower-income households, those first in the family to enter HE and those from some minority ethnic groups are less likely to apply for, and gain a place in HE (Younger et al., 2019). Richardson et al. (2020) reported that although students from all ethnic minority groups are more likely than white students to proceed into HE, Black and Asian students are less likely to receive offers from Russell Group universities and ultimately white students are more likely to obtain good degrees than students from ethnic minorities. Equity of access to HE is not a new issue, with Robbins (1963) acknowledging the effect of environmental and social factors on the disparity of access to, and participation in, HE. Widening participation in HE continues to be a key area of focus, and the Teaching Excellence and Student Outcomes Framework (TEF) incorporates metrics on widening participation and expects a commitment from universities to widening participation and fair access (Department for Education, 2017). Despite this more work needs to be done in this area as Younger et al. (2019) found no robust evaluations of UK based interventions into widening participation. As the entry characteristics of students may affect the integration and participation of

students in the institution (Thomas, 2020a), understanding widening participation will allow increased understanding of the resulting student experience for those from all backgrounds.

The student as a consumer will alter the perception and expectation of the student learning experience, with a student's sense of belonging delivered to the student by the university, rather than developed by the students themselves (Hayes and Jandrić, 2021). A key factor for students in the decision to participate in HE and apply to university is the cost of the degree. Prior to 1998 university undergraduate tuition fees were fully funded by the government (Sá, 2019). Means tested tuition fees were introduced in England in 1998, and later loan-based fee regimes were introduced in 2006, and then altered in 2012 (Temple et al., 2014). Presently, tuition fees are primarily funded by tuition fee loans on behalf of the Student Loans Company (SLC) and only require repayments once a student has left study and earning above a certain amount (Department for Education, 2022). The altered tuition fee regime introduced in England from 2012 was the largest scale single change in financing of HE seen in an advanced country (Temple et al., 2014) with removal of public funding for undergraduate studies other than some high cost and minority subjects (Temple et al., 2014) and an increase in tuition fees to a maximum of £9000 per year (Sá, 2019). Undergraduate tuition fees are currently a maximum of £9,250, which are frozen until and including 2024/25 (Department for Education, 2022). The post-2012 increased tuition fees affected student interactions with universities, with students having a more distinct sense of being a consumer. Students also have an increased consideration of future earnings and employability when selecting courses (Sá, 2019). This has in turn increased competitiveness between universities with increasing focus on league tables and surveys such as the National Student Survey (NSS).

Tuition fee regimes are associated with the appearance of student surveys. The NSS began in 2005 (Temple et al., 2014) and is commissioned by the Office for Students (OfS) to survey final year undergraduate students at all publicly funded HE universities and colleges in England, Wales, Northern Ireland and Scotland (Ipsos, 2023) on the quality of teaching and their satisfaction with courses. The annual Student Academic Experience Survey developed by Advance HE and the Higher Education Policy Institute (HEPI) surveys first and second year undergraduate students, in addition to final year students, but does not produce institution level data (Neves and Brown, 2022). Whilst these surveys are designed to measure student satisfaction, their use in ranking HEIs leads to them being used as surrogate measure of educational quality (Langan and Harris, 2019) with Douglas (2015) finding that student perceptions of communication, access and attentiveness are the biggest determinants in student assessments of quality. The results from the NSS contribute to the TEF metrics, in particular questions on student satisfaction with teaching, academic support and assessment and feedback. The TEF assesses and rates universities and colleges, awarding ratings of either requires improvement,

bronze, silver, or gold. Universities with a TEF award are able to charge the maximum yearly tuition fee of £9,250 for full-time undergraduate students, but this is limited to £9,000 without a TEF rating (Office for Students, 2022a).

The 2011 Government White Paper (Department for Business Innovation and Skills, 2011) made the collection and analysis of student data a key priority (Williamson, 2019) to drive student choice and enable competition within the HE system. The later 2016 paper (Department for Business Innovation and Skills, 2016) continued with the drive for the use of data, establishing the TEF as a measure of teaching quality and student retention as a core metric. The paper also highlighted the difference in retention, attainment and progression between students from some black and ethnic minority groups and white students (Department for Business Innovation and Skills, 2016). The Department for Education (2021) more recently announced an expectation that universities must set targets to reduce attrition and improve student progression, particularly for disadvantaged students. This was followed up by Blake (2022) from the OfS acknowledging that there is a lack of evidence in what works in improving the opportunity for success in HE.

2.5 What is allied health?

Prior to 1948 a number of occupational groups aligned themselves to medicine and were provided official recognition via a scheme organised by the British Medical Association (BMA) (Nancarrow and Borthwick, 2021). At the time the health service consisted of three hierarchies, medical, nursing and para-medical, and professional and technical services (Barrett, 1964). Occupational groups subordinate to medicine were needed to support medicine during the establishment of The NHS in the UK in 1948 to provide healthcare free at the point of delivery (Colyer, 2004). These groups were recognised as professions supplementary but subordinate to medicine and State approval to establish the groups as professions was agreed as a collective to avoid the government dealing with disparate demands from multiple groups (Nancarrow and Borthwick, 2021). The 1951 Cope Committee defined the functions of the 'Professions Supplementary to Medicine' as 'assisting medical practitioners in the investigation and treatment of disease by virtue of some special skill acquired through a recognised course of training' (Barrett, 1964). Within 30 years these supplementary professions became sufficiently independent to merit the title of allied to medicine and the professions became independent practitioners. However, they are not equal to medicine and their practice is limited in scope and authority (Nancarrow and Borthwick, 2021).

Within the NHS, allied health professions are the third largest workforce after doctors and nurses, and they work within a range of settings including hospitals, people's homes, clinics, surgeries, the justice

system, local authorities, private and voluntary sectors and primary, secondary and tertiary education (AHPF, 2021). There are 14 allied health professions in the UK, and these are:

- art therapists
- dramatherapists
- music therapists
- podiatrists
- dieticians
- occupational therapists
- operating department practitioners
- orthoptists
- osteopaths
- paramedics
- physiotherapists
- prosthetists and orthotists
- radiographers
- speech and language therapists (NHS England, 2023).

Dentistry and optometry are not included as they already had their own legislative and regulatory recognition and so were not grouped within professions supplementary to medicine (Nancarrow and Borthwick, 2021).

Allied health professions are recognised as a formal group both in the UK and in Australia. However, these countries do not reflect the same group of professions and definitions can vary just within the UK. The Allied Health Professions Federation (AHPF) represents a group of 12 allied health professions in the UK, whereas NHS England currently recognises 14, additionally including operating department practitioners (ODP) and osteopathy. In Australia, the Allied Health Professions Australia (AHPA) recognised 21 professions in 2020, including exercise physiology, chiropractic, audiology, genetic counselling, optometry, perfusion, rehabilitation counselling, social work, psychology, and sonography. Allied health are not a clearly defined group and tend to be defined as what they are not, rather than what they are (Nancarrow and Borthwick, 2021).

Since the early 1990s there has been a strong political need to develop the existing roles within the nursing and allied health professions (Colyer, 2004) with many allied health occupations considered at the time as occupations and not professions due to the shorter period of training, performance of limited skills, and requirement to work under the supervision of medics (Bruhn, 1987). Allied health lacked the tradition of research that was important to professionalism within medicine (Bruhn, 1987)

and allied health groups have worked hard to claim the autonomy and social prestige of professionalisation (Colyer, 2004). Radiography validated its first honours degree in 1989, moving from diploma education, and radiography became a graduate profession by 1993 (Price, 2009). The paramedic profession have more recently moved to degree level entry in 2018, with the College of Paramedics now seeking royal college status to increase awareness in the expertise of the profession (Eaton, 2023). For ODPs this change is currently taking place, as only degree level programmes for ODPs will be approved by the HCPC from 2024 onwards, and diplomas will be phased out as they reach the end of their approval period (HCPC, 2021a).

2.6 Issues in the education for allied health professional and clinical placements

Despite the shift to provision of undergraduate programmes for allied health care by universities, there are issues in this provision.

2.6.1 Vacancies, retention, and recruitment

The College of Radiographers (CoR) (2020b) reported a vacancy rate in the UK NHS therapeutic radiographers workforce of 7.7%, which is the highest rate since collecting of this data began in 2012. The CoR (2020a) also reported a vacancy rate in the UK NHS diagnostic radiography workforce of 10.5%. Whilst the number of students studying subjects allied to medicine in 2019/20 was 295,520, increasing by 14.7% to 339,150 in 2020/21 (HESA, 2022), Nightingale et al. (2019) highlighted challenges within the recruitment and retention of the therapeutic radiography profession, and that investment is needed to prevent a crisis point impacting on cancer survival rates. The Department of Health (2013) stated an objective to reduce unnecessary attrition from health training programmes and to make further progress in encouraging people from poorer socio-economic backgrounds to pursue a career in healthcare.

Undertaking full-time university study is expensive, and before 2017 NHS bursaries were available for nursing and allied health students. This funding model changed in 2017 and the NHS bursary for nursing and allied health students in England was withdrawn (Buchan et al., 2019) with students receiving student loans as per other undergraduate courses. In 2017 applications for nursing in England fell by 18%, and the profile of students was younger with mature students discouraged from applying. The change in funding arrangements combined with demographic drop in the population of 18-year-olds resulted in a decrease in the number of nursing students. In addition, there was a UK wide attrition rate of 24% in student nurses and 21% in student midwives due to complete in 2017 (Buchan et al., 2019). Additional funding has since been made for students studying healthcare

courses with the NHS Learning Support Fund providing yearly grants for full-time students (Brown, 2023).

The RePAIR (Reducing Pre-registration Attrition and Improving Retention) steering group was established in 2015 in response to the Department of Health (2013) mandate to reduce unnecessary attrition from pre-reg healthcare programmes. The RePAIR report (HEE, 2018) focused on the nursing, midwifery and therapeutic radiography workforce and stated that student attrition incurs costs to the health and care system. The report identified factors affecting retention as being financial pressures, wrong career choice, placement allocations, student support on clinical placement and student confidence, making 14 recommendations to improve student retention. A subsequent report by the REPAIR steering group (HEE, 2020) considered the impact of COVID-19 and determined that the high concerns for students considering leaving their studies was stress, lack of HEI support, academic concerns, feelings of being overwhelmed and doubting their ability. Medium to high concerns were workload, placement experience and financial concerns, and lower concerns were mental health challenges and lack of personal or placement support. A significant amount of 27% of allied health profession students were considering leaving their studies, although this was lower than the 37% of nurses and 41% of nurses. As this report focused on the impact of the pandemic on students, it is likely that this has changed since the pandemic has come to an end, and an up-to-date study is needed to understand the current factor affecting attrition on pre-reg healthcare programmes.

The NHS long term plan (2019) committed to increasing the NHS workforce, and in turn training and recruiting more professionals and providing more clinical placements for student training.

NHS Employers (2022) highlighted that if the NHS workforce is to grow, there is a need to increase the number of students. The ability to recruit more students is hindered by the number of placements available, and the availability of experienced staff to teach and assess students (Hellawell et al., 2018). An exploration of simulation and technology is needed to widen student opportunities for clinical learning (Wilkinson, 2023).

Edmond (2001) published a position paper with a focus on nursing within the UK, highlighting that due to the need for practitioners to be accountable at the point of professional registration, pre-registration clinical education is extremely important. This paper focused on the crisis in recruitment and retention within nursing, and the lack of availability of clinical mentors for students due to workload, also criticising the lack of formal collaboration between education institutions and service providers. Furthermore, the paper warned of a devaluing of practical clinical experience due to an emphasis on grade outcome as preparation for practice, calling for a review of nursing education. As this paper is quite dated, drawing on evidence and reports from the 1990s, the arguments may be

based on opinions of the changed landscape in the nursing profession from vocational nurse training, to nurse education within universities which was fully operational by 1993 (Carpenter et al., 2012).

2.6.2 Student expectations and experiences

Difficulties in relation to clinical training continues to be reported more recently, and Hamshire et al. (2013) investigated how healthcare students perceive their studies across nine universities in North West England. The results from interviewing 24 students, and an online survey of 1080 students were that most students reported positive experiences, but there were some areas where student expectations were not met. Some students had clear expectations of being supernumerary on clinical placement, however staff expected students to provide labour to become competent and conduct tasks such as bed making which students found disappointing. The student expectations of supernumerary status and availability of clinical mentors were at odds with some students' reality, and this, alongside low staff morale reported by some students, may account for students reporting a sense of being disrespected on placement. Hamshire et al. (2013) also found that the placement mentor was instrumental in defining overall placement experience, which was corroborated by McIntosh et al. (2013) who researched UK midwifery students in one university and found that mentors were seen as the main source of support on placement. Additionally, Bridge and Carmichael (2014) gave questionnaires to 1st and 2nd year Australian therapeutic radiography students as well as educators and all stated that the provision of a named mentor was either very important or absolutely essential. This was, however, a small study of only 18 students and 6 educators which limits the generalisability of the findings.

Difficulties during clinical placements are not confined to the UK or Australia, with Hakojärvi et al. (2014) undertaking a qualitative study on 41 healthcare students at two Finnish Universities and identifying bullying on clinical placement across several health care professions. It was found that bullying of students during clinical training was detrimental to progression and student perceptions of their profession, but can be prevented by supporting students' self-esteem, security, and sense of belongingness in placement. Hakojärvi et al. (2014) only included those students who reported primary experiences of bullying, and of the 1294 students only 41 met the criteria and returned the questionnaire, which was only 3.2% of the eligible students. Therefore, the extent of the bullying appears low, but ideally no student should experience workplace bullying. Birks et al. (2017) distributed the *Student Experience of Bullying during Clinical Placement* questionnaire to 833 Australian and 561 UK nursing students. They found rates of bullying of 50.1% in Australia and 35.5% in UK nursing students. It was reported that other nurses were the main perpetrators of bullying with patients the main (but not only) cause of any physical violence. The power dynamics between staff

and students prevented students from raising concerns, particularly as perpetrators may be responsible or part of student assessments. It does need to be noted that within this study there was a high degree of uncertainty in how students defined bullying, as a definition of bullying was not given as part of the study. Additionally, participants were predominantly female, under 30 and white Caucasian with English as their first language and so any varying experiences of minority groups was not explored.

Papathanasiou et al. (2014) administered the *Clinical Learning Environment Inventory* (CLEI) to 196 students in a Greek nursing school in order to identify and assess student perceptions of psychosocial characteristics of their clinical learning environment. They found a significant difference between the students' preferred clinical environment and their actual environment, with students wishing for a more positive setting. Characteristics highlighted were satisfaction, individualisation, and innovation, with participation being an important factor in student satisfaction. Whilst this study focused on students from one university and one hospital in Greece, the findings are supportive of other studies that highlight dissatisfaction with student clinical placements in healthcare. Bwanga and Lidster (2019) support this with their qualitative systematic review on undergraduate radiography students' perceptions and experiences of clinical placement, stating that students felt confident to learn when respected, supported and regarded as part of the clinical team. Some students reported the clinical environment as unwelcoming, but with the clinical supervisor key to creating learning opportunities. Bwanga and Lidster (2019) recommended good relationships between academic and clinical staff and a culture of professionalism promoted to ensure a positive clinical placement.

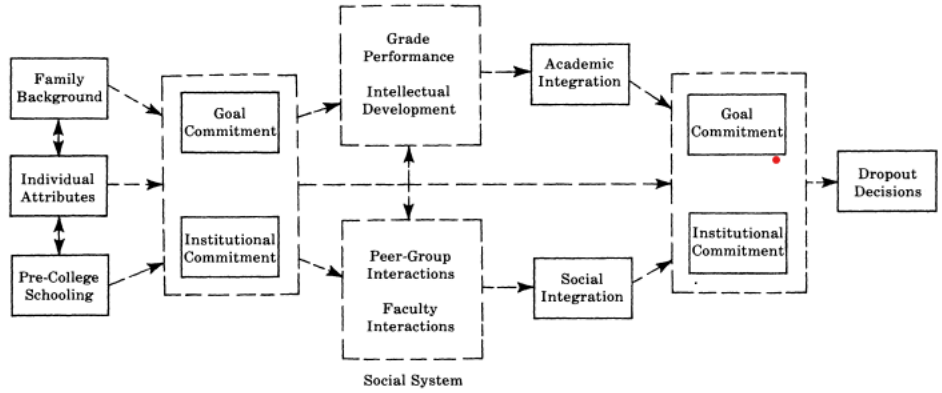
McPake (2021) undertook a mixed methods study within the UK of 13 second year undergraduate therapeutic radiography students, focusing on the impact of radiotherapy staff attitudes on student learning during placement. It was found that placement learning was shaped negatively if students perceived themselves as unwanted, in the way or were ignored. Students felt frustrated by staff reluctance to engage with them, and it was found that a single upsetting event can cause a loss of confidence in the student affecting the remainder of a placement. Peer support was reported to be important to students, and radiographers who were friendly, willing, and supportive induced positive feelings in students. Pearce et al. (2022) had similar findings after conducting 14 focus groups for 53 nursing, allied health professional, midwifery and nursing associate students about clinical placement experiences. Positive experiences related to feeling part of the team, effective supervision, and a focus on learning. Negative experiences related to a lack of respect, being referred to as 'the student' rather than by name, feeling unwanted, an expectation to 'work not learn' and poor mentorship. Pearce et al. (2022) also reported that negative experiences can be linked to high attrition rates.

2.7 Student attrition and retention

2.7.1 Attrition

Students withdraw from their studies for a multitude of interrelated reasons, and as these factors shape the student's sense of belonging and experience at university (Russell and Jarvis, 2019), student attrition and retention is pertinent to belonging, mattering and grade outcome. Inquiry into student attrition in HE has been researched for a number of years, with Tinto (1975) developing a theory of student departure to explain the processes that cause students to leave HEIs and the conceptual schema devised is shown in figure 2.2 below.

Figure 2.2 A conceptual schema for student dropout



(Tinto, 1975)

The Tinto (1975) model suggests that it is the student's integration into academic and social systems that most directly affect continuation and the degree of integration is related to continuation (Tinto, 1975), which is important as social integration is a key aspect of belonging (Dewall et al., 2011). Students of varying characteristics may hold different perceptions of similar situations and the perceptions of the student are important (Tinto, 1975). However, this research did not distinguish between academic failure and student voluntary withdrawal which created contradictory findings around the relationship between student withdrawal and grade outcome. The longitudinal process of interactions between student and academic and social systems of university is potentially overly simplified as each interaction can lead to varying levels of persistence and drop out behaviour.

Bean (1980) offered a model of student attrition by applying a causal model adapted from employee turnover in the workplace to student attrition in HEI. Bean (1980) acknowledged that not all attrition is necessarily 'bad', and students may have a legitimate reason for leaving their studies, such as an incompatibility between the course and the student's area of interest or vocational aspirations. They undertook research during 1977, surveying 907 full-time first-year students in a midwestern university

in the United States of America (U.S.), all Caucasian, under 22 years and unmarried, who completed a 107-item questionnaire. However, the sample was biased towards higher ability students. They found that a lack of institutional commitment was the primary variable influencing student drop-out, and satisfaction was a significant variable for women but not for men. Men left the university even though they were satisfied whereas women who were satisfied were more committed to their studies. The perceived quality of the education the student received was one of the most important variables found to influence institutional commitment.

Hamshire et al. (2012) interviewed 16 students via telephone who had recently left undergraduate nursing or allied health programmes within the North West of England. The majority indicated that their tipping point before departure was dissatisfaction and difficulties around their clinical placements. Issues highlighted included the organisation and management of placements, problematic placement journeys, disappointing experiences on placement, student status on placement and poor relationship with mentors. Participants identified multiple difficulties such as childcare, but it was issues around clinical placements that were predominant. Issues around clinical placement were also raised by Colyer (2013) in a report into improving retention in the radiotherapy workforce and the role of placements in student attrition, supported by the Society and College of Radiographers (SCoR). Colyer (2013) highlighted student attrition in therapeutic radiography of 36.5% during 2010-11 and audited current practices within clinical placements in radiotherapy centres in England utilising face to face meetings with radiotherapy service staff, telephone interviews with HEI course leads, interviews with staff and students, and data from a student conference. Student participants raised practical concerns related to finance that were specifically noted as contributing to attrition rates. Concerns about clinical placement were grouped into four categories of; finance, transport, and accommodation costs; structure of placement and quality of learning; variability of student support and assessments; and bullying and marginalisation. This report focused specifically on therapeutic radiography and issues relating to other students in other allied health professions were not included.

Kember et al. (2021) used the student record system of 9,526 undergraduate students at one Australian university to examine the impact on attrition after they began admitting a more diverse student body, and undertook a shift towards online and blended learning. There were inter-correlations between remote students and attendance mode as those living in remote areas and away from campus may opt to study online and it was concluded that students studying online are more likely to drop out than those attending face-to-face with remote students more prone to attrition. Socio-economic status had the least impact on attrition or academic performance. They suggested

that the expansion of HE along with increased use of online and blended learning will impact attrition as online interactions are potentially less effective at developing social cohesion.

2.7.2 Retention

The Higher Education Funding Council for England (HEFCE) and Higher Education Academy (HEA) collaborated with the 'What Works?' project investigating student retention (Thomas, 2012). Non-continuation rate for entrants into English HE in 2009-10 was 8.4%, varying between institutions from 1.2% to 21.4%. The average completion rate for entrants to English HE in 2009-10 was 78.4%, and this varied between institutions from 53.8% to 97.2%. The project emphasised a need to ensure that retention does not worsen as student numbers and diversity increase, as student attrition results in a loss of income for the HEI and unnecessary debt to the student (Thomas, 2012). Gonzalez (2022) found a loss of $842,650 in revenue at one south-eastern U.S. college due to students not completing when exploring the financial implications of academic dismissal or drop out of 136 academic probation students among 5 years of student cohorts. Thomas (2012) brought together a combination of seven projects across UK institutions used mixed methods and a range of data sources to examine student retention and success, with findings stating that a sense of belonging is critical to student retention and success. The project advocated for educational approaches to promote belonging, these being ones that support peer relations, provide meaningful interactions between staff and students, developing knowledge, confidence, and identity as successful learners, and provide an experience that is relevant to the interests and future goals of students. It was also highlighted that institutions have a responsibility to take reasonable steps to enable their students to be successful. This research instigated significant dialogue around the contribution of belonginess to student retention and within UK HE and internationally there began a wealth of initiatives designed to improve belonging and reduce retention.

An international study into engagement and retention by Soria and Stebleton (2012) surveyed 1864 first year students in Midwest U.S. and found that a student's sense of belonging positively predicted academic engagement. Soria and Stebleton (2012) report that academic engagement was measured by engaging in activities, contributing to discussions, asking questions, and interacting with academic staff. Furthermore, they also found that first generation students have lower academic engagement and lower retention compared to non-first-generation students.

A further study around retention from the U.S. by Shelton (2012) surveyed 458 associate degree nursing students and found that students who persisted with their studies had been academically successful during high school or college with higher grade point averages, but also had greater financial resources than those who failed academically. There was also a significant difference in the

student's perceptions of the faculty support available between students who persisted and those who withdrew. Also in the U.S., Banks and Dohy (2019) conducted a solution-based literature review into barriers to persistence, retention and graduation for students of colour in universities in the U.S. showing success in mitigating barriers. They identified two schools of thought involving opportunity gaps

1. the deficit remediation model which focuses on determining the needs of students around concerns, defects, and deficits or
2. the strengths-based model which stresses the importance of a person's talents and developing talents into strengths.

Institutions tend to emphasise remedial approaches with the implementation of programs to 'fix' students, but this remedial work is in addition to their programme of study and increases the student workload. Approaches that focused on the financial needs of minority students demonstrated increased rates of retention and graduation for students of colour but Banks and Dohy (2019) found that blatant, implicit and institutional racism continues to be a barrier to students. The findings recommended that homogenous peer groups could create feelings of belongingness and increase retention for students of colour and that the competencies and diversity of academic staff must be increased with universities conveying high expectations to increase the persistence of students.

Whilst these research findings may be useful and relevant to the UK context, the HE system in the U.S. is very different to the system in the UK, with undergraduate degrees typically taking 4 years in the U.S. in comparison to 3 years in the UK and tuition fees are much higher in the U.S. Students in the UK select their degree subject at the point of application whereas in the U.S. this decision is made at the end of the second year of study. These differences will impact on the experience of the student and so research within the U.S. may not always translate to the UK landscape.

A systematic review of research into student retention and engagement in HE was completed by Tight (2020) and suggested that whilst the meaning of the term 'student engagement is unclear and varied, increasing retention should be about the university adapting to the students it admits rather than helping students to adapt better to the university. Students should maintain their identity, retain their social networks, have their cultural capital valued, and the content, teaching methods and assessments should reflect the diversity of the students.

Wilson et al. (2022) studied the contribution of personality in relation to retention using 281 Canadian full-time undergraduate students. The longitudinal research measured personality, resilience, perfectionism, and trait emotional intelligence in the first semester of the first year, and enrolment status of the participants was collected at the end of each academic year for four years. Participants

completed the measures online and received credits towards their course, with 78% of participants being female, and 45% studying health or medical sciences. They concluded that high school grade point average significantly contributed to the prediction of student success, whilst males had increased odds of delayed completion. Personality variables were not found to be significant predictors of retention, although there was only a small group of withdrawn students so there was a lack of statistical power and variance in those groups. This research did not capture non-academic circumstances over the years and solely focused on enrolment status.

2.8 Factors affecting student achievement in Higher Education

There are different factors which affect student achievement in higher education, and these will now be discussed.

2.8.1 Student achievement in Higher Education

Vidal Rodeiro and Zanini (2015) utilised data from the Higher Education Statistics Agency (HESA) to examine grade outcome. The data was taken from all full-time graduates in UK HE who entered with three or more A-levels and started a first degree in 2010/11 and completed in 2012/13. The study excluded students enrolled in Scotland and students studying medicine, dentistry or veterinary science due to the length of the degrees. In total, 65,150 students were included and approximately 20% had at least 1 A* grade from their A-levels. Forty-two percent of the students with at least 1 A* studied in Russell Group universities compared to only 9% in other types of universities. Seventeen percent of Russell Group students had at least 2 A* compared to just over 1% in other institutions. These differences may increase if medicine and veterinary students were included due to the high entrance requirements. The number of A* A-level grades was strongly associated with the probability of obtaining a first-class honours degree, with a link between A-level attainment and degree performance. The average achievement at A-level was a strong predictor, after controlling for student characteristics and schooling effects. It was also noted that students from disadvantaged areas were significantly less likely to achieve first or upper-second-class degrees. This does not account for other personal, social, or financial variables that may affect success and the experiences of students was not explored as part of this research.

Rodríguez-Hernández et al. (2020) performed a mixed-methods systematic review of 42 studies into socio-economic status and academic performance in HE, measuring parental education level, parental occupation, income, household resources and neighbourhood resources. Academic performance in higher education (HE) was measured in achievement, competencies, and persistence. The study reported a positive but weak relationship between socio-economic status and academic performance,

with prior grade outcome, university experience and working status more strongly related to academic performance than socio-economic status. The relationship between university experience and prior grade outcome with academic performance was positive and significant, and undertaking employment alongside studies had a significant negative effect on academic performance. The study noted that the number of studies exploring the relationship between socio-economic status and academic performance was low and so all studies aiming to predict academic performance were considered in their research.

Cotton et al. (2016) used a mixed methods approach to explore gender and ethnicity gaps using the academic and social experiences of students, incorporating the lecturer views on student achievement in one UK university. Semi-structured interviews with 21 students and focus groups involving 28 students were conducted, plus an online questionnaire that received 1,023 responses across six academic departments. The study was exploring black and minority ethnic (BME) students and this term will be used here to discuss their findings. BME student put more importance on university participation than white students and were more influenced by their family. BME students were also more likely to be extrinsically motivated (course reputation or career) with white students more likely to be intrinsically motivated (interest in subject, personal development etc.). Family influence may result in BME students selecting courses that may not be their personal first choice, and interviews highlighted instances of BME students that were unhappy with their choice of course which was an issue they attributed to family influence. Therefore, BME students may lack a deep engagement with their chosen course and adopt surface learning. Analysis also observed that white students were more comfortable speaking English than BME students and English language ability was raised by students and staff as a key factor influencing success. Cotton et al. (2016) also found that female students were more anxious about exams than males, although male overconfidence may contribute to their underperformance as male students were twice as likely to miss at least one lecture per week. It was unclear what percentage of participants were BME students in this study, but the discussion suggested that it was a small number. In the focus groups BME students reported issues of integration and mixing with white students, but opinions varied on whether this was due to choice or difficulties encountered, and so it is possible that the difficulties reported by BME students in this research related to the culture of the individual university rather than difficulties encountered across the whole of UK HE.

Wong et al. (2021) conducted qualitative research into the opinions of undergraduate students about the ethnicity degree awarding gap, conducting 69 interviews over 2 years with undergraduate students from disciplines such as biological science, computer science, mathematics, pharmacy and psychological science. 72% of the participants were minority ethnic students, and 74% were female. Most white students expressed an individualised perspective on degree outcome difference and

struggled to articulate a reason for the ethnicity degree awarding gap. Some minority students were also unsure and took full responsibility for their own academic achievements. Participants identified a range of social and structural barriers. Those from disadvantaged financial backgrounds, may be poorly prepared for university and find it difficult to 'fit in' with university cultures and expectations, acknowledging possible racial mistreatment and microaggressions. There was a perceived language barrier for ethnic students, particularly those with non-English speaking home environment. However, the participants, and particularly those who were white British, combined minority ethnic with international students and as most black, Asian and mixed ethnicity students achieve above national averages prior to university (Wong et al., 2021) language requirements in HE is either very different or language is not the key barrier that some envisaged. The participants suggested that a narrow curriculum and a focus on white British or western examples may demoralise minority ethnic students and result in poor engagement and therefore attainment.

Murtagh et al. (2017) conducted quantitative research into the relationship between attendance at a first-year welcome event and academic attainment. One thousand and five full-time arts, law and human sciences students enrolling into the first year of one UK university completed a questionnaire during induction. In addition, the demographic data on age, gender, ethnicity, socio-economic status, entry qualifications, academic credits and average marks for each student obtained from the student record system at the end of the academic year. Fifty six percent of students attended a one-day welcome event, and attendance at this event significantly predicted first year attainment. After controlling for effects of demographics and entry qualifications, the average mark for those attending was 54.68% and for those not attending 50.26%. Ethnicity and entry qualifications were also significant predictors of attainment and age was significantly associated with attainment once entry qualifications were accounted for. For pre-entry qualifications, students with BTEC and access qualifications underachieved in comparison to students with A-levels, although the average mark does not consider different types of assessments and whether students with differing prior qualifications do better in assignments or examinations.

A recent study by Džubur et al. (2020) examining correlations between grade outcome with personality traits, learning styles, gender, and residency status involved 95 first-year medical students in Bosnia. The use of learning styles is now widely accepted as unsupported by the evidence and a myth within education (Kirschner, 2017). Džubur et al. (2020) found that females have better grade outcome than males and achievement was negatively correlated with extraversion. There was a positive correlation with conscientiousness and achievement. With an average age of 19 and 82% of the participants being female, this small study was not representative of the wider population of students but corroborated findings by Cotton et al. (2016) that females outperformed males.

Afzal et al. (2023) investigated whether the relationship between students and teachers impacts on students' grade outcome in Pakistan using a quantitative, structured questionnaire on 800 students across a range of Faculties. The relationship between the teacher and student was shown to have a significant impact on student grade outcome, with positive relationships leading to increased motivation, engagement, and academic performance. Communication explained 4.2% of variability in students' academic scores, teacher motivation 4.3%, availability of teacher 3.4% and connectivity with teacher 4.0%. Whilst the culture of HE in Pakistan is different to that of the UK, this study does suggest that the interactions between students and academic staff may affect the grade outcome. Another study outside of the UK in Ghana (Kolamong et al., 2024) correlated student grade point average with both belonging and mattering in 522 teacher trainee students. Their findings suggested that feelings of both mattering and belonging are significantly correlated with grade point average, with higher levels of mattering and belonging corresponding to higher academic performances. Whilst this study is pertinent to this area of research, the experiences of teacher trainees in Ghana may not be representative of the experiences of allied health students in the UK. Students in this study also self-reported their grades in categories which may limit the statistical analysis.

The majority of the research into student achievement in higher education highlights the ethnicity degree awarding gap, and this is highlighted in the selection included in this section. Much of this research fails to fully articulate the reasons behind this or proffer tangible solutions that can be embedded into HEIs. Universities in the UK have historically been spaces of elite white privilege (Chaudry, 2020), and Puwar (2004) suggests that to understand the impact of this it is necessary to go beyond the counting of ethnic minority students in relation to white students, but instead create a more complex picture of how whiteness is embedded into the character and life of organisations. The arrival of ethnic minorities in spaces such as HEIs, from which they have been historically or conceptually excluded sheds light on how these spaces have been constructed and challenges assumptions about belonging (Puwar, 2004). Pilcher (2016) suggests that the ethnic identity of students is embodied by their name, which can contribute to the social interaction of individuals and may help or hinder the fitting in with those around them. However, Foster (2008) found only weak evidence for a direct effect of names on academic outcomes of undergraduate students and suggested any named-based racial differences in academic outcomes may occur earlier in life and already be solidified by the time students reach university. Whilst there are no explicit barriers preventing Black or Asian individuals from entering university, some individuals are perceived as having an inherent right to be there, while others are seen as out of place. Institutional racism operates in subtle and often unspoken ways, making exclusion difficult to pinpoint. The processes of inclusion and exclusion are deeply embedded in informal rules of behaviour, and these unwritten expectations shape access

to power and privilege (Puwar, 2004). Racism is not merely the result of overt prejudice from isolated individuals but operates through subtle yet persistent mechanisms, such as racial microaggressions, which shape daily interactions and reinforce exclusion. Institutional initiatives aimed at addressing racial inequalities often fail to engage meaningfully with the fundamental aspects of racism, and instead rely on short-term strategies that produce little lasting impact on the experiences, outcomes, and success of students of colour (Rollock et al., 2018). Higher education continues to struggle with a lack of senior staff of colour, and when concerns about racial inequality are raised, they are frequently dismissed as anecdotal rather than recognised as part of a broader, well-documented pattern in UK universities. Honest discussions about race between white individuals and people of colour remain difficult, often hindered by discomfort, defensiveness, or misunderstanding. Furthermore, institutions tend to avoid directly confronting race, racism, and racial injustice, opting instead for the more palatable language of equality, diversity, and inclusion which do little to challenge systemic inaction or avoidance. Ultimately, meaningful change is dependent on the willingness of the white majority to acknowledge these issues and commit to improving racial equity, a reliance that further complicates progress (Rollock et al., 2018).

2.8.2 Student achievement in clinical placements

There is little research that specifically considers factors impacting the achievement of students within clinical placements in the UK, but there are several international studies from Australia.

Within the UK, Naylor et al.(2014) retrospectively researched demographic differences in the awarded marks of a final clinical placement in a physiotherapy undergraduate programme, exploring age, gender and ethnicity. The project included 325 students across five cohorts that enrolled between 2005-2009. As the final clinical placements were marked solely on clinical practice and were not associated with academic work, they provided the truest reflection of clinical performance. There were no significant differences in the achievements of mature versus traditional students, and gender had no significant difference on the grade awarded. However, higher marks were achieved by white students in comparison to ethnic students. Cognitive and psychomotor were skills most significantly affected, although interpersonal skills were also judged lower for ethnic students. Despite the statistical significance, the actual percentage difference was only 2-3% between the groups, and these were small resulting in just two categories of white British and minority ethnic.

A further UK study by Coleman (2023) quantitatively studied the effect of placement design on student retention and grade outcome on 460 part-time UK pre-registration adult and mental health nursing undergraduates across two cohorts in one institution. Nurse education within the UK is traditionally a block placement design, but some UK universities are considering alternative models to optimise

placement capacity. Coleman (2023) sought to identify whether block design or an integrated structure throughout the programme displayed a statistically significant difference on student retention or degree classification, and no significant effect was seen.

In an Ausralian study, Doyle et al.(2017) used the 'Clinical Learning Environment Supervision and nurse Teacher' (CLES+T), a 34-item questionnaire with 150 Australian third year nursing undergraduate students. Eighty percent were female and were from diverse placements across both public and private settings. The patient mix and acuity, rosters, accessible transport, and access to mentors explained less than 10% of the total variance. The psycho-social culture of the ward predicted the highest student satisfaction rates. Predictors of student-perceived success were identified as either internalising or externalising. The internalising culture of a ward was most important and related predominantly to how ward staff acted towards their own colleagues and staff, and the externalising culture, the second strongest factor, related to how ward staff acted towards people who were not part of the ward team, such as the undergraduate students. A culture of staff being welcoming and affirming was an important factor in determining the success of student placements. In a further Australian study, Rebeiro et al. (2021) explored the lived experience of interpersonal relationships between Australian registered nurses and undergraduate students during clinical placements. They conducted 10 semi-structured interviews with nurses who had facilitated student clinical learning within the last 12 months and identified three predominant themes: getting to know the student is essential; effective communication is a reciprocal process and mutuality of engagement and commitment is essential. It was concluded that effective interpersonal communication enables a positive relationship with students, and positive and reciprocal relationships enable effective learning and teaching. A third Australian study by Brown et al.(2020) conducted a quantitative cross-sectional study with 149 Australian occupational therapy students, distributing a questionnaire that included demographics, resilience at university (RAU) scale, Resilience Scale for Adults (RSA) and a student practice evaluation form. Participants were predominantly women (91.3%), aged 20-24 years with English as their first language, and all domestic students. Resilience factors were significant predictors of practice education performance in occupational therapy students with positive association between resilience factors of managing stress, find your calling and living authentically and several practice evaluation domains. A limitation of these findings is there was no standardised scoring system for placement evaluation, and so these may vary between placement environments.

2.9 Student satisfaction

Within the UK Douglas et al. (2015) conducted a qualitative cross-sectional study on 350 undergraduate students to explore satisfaction and dissatisfaction. Participants were first- and third-

year students recruited from two north-west university business schools who submitted handwritten narratives that identified what the students deemed to be critical to the quality of their experience, focusing on encounters that were particularly satisfying or dissatisfying. The study identified six determinants of quality: motivation (level of motivation inspired by university staff); praise or reward; social inclusion; usefulness; value for money and fellow student behaviour. The critical areas for teaching and learning were attentiveness; communication and usefulness, and for support services were access; attentiveness and value for money. However, as only undergraduate business students were included in this research these findings may not apply to students studying towards healthcare professions as the inclusion of clinical placements has a significant impact on the overall experience of the student. The demographics of the participants were also not explained, to consider the representative of the student sample.

Pennington et al. (2018) studied the effect of a pre-entry programme on 88 first-year undergraduate psychology students from two UK HEIs, measuring student satisfaction, academic self-efficacy and social identity at the start and end of the academic year. Students who participated in a pre-entry programme reported higher self-efficacy and satisfaction at the start of the academic year. There were similar levels of self-efficacy, satisfaction, and identity between the groups at the end of the academic year, although academic self-efficacy predicted satisfaction at the start of the year and in-group affect (a facet of social identity) predicted this at the end. The study concluded that whilst pre-entry programmes may foster positive educational experiences, student satisfaction may be influenced by different factors at different time points. It is important to consider that students who opted to participate in a pre-entry programme may have had a more general positive approach to their own learning than those who did not participate, and with baseline measures not taken these results need to be considered with caution.

A recent UK study by Kandiko Howson and Matos (2021) explored the relationship between student satisfaction and engagement, surveying 1480 undergraduates. The study developed an Institutional Experience Survey (IES) which combined approaches of the NSS and the U.S.-based National Survey of Student Engagement (NSSE), plus additional open-ended questions. The research found that more engaged students reported significantly higher levels of satisfaction than less engaged students, and there was a strong correlation between engagement and satisfaction. The higher the level of engagement, the higher the level of satisfaction. The study suggested that if enhancement of the student experience is focused on engagement rather than satisfaction, there is a shift towards engaging students in educationally purposeful activities rather than making students happy. To enhance the student experience, engagement with students is necessary.

Internationally, Schreiner (2009) conducted a large study on student satisfaction and retention across all 65 four-year institutions across all areas of the United States. The study administered the 79-item Student Satisfaction Inventory (SSI) to 27,816 undergraduate students and tracked the enrolment status for each participant. The study found that students who have one-point higher satisfaction scores on the campus climate scale (e.g., creating an inviting climate) have an 80% increased chance of persisting with their studies. Students who felt welcomed, knew what was happening on campus and felt that they belonged were more likely to return to the studies the following year. The study concluded that global indicators of satisfaction were significantly predictive of retention in undergraduate students and that satisfaction was most predictive of first year student retention.

Pidgeon et al.(2017) studied 211 students from Australia, Hong Kong and Florida using a questionnaire that measured satisfaction with academic experience; depression, anxiety and stress; perceived social support and campus connectedness. The participants were 77.7% female and aged between 18-59 years. Multiple regression predicted that 12.8% of the variance in student satisfaction with their academic experience was attributed to psychological distress, perceived social support and campus connectedness. Perceived social support and campus connectedness may be important in that low psychological distress is associated with increased satisfaction with academic experience. However, the self-reporting scales measure perceptions of social support and connectedness, rather than the actual support available and it is not possible to draw causal conclusions. It was not clear whether there were any differences between institutions from the three countries.

2.10 Belonging

This section will unpack the emergence of belonging as a concept and give the working definition of this thesis. It will then discuss the existing research which has explored belonging as a concept

2.10.1 Concept of belonging

In psychological theory, Maslow (1943) published a well-known paper theorising human motivation, and detailed the needs required for self-fulfilment. One of the five basic needs was ‘esteem’ and forming part of this is the desire for recognition, attention, importance, or appreciation. In his later paper, Maslow (1954) argued that the need for belonging is as instinctual as physiological impulses such as hunger or thirst and included belonging as a basic human need in his hierarchy of needs.

Belonging is also considered in sociological theory, particularly as part of social identity theory and the work of Bourdieu’s habitus and forms of capital (Bourdieu, 1986). Social identity theory was developed by Tajfel and Turner in the late 1970s and proposes that individuals identify social groups, such as a

community group or supporters of a specific team and categorise themselves as belonging to the relevant social groups (Trepte and Loy, 2017). Individuals evaluate the positive or negative connotations of membership of each social group, and define themselves accordingly, creating social barriers between groups and favouring members of their own group (Robinson, 1996). This helps to define an individual's social identity. The need for belongingness is the driver for individuals to both categorise themselves to a group and to also identify with the other individuals within each group. A lack of belonging can negatively impact on self-interpretation, self-worth and self-validation, with identity being formed through the comparison and differentiation of the attitudes, beliefs, values and behavioural norms of the self and others in social groups (Reed, 2021). Educational institutions such as universities enable group memberships through shared goals and the opportunities for social interactions. However, conflict, discrimination or negative intergroup attitudes and behaviours can weaken an individual's sense of belonging and lead to negative emotional experiences and reduced well-being (He, 2023).

Bourdieu's sociological concepts on habitus and capital provide an understanding of how belongingness is embedded into social and cultural structures as a complex, socially constructed experience. Bourdieu suggests that social capital exits in the form of resources that are held and accessed via social connections, networks and experiences (Bourdieu, 1986). These resources form the features of social life, the networks, norms and trust that enable individuals to act together (Grenfell, 2009). A sense of belonging is strongly associated with social capital, and although social capital and belonginess have been theoretically developed independently of each other, they both share a foundation of social network and participation as their key components. It is possible that belongingness can be an effective indicator for measuring social capital (Ahn, 2017). Bourdieu considers cultural capital as the advantages derived from cultural knowledge, habits and taste, and incudes group lifestyles, competences and attitudes in cultural, moral or political affairs (Prieur and Savage, 2013). Cultural capital is acquired over time through exposure to a particular habitus, social acceptance, interaction and shared thinking (Agbenyega, 2017) and being able to understand and follow the rules and processes within an environment is essential for feeling a sense of belonging in an environment (Agbenyega, 2017). Therefore, cultural capital is an essential element of belonginess. Bourdieu's concept of habitus describes the way an individual will see, interpret and act in the world, in accordance with their social position. The habits and dispositions are internalised and consolidated through life experiences and shape how an individual will perceive themselves and their place in the world. This is turn will influence an individual's ability to belong to different social contexts, and will ultimately affect their sense of belonging (Thomas, 2015).

Hagerty et al. (1992) undertook a concept analysis of belonging and acknowledged that since Maslow's inclusion of belonging in his hierarchy of needs little attention had been given to belonging and there was a lack of empirical research. Hagerty et al. (1992) completed clinical observations, interviews, focus groups and a research review. Based on this, belonging was defined as "*the experience of personal belonging in a system or environment so that persons feel themselves to be an integral part of that system or environment*" with a sense of belonging having two dimensions; firstly, the feeling of being needed and secondly the perception that an individual's characteristics complement their environment. This definition of belonging will be used for the purpose of this study. Hagerty et al. (1992) further suggested that belonging can be considered from the psychological (internal perception of being valued), sociological (membership of groups), physical (ownership of objects or places) and spiritual (metaphysical relationship) perspectives. This work of Hagerty et al. (1992) was conducted within the psychiatric nursing setting in Michigan and is now quite historical. As society has developed, how well this theory, as well as earlier work, still applies to the UK in modern day and particularly to the experiences of undergraduate students must be considered.

It was not long after this that Baumeister and Leary (1995) conducted a review of empirical findings relevant to belongingness theory, recognising that there had been little attention to the applicability of belongingness on human behaviours. It was concluded that belongingness is a fundamental human motivation that links to health and well-being as well as cognitive, emotional and behavioural responses. (Baumeister and Leary, 1995) highlighted the impact of belonging on behaviour and emotions, noting that a lack of belonging causes increased stress and is correlated with increased mental illness and decreased immunocompetence. Strong social ties are associated with a decrease in suicide risk, and general well-being and happiness is dependent on having close social ties.

Youkhana (2015: 16) redefined belonging in order to apply concepts of space and political relations. The spatial factors of belonging refer to geographic places that evoke familiarity, comfort and security, and a feeling of being 'at home,' although space can be both physical and social. The political arenas refer to communities based on, for example, class, ethnicity, culture, religion, political values, or nationality. Youkhana (2015) considers belonging to be a fluid and dynamic concept, defining belonging as:

> *a socio-material resource that arises by means of multiple and situated appropriation processes. Belonging describes alterable attachments that can be social, imagined and sensual-material in nature. The material-semiotic and space sensitive study of belonging reveals activities that produce belonging on different temporal and spatial platforms and within more or less institutionalised everyday practices, rituals and 'regimes of belonging'*.

This definition incorporates additional aspects of belonging, such as rituals, that previous definitions did not consider.

Dewall et al. (2011) acknowledged that as previous literature has highlighted the impact of belonging on emotional and behavioural outcomes, they considered the impact of belonging or social exclusion on personality expression. Studying multiple empirical research findings, Dewall et al. (2011) concluded that social exclusion increases aggression, and selfish behaviour. However, the possibility of future social inclusion will increase prosocial behaviour. Socially excluded people also had reduced self-regulation of impulses, but this increased with the prospect of future social inclusion. Belongingness was also found to affect attitudes, with socially excluded people more likely to form attitudes in agreement with potential peers, and had increased attention to friendly, smiling faces. This suggests that a lack of belonging will impact on personality traits to improve the prospect of gaining group acceptance.

Lahdesmaki et al. (2016) conducted a qualitative content analysis of academic journals covering belonging across a number of disciplines, and noted five themes within the concept of belonging; spatiality, intersectionality, multiplicity, materiality and non-belonging. Spatiality was framed in relation to physical spaces such as homes, neighbourhoods, and countries, and is frequently discussed alongside topics such as migration. Intersectionality and multiplicity refer to the multiple, intertwining social fields impacting belonging and the individual collisions these may bring, such as homosexuality and religion, with belonging a constant changing process, and not a fixed state. Materiality has been ignored by many theorists who have focused solely on relations, and considers the interactions with the physical environment, such as the design and function of houses, design and style of clothing, heirlooms, and artefacts. Analysis of non-belonging emphasises social exclusion and marginality, and the effects of this as well as the psychological or political processes. Within the literature, belonging is overall considered to be a positive phenomenon with very little consideration of any negative aspects that belongingness may bring.

Kuurne and Vieno (2022) acknowledged that in some settings, some people feel a sense of belonging automatically, whereas others work hard to achieve this sense of belonging. They aimed to conceptualise the process of accomplishing belonging and defined this as "*an active engagement in shaping social and material relationships and someone's position in them with respect to belonging in a certain form of life*" and recognised that belonging does not reside in either an individual or a social sphere but is part of the relationship between the two. Kuurne and Vieno's (2022) work was based on theorising rather than empirical research, but they acknowledged that the act of belonging involves constant activity of conscious and subconscious behaviours, gestures and interactions but as humans the need to belonging is hard-wired into the psyche as necessary for survival.

2.10.2 Research into belonging in higher education

Following the work to develop the concept of belonging, Hagerty et al. (1996) used the concept to investigate the relationship between belonging and social and psychological functioning in community college students in Michigan, with a focus on gender differences. Their findings suggested that belonging in women was more strongly linked to social and psychological functioning than it was for men. Women had a high inverse correlation between belonging and loneliness suggesting that failing to fit in and feel valued results in feelings of loneliness. Income was also found to be inversely correlated with a sense of belonging in women, with women in lower socioeconomic groups having a lower sense of belonging. When considering belongingness in students, and in particular widening participation students, income may impact belongingness due to the financial pressures of full-time study and the limited bursary available, although the financial policies around tuition fees have changed since this study.

An American study was conducted by Buckley (2023) through interviews and focus groups to study the perceptions of eight students on the role of social class when transitioning from high school to HE in the U.S.. Students described classed boundaries in high school that were driven by status and cliques, but felt that these boundaries shifted at university, with more opportunities for movement and interaction across groups, with boundaries driven by student interest rather than status. When students identified exclusive boundaries in which they did not belong, they were tangential rather than central to their perceptions of belonging.

Student belonging is a concept that has gained popularity within HE after the findings of the 'What Works?' project that reported student belonging was central to improving student retention and success (Thomas, 2012). Thomas (2012) brought together the outputs from seven projects that spanned 22 HEIs across the UK and found belonging to be closely aligned with academic and social engagement. Interventions aimed at increasing belonging improved student retention rates by up to ten percent, and although the projects had varying focus and methods, the findings were consistent.

In agreement with the findings of Thomas (2012), Suhlmann et al. (2018) aimed to explore the mediating effects of belonging utilising an online questionnaire in Germany with 367 undergraduate students of different majors, including philosophy, mathematical and natural sciences, economics and social sciences, medicine, law and theology. They measured perceived independent university norms; belonging to the university; well-being; academic motivation; and dropout intention, finding a relationship between student sense of belonging and increased well-being, increased academic motivation and a lower intention to drop-out. No significant difference between the faculties was found, although the participants were all under 30 years of age, with older students excluded due to

the small numbers in this category. Russell and Jarvis (2019) researched the experiences of students who had either left, thought about leaving or had attendance issues during their studies at one English university. Semi-structured interviews were conducted on 80 diverse undergraduate and postgraduate participants. Russell and Jarvis (2019) found that the reasons students drop out are multiple and inter-connected with key factors for leaving grouped into internal and external factors. Feelings of exclusion, lack of support, isolation and anxiety were grouped under students' overall sense of belonging with most students experiencing a mixture of these. Certain transition periods such as enrolling at university, moving from undergraduate to postgraduate, returning from placement and prolonged non-teaching or contact periods intensified a student's sense of not belonging, with males being especially vulnerable to trying to cope on their own and not seeking available institutional support.

Khalandi (2021) investigated the relationship between belonging and grade outcome within four high schools in the U.S. Using existing data from an electronic survey of 3,892 students, a statistically significant but moderate positive correlation between a student's sense of belonging and their grade point average (GPA) was found. The study used a Panorama survey rather than a specific belonging scale, and so the validity of the results cannot be determined.

Aker and Şahin (2022) invited 601 pre-clinical medical students in Turkey to complete a School Burnout Inventory and Psychological Sense of School Membership Scale, in addition to providing their mean academic grades. The study found that as a student's sense of belonging increased, their grade outcome increased, and as school belonging decreased, burnout increased. Additionally, the belonging scores for first year students were higher than those in the second or third year. The academic grade was self-declared by students on the questionnaire, and the accuracy of the grades was not verified. Participants may have provided estimates rather than exact figures, impacting the reliability of the findings.

In an American study, Cwik and Singh (2022) surveyed 814 students studying physics. They found a link between belonging and grade outcome and found a student's sense of belonging to have a major role in predicting student grade. It was also found that women had a lower sense of belonging than men and whilst the men's sense of belonging increased during the course, the women's did not. The reasonings behind this were not explored in the study.

Coetzee et al. (2022) undertook research into belonging and academic misconduct with 234 university students across 65 HEIs within 12 countries including Australia (184), New Zealand, the UK and the U.S. Participants were aged 18 to 64 years, with the majority (72.6%) of white / European ethnicities. An online survey was used to measure sense of belonging, dispositional hope, motivation to reach

their goals, perceived ability to implement a plan to attain their goal, future intentions to engage in academic misconduct and previous engagement in academic misconduct behaviours. It was found that students with a strong sense of belonging, but low levels of hope were more likely to engage in academic misconduct behaviours, although belongingness did not independently predict academic misconduct intentions.

Pedler et al. (2022) distributed a mixed methods questionnaire to 578 Australian undergraduates between 18 to 60 years of age. Students with both parents having a university degree reported higher belonging scores than those with one parent and students who had considered leaving the university had lower belonging scores than those who reported having never considered it. Students with higher belonging scores also reported higher levels of enjoyment and motivation to study. It was not clear which course students were studying, and data regarding ethnicity was not collected.

Ahn and Davis (2023) surveyed 380 students across 16 academic departments in the UK, measuring belonging to the university and to the students own academic department. Most participants were aged 18 to 22, with 77.4% white and 63.7% female. The study found that retention and well-being was significantly associated with belonging and support, although there was no correlation between academic engagement and social engagement. No statistical difference was found in belonging and retention between young and mature, female, and male, disabled and not disabled groups, although a student's socio-economic status was crucial to feelings of belonging and to student retention. A lower socio-economic status correlated with lower belonging scores. Interestingly, healthcare students showed the lowest level of belonging to university, although the reason for this is unclear.

Crawford et al. (2022) conducted an online survey of 1,879 undergraduate students aged 21 or over in regional and remote Australia, in addition to 51 interviews to research experiences of belonging. They captured a range of demographic data and of these the variables found to be significantly associated with belonging were study type and mode, employment, caring for children at home, diagnosed mental health condition, peer groups and the support of family and friends. The importance of being known, student relationships and connections with staff and peers, and a non-judgemental learning environment where students felt listened to contributed to a sense of belonging. Student experiences of inclusion, connection and belonging were influenced by their social locations and backgrounds and reported sense of belonging varied from strong to a complete absence. Some students showed ambivalence around feelings of belonging, with others not feeling like it is essential to their student experience.

Levels of belonging can also be impacted by the physical space of the institution. Samura (2018) investigated the different ways in which students experienced spaces, and ways to address spaces

that hinder belonging using interviews and photo journals that uncovered student understanding of their belonging, as well as their connections between belonging and space. Samura (2018) found that spaces such as the campus diner, where students connect with friends, can serve as a key indicator of belonging for some, while others may find them stressful or isolating. Open public spaces with natural pedestrian flow encourage group bonding and contribute to a stronger sense of connection to the wider campus. However, what works for students at one point in time may not remain effective as social dynamics and needs evolve. Space is socially constructed and adaptable, meaning that changes to the physical environment can influence social interactions and, in turn, shape students' experiences. A single space can simultaneously foster a sense of belonging for some while hindering it for others (Samura, 2018). Thomas (2015) also identifies space as an influencer on belonging, particularly within HEIs where academic culture, disciplinary traditions and institutional status are determined by social and structural links that go beyond its physical location. Each university possesses its own power structures that shape ideas about higher education, student life, and belonging. These narratives, often unspoken, also define which student groups are seen as different, 'other', or problematic. This lived experience of the physical university space and its impact on groups who may be considered as 'out of place' (as discussed earlier in section 2.8.1) was explored by Samatar et al. (2021) by interviewing five female undergraduate students of colour on how they navigate university spaces. Participants conveyed their commitment to their studies but reported minimal interaction with university spaces and a detachment from the institution. Descriptions were given of the avoidance of the physical university building and popular student spaces, with isolated or peripheral spaces preferred. Participants felt that traditional student groups (i.e. white students) held a monopoly over student spaces and there was a feeling of a need to reconstruct their identity to minimise or subdue their racialised identities within the university to increase their sense of belonging. Generally, these students had little sense of belonging, felt a lack of support and noted the lack of representation in teaching staff.

2.10.3 Research into belonging in clinical placements

In a much-cited study across Australia and the UK, Levett-Jones et al. (2008) administered a 34-item Belongingness Scale-Clinical Placement Experience (BS-CPE) to 362 third-year undergraduate nursing students. Participants were aged 20-60 years, 90.4% women, 47.1% Australian and 41% from the UK as their country of birth. It was concluded that the duration and structure of clinical placements was one of the most important factors affecting student belongingness. The highest belonging score was for site three (the English university), which differed from sites one and two (Australian) in the duration and structure of placements, and the consistency, structure and quality of the mentorship

provided. Site three had extended placements from 4 to 12 weeks duration, which is typical in the UK, compared to a series of one-to-two-week placements in sites one and two, which is typical in Australia. `Whilst this is an interesting relationship, a causal relationship between placement duration and structure cannot be inferred. During the same study, Levett-Jones and Lathlean (2009) also interviewed 18 of the participants, 16 women and 2 men, 6 from the UK and 12 from Australia, aged between 20 and 47 years. It was found that the experiences and perspectives of participants regarding belonging from each site were remarkably similar despite their geographical differences. Participants described experiences spanning from promoting a high degree of belongingness to provoking intense alienation, and interpersonal relationships with registered nurses exerted the most influence on the students' sense of belonging during placements. Students believed their experiences of belongingness were linked to whether they felt included or excluded by nursing teams on placement (Levett-Jones et al., 2009b). Students felt included if provided with opportunities to work with positive role models, and when staff interacted informally with them. The students' first impressions and the receptiveness of staff foreshadowed how their placements would unfold, with the receptiveness and approachability of nursing staff affecting their anxiety and sense of wellbeing Levett-Jones et al., 2009b). A sense of belongingness increased feelings of safety, comfort, satisfaction, and happiness within the clinical environment. The relationship between belonging and the extent to which students were willing to question or conform to poor practice emerged as a critical and recurring theme. Belongingness was found to be related to a student's self-esteem, resilience, feelings of connectedness, confidence, degree of self-efficacy, future career decisions, and their capacity and motivation for learning (Levett-Jones and Lathlean, 2009).

McKenna et al.(2013) utilised the BS-CPE (Levett-Jones et al., 2009a) to examine sense of belonging in clinical practice in 60 Australian undergraduate midwifery students, aged between 19 and 48 years. These students shared similar perspectives as those found by Levett-Jones et al. (2009a), with the top responses in the likert scale being the same. Students perceived belonging in the placement setting to be important and reinforced that they need to feel accepted by colleagues to experience a sense of belonging. Generally, students felt comfortable and experienced a sense of belonging during their clinical placements.

Borrott et al. (2016) also utilised the BS-CPE (Levett-Jones et al., 2009a) with two other scales in a longitudinal study to investigate the relationship between belonging in Australian nursing students and the relationship with their workplace satisfaction. Borrott et al. (2016) administered three validated surveys, the Need to Belong Scale; BES-CPE; and a Nursing Workplace Satisfaction questionnaire on 468 predominantly female (86%) undergraduate nurses in their final semester. It was found that participant age was a significant influence on workplace satisfaction, with participants

aged 20-24 years scoring higher on satisfaction than participants aged 30-40 years. There was no significant relationship between the need to belong and a sense of belonging, or the need to belong and workplace satisfaction. However, there was a strong positive correlation between a sense of belonging and workplace satisfaction.

Outside of Australia, Grobecker (2016) in the U.S. researched the relationship between a sense of belonging and perceived stress among nursing students in clinical placement using the BS-CPE and a further scale. 1,296 nursing students from the National Student Nurses Association (NSNA) database completed Levett-Jones et al.'s (2009a) BS-CPE and the Perceived Stress Scale (PSS-10) with participants ranging from 18-60 years, 92.1% identifying as female and 81.3% Caucasian. Grobecker (2016) found a statistically significant low inverse relationship between belonging on placement and perceived stress, with perceived stress decreasing as sense of belonging increases. Whilst all participants had completed at least one clinical placement, the amount of placement experienced was not known and there was limited diversity within the sample.

Sedgwick and Rougeau (2010) undertook analysis of interviews and written accounts of 12 Canadian fourth year nursing students, all female aged between 24 and 43 years. Minority students were not represented. Participants were asked to recount important non-crisis events, and it was concluded that belongingness was influenced by individual characteristics, interpersonal relationships between the staff and the student, and the clinical environment. Interactions where students felt they were treated like a nurse, peer or equal, rather than a student influenced their sense of belonging with students not feeling part of the team experiencing anger, frustration, decreased self-confidence, confusion, and despair. Sedgwick (2013) went on to compare the sense of belonging in 408 nursing students on four-year traditional undergraduate programmes with 47 students on two-year accelerated second-degree programmes using Levett-Jones et al.'s (2009a) BS-CPE. The accelerated students had lower belonging scores than traditional students during placement, and accelerated students particularly felt less efficacious (efficacy), followed by connectedness and esteem. Accelerated students were also less confident in their abilities. The possible reasons behind these differences were not explored as part of the study. There was no overall significant gender difference between males and females on two subscales, but there was a significant difference on the efficacy subscale. Male students felt that acceptance by colleagues was less important, and they were less likely to ask for colleagues' advice and help (Sedgwick and Kellett, 2015).

Sedgwick et al. (2014) noted that whilst only 41 (8.8%) participants who responded to the belongingness scale were ethnic minority, the analysis showed that participants identifying as First Nations / Aboriginal Asian or Other felt discriminated against on placement, did not perceive that they worked with registered nurses who shared their professional and personal values, and were more

likely to feel the greatest degree of being disliked compared to Caucasian students. Sedgwick et al. (2014) undertook seven interviews on female nurse undergraduate students and found that nurses who were perceived as being judgmental and treating minority students differently to Caucasian students negatively impacted the student's learning and sense of belonging during placement. Many participants described feeling invisible when they first entered the clinical setting and participants felt that being part of a group composed of predominantly Caucasian women made belonging difficult due to a lack of common experience and cultural differences. Sedgwick et al. (2014) concluded that minority students experienced bias and discrimination with all groups of people involved in their learning.

2.10.4 Measuring belongingness

Hagerty and Patusky (1995) developed previous earlier research by Hagerty (1992) to develop the Sense of Belonging Instrument (SOBI); which was important as no other known measure of sense of belonging was available at this time. The initial 49-item initial instrument was tested with 379 college students, 31 people in treatment for major depression, and 37 roman catholic nuns, as these contrasting groups were expected to be either very high or very low on the characteristics being measured. Nuns scored significantly higher than students, and depressed people significantly lower. Two scales were then created, SOBI-P comprising 18-items representing psychological experience of sense of belonging and SOBI-A comprising 9-items representing antecedents on a 4-point scale. Scores were correlated with measures of loneliness, reciprocity, and social support to examine construct validity.

Somers (1999) developed a large 140-item Belongingness Scale (BES) in the U.S. based on Baumeister and Leary's (1995) framework and encompassing four 35-item subscales of family, friends, work/school and neighbourhood. The scale was revised by a panel of five judges and then further refined during a focus group, before being administered to 330 adults between 18 and 65 years of age, 77% of which were from a college setting. The subscales' reliability coefficients ranged from 0.94 to 0.97, although after statistical analysis 36 items were dropped due to being identified as redundant and the BES revised to a 104-item scale (BES-R). Coefficients remained above 0.90.

Hoffman et al. (2002) initially constructed two measures of belonging, a 50-item, 5-point measure concerning student / peer relationships, and a 35-item measure for student / faculty relationships, combining into an 85-item total scale. Hoffman et al. (2002) conducted a literature review and 24 focus groups of 15-30 first year students before administering the 85-item scale to 205 first year college students between 18-20 years of age, of which 85% were Caucasian and 70% women. The student / peer measure identified four underlying dimensions; perceived classroom comfort,

perceived isolation; perceived academic support and perceived social support. The student / faculty measure identified three dimensions; empathetic understanding; perceived faculty academic support / comfort and perceived faculty social support / comfort. Therefore, the five factors of the final 26-item Sense of Belonging (SB) instrument were perceived peer support; perceived faculty support / comfort; perceived classroom comfort; perceived isolation and empathetic faculty understanding. Whilst this scale is specific to the educational environment, the sample of young, American, Caucasian females is not representative of the UK allied health student population and so the reliability of the scale in this setting cannot be assured. Tovar and Simon (2010) assessed the 26-item scale developed by Hoffman et al. (2002) on 916 participants, of which 68% were female, 35.6% white and 28.3% Latino. Tovar and Simon (2010) found evidence in support of only three moderately correlated factors (16-items) of perceived faculty understanding / comfort (8-items), perceived peer support (8-items) and perceived classroom comfort (4-items). However, it was concluded that these 16 items were theoretically consistent and reflective of college student's sense of belonging.

Levett-Jones et al. (2009a) developed the 34-item BS-CPE to specifically consider belonging in the clinical placement setting. The BS-CPE was based on Somers' (1999) belongingness scale, and 18 students were interviewed to explore the factors that impact on students' experience of belongingness when undertaking clinical placements with the use of terminology more closely aligned to nursing students. The BES-CPE measures feelings, cognition and behaviours reflecting the major components of esteem, connectedness, and efficacy on a 5-point scale. Levett-Jones et al. (2009a) used the BES-CPE scale in a pilot of 41 students which gave a reliability Cronbach's alpha of 0.9, before then administering to 362 students across Australia and the UK. Reliability of the scale was high, with Cronbach's alpha scores of BES-CPE 0.92, esteem subscale 0.9, connectedness subscale 0.82 and efficacy subscale 0.8. Self-efficacy was strongly influenced by personality traits, previous experiences and the degree of belongingness experienced on placement.

Kim and Jung (2012) went on to develop a Korean version of the BS-CPE which was translated and back translated. The Korean version was administered to 30 nursing students with no significant problems encountered, although the final version deleted two items as they were felt to be unsuitable for the Korean environment. The overall Cronbach's alpha was 0.90 with subscales ranging from 0.71 to 0.84 demonstrating that this scale can retain validity Internationally. Ashktorab et al. (2015) also translated the BS-CPE into a Persian version for use in Iran, recruiting 300 nursing students to complete the Persian version of the scale. The Cronbach's alpha for the whole scale was 0.92 with subscales ranging from 0.8 to 0.86. Ashktorab et al. (2015) retested 25 students following a two-week interval and found a reliability coefficient of 0.95. Like Kim and Jung (2012), the same two items were removed as they were considered culturally inappropriate.

Malone et al. (2012) conducted three studies on 81, 875 and 213 psychology students in the U.S. to develop a 12-item General Belongingness Scale (GBS) after noting that instruments assessing general belongingness were predominantly comprised of negative worded items, indirectly measuring belonging by assessing a lack of belonging. Malone et al. (2012) generated a pool of 30 items based on the literature, using 7-point likert scale. After study one, 12 items were retained across two factors of rejection/exclusion and acceptance/inclusion. Study two found the coefficient alpha of the scale to be 0.95, noting a strong correlation with other measures of belongingness and loneliness and a distinction from the need to belong. Study three tested the relationship with GBS and the 'Big Five' personality constructs and found them to be important predictors of belongingness.

More recently Yorke (2016) sought to develop an instrument for general use in UK HE, applicable from first to third year, and across academic subjects. Yorke (2016) produced three scales; perceptions of belongingness; academic engagement and self-confidence on a 5-point likert scale ranging from strongly agree to strongly disagree. The initial 30-item scale was piloted with 232 first-year students in two post-92 universities in England, with twelve items rejected after statistical analysis and student comments. The reliability of the belonginess scale was 0.76. The remaining 18-items were piloted with 709 first-year students across four varied universities with two items discarded after Cronbach's alpha analysis, leaving three scales of belongingness (6-items); engagement (6-items); and self-confidence (4-items). The survey was then administered with first -year students across 13 institutions in the UK as part of the What Works project (Thomas, 2012), with 2841 usable responses. The survey was again administered to the same cohorts in 12 of the 13 institutions with 2696 usable responses and re-running the analyses from the pilot produced almost identical results which suggests that the instrument is stable.

2.11 Mattering

This section will outline the concept of mattering, how it is measured, and the research undertaken.

2.11.1 Concept of mattering

The concept of mattering has been discussed for some time, with Rosenberg and McCullough (1981: 165) defining mattering as "*…a motive; the feeling that others depend on us, are interested in us, are concerned with our fate, or experience us as an ego-extension exercises a powerful influence on our actions*". In psychological theory mattering is an important element of both self-determination theory and Erikson's stages of development. Self-determination theory is a social psychological theory of human motivation in social contexts, differentiating motivation between being autonomous and being controlled (Deci and Ryan, 2012). Self-determination theory identifies all individuals as possessing

inner motivational resource, and for optimal development the three psychological needs that individuals require are competence, autonomy and relatedness (Deci and Ryan, 2012). Possessing a feeling of not mattering to others will clearly impact on the ability to feel connected with and cared for by others which reflects the need for relatedness (Flett, 2018). It is also likely that lacking a sense of mattering will create a deficit in an individual's feelings of being personally capable and therefore mattering is fundamental to the ability to satisfy personal needs (Flett, 2018). These personal needs enable a person to be intrinsically motivated and enable a student to be engaged (Reeve, 2012).

Erikson's stages of psychosocial development explore the stages of development in a human's life cycle, and there are eight stages identified. These are: trust versus mistrust in infancy; autonomy versus shame and doubt during the toddler years; Initiative versus guilt during early childhood; Industry versus inferiority during childhood; identity versus identity confusion during adolescence; intimacy versus isolation during young adulthood; generativity versus stagnation during middle adulthood; and integrity versus despair during late adulthood (Erikson, 1959). The concept of mattering aligns with many of Erikson's stages of development as the stages focus on the challenges and conflicts faced during the different life stages that would shape an individual's identity and relationships. The stage of identity versus identity confusion in adolescence is particularly important to the concept of mattering, as it is within this stage that the peer group provide social feedback and the inner assuredness of gaining recognition from those who count is developed (Erikson, 1959). Additionally, the next stage of intimacy versus isolation in young adulthood focusses on the building of interpersonal relationships, and the desire to be needed as well as feel valued in a relationship fosters emotional intimacy that negates ongoing feelings of isolation (Erikson, 1959). A sense of mattering can impact on a person's ability to achieve the developmental goals associated with each stage of the life cycle.

In sociological theory, Bourdieu's sociological concepts, although not explicitly discussing the concept of mattering, provide insight into how mattering relates to an individuals' social recognition, status and importance within social structures. Bourdieu's concept of social capital and the resources generated from social network ties (Ahn, 2017) illustrates that individual's feel a sense of mattering when they are valued and have a role to play in their community (Flett, 2018). Bourdieu argues that social capital is an essential resource that influences an individual's standing and power in a social setting (Bourdieu, 1986), and this may be determined by the recognition and validation received from others (Grenfell, 2009). Bourdieu also discusses the concept of the field, which can be described as the nature of social space in society and the practical action within it (Bathmaker, 2015). The possession of capital and power influences a person's position in the field and their place in the social

hierarchy and the concept of value is important to social relegation and the potential for stigmatisation, and those individuals who hold dominant positions experience more recognition and thus a stronger sense of mattering (Hilgers and Mangez, 2014).

Rosenberg and McCullough (2008) researched mattering by conducting large-scale surveys on high school students and examined adolescents' perception of their significance to parents, however the indices used were not specifically created for measuring the construct of mattering. Schlossberg (1989) conducted twenty-four structured interviews with men and women aged 16-80 years and considered the four aspects of mattering – attention, importance, ego-extension, dependence that were identified by Rosenberg and McCullough (1981). It was concluded that mattering is opposite to marginality, people need to feel like they matter, and mattering is our belief that we matter to someone else. However, Schlossberg (1989) warned that people can perceive that they matter too much, being depended upon to the point it becomes too much to bear, and also consider the quandary of students who were the centre of the family life, and find that family copes without them when they go to university. The interviews led to Schlossberg (1989) adding appreciation to the mattering construct, due to the importance of feeling that efforts made are appreciated by others. However, the actual outcomes of the interviews were not clear, nor the structure or participant information, and so it is difficult to consider the quality of this research.

O'Brien (1996) philosophised on the concepts of meaning and mattering and suggested that philosophers who debate the meaning of life consider meaning to be about importance or significance. To be meaningful is to be important, and if something is important to someone, then it matters. O'Brien further considered whether something always needs to matter to be meaningful but made clear that meaning and mattering are philosophically intertwined. Whilst O'Brien (1996) did not conduct empirical research, their thoughts add to the discussions developing the concept of mattering.

Taylor and Turner (2001) conducted a longitudinal study into mattering utilising interviews on Canadian adults and completing a five-item scale developed by Rosenberg. They suggest several correlates of social integration that may contribute to mattering; relatedness, belonging, intimacy and communion and suggested that mattering shares common ground with constructs that measure meaningfulness, commitment, and purpose of life. Purpose in life is a defining element of psychological well-being, although they agreed with Schlossberg (1989) in that social relationships can be experienced as a burden. Whilst accepting that there are negative aspects of social ties Taylor and Turner (2001) consider mattering to be a positive consequence and hypothesised that a perception of mattering could protect against depression. They noted that mattering is significantly associated with

depression and changes in mattering are predictive of changes in depression in women, although this was not apparent in men. As a result of their research, Taylor and Turner (2001) noted that there is much to learn about mattering. At the same time Marshall (2001) set out to develop a measure of perceived mattering to others and utilised a sample of 110 Canadian social science students, aged 15-19 years to construct the 'Mattering to Others Questionnaire' (MTOQ). Marshall (2001) suggested that mattering develops in social interactions, provides a sense of social meaning and relatedness, and is most likely influenced by cultural norms. The perception of mattering to others requires a process of using role-taking to interpret the meaning of attention from others, and the concept of the looking glass self to imagine what the other person's evaluation is. The imagined judgement is then assigned to the self and incorporated into an evaluation of perceived mattering. Perceived mattering likely contributes to an individual's perceptions of meaning or purpose for life. Marshall's (2001) research found that older respondents perceived themselves as mattering more than younger respondents and females perceived themselves as mattering more than males, although further qualitative research was recommended to understand the gender differences. They suggested that mattering and self-esteem are distinct but related constructs and perceived mattering is distinct from the degree of liking or satisfaction with the self.

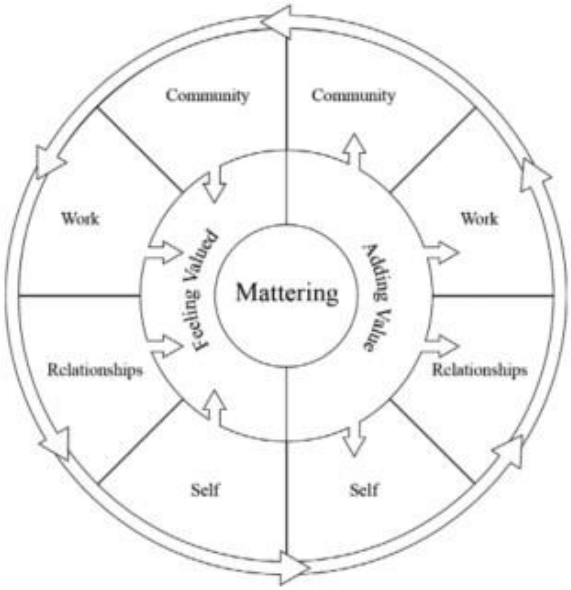
More recently, Elliott et al. (2004) set out to construct and validate a mattering index using college students in New England, U.S., and considered three main elements of mattering; awareness, importance and reliance. Elliott et al. (2004) proposed that mattering arises from perceptions of quantity and quality of attending behaviours from a specific other person and is distinguished by others relating to a person as an end in itself, and not as a means to some other end. Individuals compare their perceptions of attention received from a specific other with their perceptions of the attention that the specific other gives to other people in the environment. Elliott et al. (2004) stated that mattering provides individuals with a sense of social meaning and relatedness. Elliott et al. (2005) went on to utilise their 30 scale mattering index to investigate the relationship between mattering and suicide ideation during interviews with 2,004 youths aged 11-18 years, defining mattering as "*a belief that one makes a difference in the lives of others*" and this definition will be used for the purpose of this study. Elliott et al. (2005) found that those who perceive they matter more are less likely to consider suicide. Mattering influences self-esteem which in turn influences depression and those who believe they do not matter feel socially invisible and as if 'the world gets along without them.' The concept of mattering is different to social support, as social support is the sense that others will provide for specific needs, such as emotional support, whereas mattering involves continual interest on a person's welfare beyond the provision of specific forms of support, such as the unexpected friendly telephone call when a person is not in need, reminding that individual that they matter.

Mattering implies that people invest in an individual because they are interested in their welfare, and if the support or interest is provided to further their own end, then mattering will not be perceived, potentially causing more harm than good. Elliott et al. (2005) states that mattering is a dimension of the self-concept, and whilst social support can enhance the feeling of mattering, there is more to mattering than social support. The feeling of not mattering is responsible in part for feelings of social isolation.

More recently, Prilleltensky (2020) reviewed the concept of mattering, and defined mattering as "the experience that you are valued and that you can add value" (Prilleltensky, 2020). Feeling valued makes a person feel appreciated, respected and recognised, and when value is added, people are able to make a contribution or difference. Prilleltensky (2020) suggests that to matter, feeling appreciated and recognised is not enough as skills and opportunities are needed to add value, and make a contribution to the individual or others. Prilleltensky (2020) links mattering to three psychological theories that attest to need to add value; self-determination, self-efficacy and meaning in life.

Prilleltensky (2020) put forward a mattering wheel to illustrate the concept of mattering.

Figure 2.3 The Mattering Wheel: A conceptual framework



(Prilleltensky, 2020)

Mattering is at the centre, supported by feeling valued and adding value. There are four sources of feeling valued and four beneficiaries of adding value with a cycle where the benefits of feeling valued will lead to adding value. This mattering wheel requires balance across all four sources, rather than investment in one aspect alone. Prilleltensky (2020) proposed that a sense of mattering promotes

health and happiness and prevents personal devaluation, relational disconnection, work disengagement and community disintegration.

Flett (2022) published an in-depth conceptual analysis of mattering, and defined mattering as "*the personal sense of feeling significant and valued by other people*", stating that feeling like you matter is to feel important, visible and heard. Whether a person feels like they matter is a central element of how they define themselves, and a sense of not mattering is a vulnerability with risks and consequences. Feeling a persistent sense of mattering can act as a buffer for life stressors but Flett (2022) acknowledges that mattering is neglected in the research community with a paucity of theory and pragmatic research. As part of his analysis Flett (2022) conducted a comprehensive literature review and concluded that mattering is a vital source of resilience and adaptability, is modifiable, central to how peopled find themselves, pertinent across the lifespan, relevant to our current times, universal and has great knowledge mobilisation potential. In comparison to the sense of belonging, Flett (2022) acknowledges that both concepts incorporate an emphasis on being accepted. However, belongingness involves being accepted and fitting into a group, whilst mattering reflects social significance and being depended upon. Mattering is a sense of importance, rather than fit.

2.11.2 Research into mattering in higher education

Schlossberg (1989) stated that it is possible to have feelings of mattering in one environment but marginalisation in another, and that individuals in transition can feel marginalised and like they do not matter which affects students entering further or higher education (HE). Every new transition or experience provides the potential to feel marginalised and creating environments that indicate to students that they matter encourages them to have greater involvement, which will increase their likelihood of success in their studies.

Dixon and Kurpius Robinson (2008) investigated relationships between depression, college stress, self-esteem and mattering involving 455 undergraduate students from one university in the U.S., aged between 18 and 23. It was found that women reported greater depression and college stress although there was no differences between men and women in feelings of mattering. Generally, the participants felt that they mattered to others, however mattering and self-esteem were positively related and the sex of the students, self-esteem and mattering accounted for 13.8% and 39.4% of the variance in stress and depression respectively. The participants had a high average self-reported family income.

A further study from the U.S. by Huerta and Fishman (2014) was a qualitative study with first generation low-income Latino male college students using Schlossberg's mattering and marginality theory. Huerta and Fishman (2014) interviewed 10 Latino males aged from 17 to 23, recruited from

six community colleges, one state comprehensive university and two research universities on their transition experience and success. The level of support that students perceived they had reflected how valued they felt by others, and several participants described experiences that made them feel they mattered, provided critical academic motivation, and improved self-esteem. However, this study only included successful students and did not consider the views of those who did not transition to college.

Duenas and Gloria (2017) examined the differences in, and the relationship of, psychological, social and cultural dimensions of university mattering in 141 Latina/o undergraduates in the U.S. across the first to fourth year. Participants completed a questionnaire containing five scales; Collective Self-Esteem Scale; University Belonging Scale by Freeman et al. (2007); Perceived Cohesion Scale, Cultural Congruity Scale; and the General Mattering Scale by Elliott et al. (2004) adapted by France & Finney (2009). Duenas and Gloria (2017) found that a student's sense of collective self-esteem was most tied to whether they felt they mattered to others and students who felt an increased membership to the university were most predictive of feeling that they mattered to other individuals within the setting. It was concluded that a sense of belonging mediated the relationships of cohesion and congruity with mattering and to understand how students feel they matter to others within the university their sense of belonging needs to be considered.

Flett et al. (2020) examined the association of mattering with insecure attachment styles, rumination, self-criticism and depression on 247 university students, of which the mean age was 20.3 years and 70% were in their first year of studies. Depression was associated negatively with mattering, with decreased mattering predicting depression after considering any variance explained by insecure attachment, rumination, and self-criticism. Smith and McLellan (2024) also investigated the association between mattering and mental health in 242 UK undergraduate students. They found that higher levels of mattering and lower levels of anti-mattering were statistically significantly associated with lower levels of mental health problems for all students, and particularly for first generation students. Smith and McLellan (2024) suggest that mattering has the potential to be a basis for strategies and interventions to improve the mental health of university students.

There is limited research that specifically focuses on mattering in HE, and the studies published so far are conducted within the U.S. on a narrow subset of students. It is unclear whether the findings of these studies would be relevant to undergraduate healthcare students within the UK.

2.11.3 Measuring mattering

Marshall (2001) constructed and validated an 11-item 5-point Mattering to Others Questionnaire (MTOQ) to measure global perceived mattering to others. The scale was targeted at adolescents aged

13-18 years and items were assessed by 14 social scientists and eight professionals (social workers, high school teachers and family therapists), followed by 12 adolescents. Marshall (2001) used the MTOQ firstly on 110 social science undergraduate students from 17 to 25 years, and secondly on 532 adolescents aged 15-19 years at a Canadian high school. The resulting data confirmed mattering and self-esteem to be distinct constructs and mattering to be specific to a named individual rather than a generic environment or group of people. As this scale has been developed specifically aimed at adolescents, it may not be reliable if used on an older population. Whilst undergraduate students were used during validation, students were only aged up to 25 and mature UK healthcare students may be aged up to and beyond 60 years of age.

Elliott et al.(2004) aimed to develop and validate an index to measure mattering, and elaborated on the concept theorised by Rosenberg and McCullough (1981). Elliott et al. (2004) considered two categories; awareness and relationship, relationship having two elements of importance and reliance. A list of constituent elements for each form of mattering was created, resulting in 47-items on a 5-point likert scale. Confirmatory factor analysis was then conducted using 508 students at a private college in New England, and this reduced the number of items to 26. The discriminate validity of the mattering items was determined using self-consciousness, self-monitoring, and alienation with 388 first-year students and perceived social support, self-esteem with 544 students. This showed a remarkable level of discriminant validity, but two items failed to meet criteria and were removed, resulting in a 24-item index. Elliott et al. (2004) subsequently used confirmatory analysis to test the 24-item scale using the original three samples described, concluding that the scale provided a high degree of content validity, construct validity and discriminant validity.

France and Finney (2009) administered Elliott et al.'s (2004) 24-item scale to 593 university undergraduate psychology students in the U.S. in addition to scales of psychological well-being and the Student Worry Questionnaire-30. France and Finney (2009) suggested a four-factor mattering model of awareness, importance, ego-extension and reliance in addition to alternative wordings for some questions. However, they did not seek to validate an amended scale and acknowledged that whilst the fit of a four-factor model was sufficient some items contained large amounts of error variance. France and Finney (2009) acknowledged that Elliott et al.'s (2004) model fit well, but later (France and Finney, 2010) adapted Elliott et al.'s (2004) scale to create a University Mattering Scale. The only difference in the adapted scale was context, with participants given specific instructions to think about members of the university community. 295 undergraduate psychology students were given both scales, one general and one where participants were asked to consider the specific university context. France and Finney (2010) found that importance became more related to awareness without the ego-extension items, although both three- and four-models of mattering scales

fit, and also concluded that mattering is context specific. Participants were mainly Caucasian females and so results may not relate to the general population.

In an American study, Tovar et al. (2009), in suggesting that a student's general feeling of mattering to the college may be indicative of their general place within university, and their relationship to specific others may impact their feelings of mattering (or not) the most, developed a college mattering inventory. The construct definition of mattering incorporated being the object of attention from others, perception of support, supportive learning environment, sense of fit within college and perceived marginality. In their study, 3,139 U.S. students completed a 55-item 5-point mattering scale resulting in 29-items retained with six subscales; total mattering scale; general college mattering; mattering versus marginality; mattering to counsellors; mattering to instructors; mattering to students and perception of value. Whilst this scale has been validated with a focus on HE, references to counsellors and instructors make this scale specific to HE within the U.S., and not necessarily within the UK where the roles of academic staff differ.

Similar to Elliott et al. (2004), Richards et al. (2017) utilised Rosenberg and McCullough's (1981) theories to propose and validate the Perceived Mattering Questionnaire – Physical Education (PMQ-PE) for physical education teachers' perceptions of mattering. After interviewing 30 teachers, Richards et al. (2017) identified 8-items on a 5-point scale across two domains of teacher matters; and PE as a discipline matters. 460 physical educators completed the scale with the PMQ-PE correlating positively with resilience and negatively with role stress. The scale was designed to be specific to PE teachers and so may not be applicable to undergraduate healthcare students in the UK.

2.12 COVID-19 and the student experience

The World Health Organisation (WHO) declared COVID-19 a pandemic in 2020 (World Health Organisation, 2020), and due to the COVID-19 pandemic, in March 2020 the first lockdown in the UK was announced which prevented non-essential contact and travel (Institute for Government Analysis, 2022). By mid-April 2020 an estimated 94% of learners enrolled in 200 countries were affected by school and college closures (United Nations, 2020) and this forced UK universities into was an overnight shift to online learning for students in higher education, which was introduced without the training, infrastructure or resources in place, or the consideration of pedagogical requirements (Hounsome, 2023). This created immense disruption to the student experience of higher education, with a significantly different experience to that prior to the pandemic (Office for Students, 2020).

Since the pandemic there have been a number of researchers investigating the impact that this has had on undergraduate students, particularly their sense of connection, social networks and sense of

belongingness. HEE (2020) conducted a survey on UK nursing, midwifery and allied health profession students and made a number of key findings. The students who were allocated to an extended placement were largely positive about their student experience, but were anxious about catching up on their academic studies. Those students focussing on their academic studies felt positively about contacting academic staff, but were less positive about the online learning experience. The reason behind this is unclear. Allied health professional students from a black or ethnic minority were concerned about mental health challenges that they were experiencing. The majority of students (85%) felt support in the clinical environment during their placements, and 80% felt that academic staff were available if needed. However, only 43% agreed that online learning fulfilled the need for face-to-face contact.

Mulrooney and Kelly (2020a) questionnaired 208 students and 71 academic staff in a UK university, concluding that the COVID-19 lockdown reduced feelings of belongingness in both staff and students, predominantly due to the lack of physical presence on campus. It was found that significantly more staff than students thought that belonging at university was important (93% versus 66.8%). This suggests that students may not feel as high a need to belong as expected and the reason for this is unclear, but both populations felt that being present on campus mattered in terms of belonging. Almost half of students disagreed that they learned better online than in face-to-face teaching, and both staff and students expressed a preference for being physically present in class. Tice et al (2021) reviewed existing data and published research in the US and also found that students experienced a considerable drop in belonginess during the pandemic, highlighting student engagement as a particularly problematic area. However, the reliance on secondary data means there may be gaps in understanding students' lived experiences, particularly those from diverse socioeconomic and cultural backgrounds. Tice et al (2021) suggested that being present and providing time for students to build relationships supports the building of interpersonal connections that are central to feeling a sense of belonging. This presentness was significantly more challenging with campus closures. Ouzia et al (2023) conducted an online survey with 235 full-time undergraduate students across the UK, studying on a campus based degree programme. There was no association found between those starting university during the pandemic in 2020/21 and levels of loneliness, although this may be linked to student expectations of the social opportunities available. However, students starting university during or immediately after the pandemic did report reduced levels of belongingness and this suggests that belongingness may be influenced by factors beyond mere social interaction, such as academic integration and institutional support.

Hounsome (2023) analysed the student experience in the COVID-19 setting using interviews and survey responses from students at a UK university. It was found that students continued to value connectivity to their peers, and they highlighted the importance of their social lives and society. The potential differences between students of different demographics, such as mature students or those with disabilities, may have experienced and navigated these challenges during the pandemic was not explored. Students often cited the support system of friends as a reason to either stay at or return to the university and the absence of those networks indicated a loss of experience. Tang et al (2023) conducted a survey and focus groups to explore the sense of belonging in first year clinical health students and academic staff during COVID-19. Whilst the majority of students felt respected, only 20% of students felt that they were understood as an individual and an even smaller amount of 13% felt that they were 'quite' or' extremely' mattered to others at the university. Academics and students agreed that developing a sense of belonging was a challenge due to COVID-19 and the rapid change that this brought to online learning. Students having connections with their peers, enabling them to connect with somebody experiencing the same thing was recognised as being extremely important, and students perceived that being connected to academics directly impacted learning. Students acknowledged that whilst the transition to online learning offered benefits of flexibility and reduced travel time, it created challenges around family employment, access to childcare and home-schooling. Tang et al (2023) concluded that whilst online learning met some of the students' needs of knowledge transfer and development, the serendipitous connections before, after and between classes no longer existed and their absence limited a pivotal social aspect of belonging. Collaboration with peers is fundamental for students, and effective and regular communication with staff is necessary. Whilst online learning can provide useful flexibility, it makes it difficult to 'read the room' and identify students who appear to be struggling or disengaged.

More recently, Jones and Bell (2024) published a systematic review of 59 studies focusing on HE in the post COVID-19 pandemic. It was determined that the evidence suggests post covid students are struggling to attend and engage with their studies, and this lack of attendance and engagement may impact on the students' sense of belonging. The review does not, however, differentiate between students who struggled with engagement due to the mental wellbeing, and those who developed new hybrid learning preferences in a post-pandemic environment. Jones and Bell (2024) did, however, identify a need for HEIs to make strategic plans to support students' sense of belonging and resilience due to the effect that COVID-19 has had on student stress and anxiety.

The literature around the impact of COVID-19 in HE highlights the significant impact that the pandemic has had on student connections, and their sense of belonging, with disruption to social networks and

presence on campus being a pivotal theme. Research has consistently found a decline in student belongingness, and whilst online learning has some benefits it has created barriers to interpersonal relationships and engagement.

2.13 Conclusion

Students attend university to gain knowledge and skills that will prepare them for the future workforce. Unfortunately, equity of access to HE is an issue and whilst student numbers are increasing, participation is not evenly distributed across the population. Students with a lower socio-economic status or from a minority background are less likely to attend or obtain a good degree at university.

The cost of university education is a crucial factor for students, and as students are a consumer paying significant tuition fees, they will seek to assess and compare the quality of the education and experience that they receive. Student retention is a core metric in the measurement of teaching quality, and widening participation continues to be a key focus in HE.

Student retention in health undergraduate courses is lower than the UK national average, and as the allied health professions are a significant workforce in the NHS, the drive to increase the NHS workforce relies on the successful recruitment and retention of students. Difficulties and dissatisfaction around clinical placements have been reported as contributing to student attrition.

Research into student success on clinical placement identifies the importance of clinical staff being welcoming, affirming, and providing students with an accessible mentor. Students with a secure sense of belonging on clinical placement increases student satisfaction and happiness and appears to decrease student stress. Feelings of belonging also appear to impact student retention and grade outcome with studies linking sense of belonging with academic engagement.

Students who are academically more engaged with their studies have been found to have higher levels of satisfaction, and attentiveness to the student by their academic tutors appears to be important to student satisfaction. Feelings of being invisible whilst on placement have been highlighted by students as negatively affecting their experience, and these individual feelings of mattering have been found to decrease stress in students and improve student self-esteem. There are also findings that increased feelings of belonging may predict feelings that the student matters to other individuals within the setting.

Current research into the impact of belonging within HE is plentiful, but there is limited research into the effect of belonging in clinical placements, particularly within the UK. There has been no research found that considers the correlational relationship of a sense of belonging across both the academic and clinical placement environment. Whilst there is limited research on mattering, this is again limited

within the UK and does not consider the clinical placement setting for allied health undergraduates. Whilst research has demonstrated links between belonging and grade outcome, and mattering with satisfaction, there is no research that brings together belonging, mattering and grade outcome across both the academic and the clinical environment.

Research into belonging is mainly focused on young, white females, and whilst studies have highlighted social and structural barriers facing ethnic minority students, the relationship between belonging, mattering and grade outcome across a diverse demographic of students is not fully reported. Whilst some gender differences around belonging have been noted, these differences are inconsistent within the research and apply to niche student groups.

2.14 Reflection / Positionality

This chapter was in part interesting and informative to put together, but also a laborious endeavour that tested my motivation and stamina. The literature for this review was sourced in many stages over the period of the research, and at times this made it difficult to track the many sources and to select those for inclusion. The topics of belonging and mattering connect with many other themes such as self-esteem, cultural-capital, habitus, and identity to name a few but as these are significant well-researched themes in themselves it was decided to keep this literature review focused and not to include them. Including them would have significantly increased the word-count of this thesis and taken the discussion on a tangent. Whilst I enjoyed sourcing, reading, and deliberating over articles, I didn't particularly enjoy the writing of this chapter and found it difficult at times to articulate the threads that weave each section within this chapter together.

I found it particularly challenging to decide on the most appropriate scales to use that measure belonging and mattering as some of the statistical discussions around scale validation can be difficult to follow with rudimentary knowledge of statistics. My knowledge in this area has improved considerably since I began this journey and I still have a lot to learn. I may now have the confidence to validate my own scale, which I didn't have when I commenced this project.

Research around the concept of mattering has increased since this project began, and it was heartening to be able to keep adding literature to this section as it confirmed to me that this is a growing area of interest within HE. This literature review also revealed some tangible gaps in the literature, particularly around mattering and around student clinical placements, and understanding these better could have a useful impact on how we design student support systems and the student experience.

Chapter 3 Methodology

3.1 Introduction

This chapter will begin with the aims and objectives for the study. The overall research design and methodological approach to this study will be explained, with the setting of the research overviewed to provide the context for the environment in which this study took place. The participants involved, and the inclusion and exclusion criteria utilised for the study are detailed. This chapter continues to discuss the questionnaire used to collect data, the likert scales used to measure belonging and mattering, and the quantifying of grade outcome. The piloting process incorporated into the development of the study are detailed, as well as the ethical considerations. The process of the actual data collection, including data storage and documentation are described, and the chapter will conclude with a personal reflection of the methodology and data collection that demonstrates the personal journey of the researcher.

3.1.1 Aims

This study has the following two aims:

- To determine levels of belonging and mattering across the academic and the clinical environment in undergraduate allied health professional students.
- To explore how these levels of belonging and mattering vary across student demographics and correlate with student grade outcome.

3.1.2 Objectives

This study has the following four objectives:

1. To explore levels of student belonging across a range of demographics within undergraduate allied health professional students, in both the university and the clinical environment.
2. To explore undergraduate allied health professional students' feelings of mattering, across a range of demographics, in both the university and the clinical environment
3. To investigate correlations between levels of belonging and mattering across both the university and clinical placement environments, in undergraduate allied health professional students.
4. To investigate correlations between feelings of belonging and mattering and grade outcome in undergraduate allied health professional students.

3.2 Application of theoretical concepts

This study examines both belonging and mattering as key factors in the student experience of the university and clinical placement environments. As the physical environmental and institutional space is socially constructed and can either foster or hinder belonging (Samura, 2018) both the university and the clinical placement environment will be considered in this study. Allied health students spend an equal amount of time in both environments, with these environments being designed for differing purposes with differing social structures, cultural norms and hierarchies. To operationalise these concepts, belonging will be measured using the scales validated by Yorke (2016) and Levett Jones (2009a) and mattering will be measured using a scale validated by Elliott et al. (2004). These will be discussed further in sections 3.6.3 and 3.6.4.

In sections 2.10.1 and 2.11.1, it was outlined what is understood by belonging and mattering and how these are theoretically informed by contextualising the concepts within the higher level social theories of Bourdieu. Therefore when Belonging is deployed in this study through the aforementioned validated scales, it is informed by Bourdieu's social identity theory and constructs of social and cultural capital (Bourdieu, 1986). The belonging scale at university (Yorke, 2016) measures items on feeling at home; feeling of not belonging; enriching experience, feeling welcomed and being shown respect. These areas of feeling a sense of being at home or belonging to the university link to the individual's social identity and drive to categorise themselves within a group. An enriching experience is provided via social opportunities and support, connections with others and collaborative working with peers and tutors. This enriched experience signifies a good sense of social identity. Feeling welcomed and respected signifies the social acceptance gained from the students acquired cultural capital.

The clinical belonging scale BES-CPE (Levett-Jones et al., 2009a) is based on the work of Baumeister and Leary (1995) and assesses feelings, cognition and behaviours. This scale reflects the major components of belongingness which are esteem, connectedness and self-efficacy. Maslow (1987) argued that belonging and acceptance are essential for developing self-esteem, which consists of self-respect, confidence, and self-acceptance. Without these, individuals may experience feelings of inferiority and worthlessness. Hagerty et al. (1992) defined connectedness as active engagement with others that fosters comfort and reduces anxiety. This sense of connection depends on shared values, goals, and experiences, reinforcing a sense of belonging. Self-efficacy, widely studied in social psychology, refers to an individual's belief in their ability to control outcomes and achieve goals. Those with high self-efficacy persist despite challenges, while those with low self-efficacy, shaped by past failures, are more likely to struggle with motivation and persistence. Together, belonging, connectedness, and self-efficacy play a crucial role in personal growth and success (Levett-Jones et al.,

2009a). These areas all shape how individuals can access and benefit from both social and cultural capital. The confidence to engage in social networks boosts feelings of esteem, and connectedness being an indicator of strong social relationships and shared cultural knowledge. Self-efficacy drives the effective use of social and cultural capital, with students possessing high self-efficacy taking advantage of opportunities and social networks with confidence.

Mattering will also be deployed in this study through the aforementioned validated scales, but again the use of mattering as a concept is theoretically informed through the higher level social theories of Bourdieu's social identity theory and constructs of social capital and field (Bourdieu, 1986) as outlined in section 2.11.1.

Elliott et al. (2004) identified two major categories that form feelings of mattering: awareness and relationship. Awareness relates to being the focus of attention of others, being recognisable to others as individuals and being noticed. In Bourdieu's social capital, being recognised by others is crucial as this awareness will provide increased social capital and increase the opportunities and resources available. Recognition is also afforded to those in higher positions of power within Bourdieu's field (Hilgers and Mangez, 2014) and this impacts social interactions and hierarchy.

The second category of mattering, that of relationships, can be further categorised into importance and reliance (Elliott et al., 2004). Importance within relationships is shown by being the object of interest and concern, with others investing time and energy into the person. This feeling of importance within relationships is closely related to Bourdieu's social capital and field as perceiving somebody as significant and investing in a relationship with them reinforces their position within the field. This importance strengthens trust, reciprocity and influence, which are key components of social capital. Reliance within relationships is shown when others look to the individual for satisfaction of their needs or desires, and reliance flows from a sense that others appreciate the resources that can be offered (Elliott et al., 2004). Reliance plays a key role in Bourdieu's concepts of social capital and field, as reliance can strengthen or weaken social networks. Being relied upon for knowledge, support or influence increases an individual's social capital which increases their access to opportunities and status within the field. Reliance shapes the balance of power in the field, and how social capital can be distributed and utilised (Bathmaker, 2015; Flett, 2018; Hilgers and Mangez, 2014).

Elliott et al.'s (2004) mattering scale (discussed further in section 3.6.5) measures the categories of awareness, importance and reliance and therefore this scale will be used and this will encompass Bourdieu's social identity theory when using the scales for the measurement of mattering in this study.

3.3 Research design and methodological approach

This research is a non-experimental, quantitative, cross-sectional study. Two stages of data collection will be employed: a questionnaire including four validated likert scales; and student academic records.

Research methodology can be categorised into two central divisions, these being quantitative and qualitative. Quantitative methodology produces results in the form of numerical data, is designed to be objective, valid, reliable and describe empirical relationships (Tuli, 2010), and is commonly considered a positivist approach to research due to the ability to statistically test hypotheses in objective means independent of the researcher (Wellington, 2015). Conversely, qualitative methodology produces non-numerical results that is commonly written or verbal, but may also be in the form of drawings, behaviour, or other forms of expression. Qualitative information provides the meaning and understanding of why things are the way they are (Tuli, 2010). Qualitative methodology is commonly considered an interpretivist approach to research as it can be subjective in the interpretation of its meaning and provides explanation and context to a phenomenon (Wellington, 2015). Each approach has its benefits and its limitations, but quantitative data can provide direct comparisons between variables and enables relationships to be established. This study takes a quantitative research approach to data collection to describe the relationships between belonging, mattering and grade outcome across the university and clinical placement settings. Quantitative research enables the objective investigation of measurable phenomena and the understanding of how variables may interact or correlate with each other (Tuli, 2010). As this research aims to explore correlational relationships a quantitative approach is the most appropriate to achieve the aims of this study as numerical data can offer a useful description of a situation and the statistical significance of variables can be established (Tuli, 2010).

A non-experimental design is utilised as this allows for the study of nonmanipulable variables (Johnson, 2001), and feelings of mattering and belonging cannot be controlled by the researcher, nor can exposure to factors that may affect feelings of belonging and mattering. Non-experimental research is purely observational, that produces results intended to describe a situation (Bleske-Rechek et al., 2015). A cross-sectional study design is often used when the aim is to describe a population or situation (Levin, 2006) with a 'snap-shot' of a population being produced at a particular point in time (Cohen et al., 2018). The cross-sectional design allows for relationships between variables to be explored, and whilst it is not possible to measure patterns or changes over a period of time, or identify causal factors to any relationships, large amounts of data can be collected in a shorter period of time that increases statistical robustness (Hua and David, 2008). This study will survey parallel groups (e.g. first, second and third years) simultaneously rather than taking a longitudinal design and surveying the same group of students as they progress through their studies (Cohen et al., 2018).

Correlational research aims to identify whether, and to what extent, a relationship exists between variables (Johnson, 2001). In this instance the variables are feelings of belonging, feelings of mattering, grade outcome, and demographic categories such as age and ethnicity. These variables are quantifiable and independent, but any causal relationships will not be identified, and cannot be determined through correlational research (Johnson, 2001). The aims of this research do not include the identification of causal factors as there are many additional social, cultural, and financial elements that may influence the variables being studied.

3.4 Research setting

The research was carried out at a large university within the Midlands, UK. Local research within a singular university rather than research across multiple institutions was undertaken as it was determined that a participant sample large enough for statistical analysis could be gathered from one Faculty. Whilst variances on the student experience exist across courses and professions, there were likely to be bigger variances across Institutions that would impact on feelings of student belonging and student mattering across the university and clinical placement environments, due to the geographical factors that impact belonging (Ahn and Davis, 2020; Mulrooney and Kelly, 2020b). The university selected had a large, diverse, and established health faculty with several allied health courses that had similar placement patterns and similar student support structures. This was expected to provide a large pool of potential participants. The university selected was known to the researcher, and therefore access to the academic records of students was available. Whilst consent was required to access student records, once this was granted this data could be gathered individually by the researcher. Reliance on a third party for data gathering was not required.

3.5 Participants and sampling

As it is not possible to study everyone everywhere doing everything (Punch, 2009), it is necessary to select a representative sample on which to focus the study. There are two main approaches to sampling: probability or non-probability (Cohen et al, 2018). The population for this research study is undergraduate allied health professional students and probability sampling provides all members of this population with an equal chance of being selected for the study, and their inclusion or exclusion from the sample is a matter of chance (Punch, 2009). Probability sampling would require all undergraduate allied health professional students to have an equal chance of being included within the sample (Taherdoost, 2016). Non-probability sampling involves the researcher purposely selecting a section of the population to either include or exclude. Whilst a probability sample has the benefit of enabling the researcher to make generalisations as it is representative of the wider population, non-probability sampling limits the

generalisations that can be made and seeks to represent a particular section of the population (Cohen et al, 2018). Convenience sampling is a type of non-probability sampling and is the selection of participants that are easily available (Taherdoost, 2016). Selecting participants within one HEI that is known to the researcher is considered convenience sampling, and this applies to the inclusion of these students. However, limiting the sample to specific courses within one institution has the benefit of limiting the variables that may impact feelings of student belonging and mattering, such as different teaching teams, personal tutor systems and placement patterns (Ahn and Davis, 2020). Although non-probability sampling was used in identifying a population of students within a particular university, probability sampling will then be utilised to provide all students within this group an equal opportunity to participate (Taherdoost, 2016).

3.5.1 Inclusion criteria

Undergraduate students from two departments within the identified university are eligible for invitation to participate. These departments are the Department of Radiography and the Department for Operating Department Practice and Paramedic Science. The undergraduate students within these departments encounter a similar academic experience all being within the School of Health Sciences; work within the allied health professions on clinical placement; are enrolled on a course that is regulated by the HCPC; and experience a similar mixture of academic study and clinical placement. Data collection takes place during one academic year, and during this time a potential sample of 672 students is available.

There are seven undergraduate courses delivered within these departments, including:

- BSc (Hons) Diagnostic Radiography
- BSc (Hons) Radiotherapy
- BSc (Hons) Medical Ultrasound
- BSc (Hons) Paramedic Science
- DipHE Paramedic Science
- BSc (Hons) Operating Department Practice
- DipHE Operating Department Practice

The breakdown of numbers of students enrolled on the seven different courses by year groups, that provides the total available sample size is detailed in table 3.1 below. Two of the year groups do not have any enrolled students, which meant that across the year groups for the seven courses there are a total of 17 possible cohorts.

Table 3.1 Breakdown of students per course and year group

Course	Year Group	Total students
BSc (Hons) Diagnostic Radiography	1st Year	124
	2nd Year	95
	3rd Year	117
BSc (Hons) Radiotherapy	1st Year	23
	2nd Year	14
	3rd Year	22
BSc (Hons) Medical Ultrasound	1st Year	0
	2nd Year	11
	3rd Year	4
BSc (Hons) Paramedic Science	1st Year	40
	2nd Year	32
	3rd Year	19
DipHE Paramedic Science	1st Year	29
	2nd Year	0
BSc (Hons) Operating Department Practice	1st Year	23
	2nd Year	27
	3rd Year	14
DipHE Operating Department Practice	1st Year	39
	2nd Year	39
Total available sample size		**672**

3.5.2 Exclusion criteria

Students enrolled on postgraduate courses, foundation degrees and access or foundation years are excluded from this study. These students are on a different part of their educational pathway, and therefore may have different expectations of, and relationships with the university. The students' interactions with academic tutors, support with their professional career goals and overall structure of their course differ significantly from those within the undergraduate programmes. These programmes either do not include a structured clinical placement arrangement, or students are post-qualification and working in the clinical environment as a registered allied health professional rather than a student. This increases the variables that may impact on feelings of mattering and belonging.

Students enrolled within departments other than Radiography, Operating Department Practice and Paramedic Science are not invited to participate in the research as their profession may be regulated by a different professional body than the HCPC, with a significantly different timetabled ratio of academic studies and clinical placement. The two departments of Radiography and Operating Department Practice

and Paramedic Science are selected for their similar structure and student experience, and so students outside of these departments are excluded.

3.6 Questionnaire design

Questionnaires are the choice of data collection as they are ideal for collating opinions and attitudes across a large sample of participants (Nardi, 2018). Interviews and focus groups are better placed to collect qualitative data from a smaller group of participants, and this would not achieve the aim of the study. Questionnaires also provide anonymity and can collate data on multiple topics, such as belonging and mattering, within one survey. Self-administered questionnaires are ideal for investigating attitudes and opinions that are not usually observable and they enable the collection of a large number of responses in a short amount of time (Nardi, 2018).

The questionnaire (see appendix D) aimed to collect data on student demographics, feelings of student belonging and feelings of student mattering in both the university and the clinical environment, in addition to student grade outcome, and therefore contained the following sections:

- Consent
- Student demographics
- Mattering scale based on the university environment (Elliott et al., 2004)
- Mattering scale based on the clinical placement environment (Elliott et al., 2004)
- Belongingness Scale at University (Yorke, 2016)
- Belongingness Scale – Clinical Placement Experience (BS-CPE) (Levett-Jones et al., 2009a)

The questionnaire is suitable to be distributed either electronically or via printed hard copies. Whilst an electronic questionnaire is efficient in enabling data to be downloaded without the need for manual transcription, student response rates to electronic questionnaires can be low (Chaudhury and Jenkins, 2021). An impersonal emailed questionnaire is easy to discard, but distributed paper questionnaires with time allotted for completion can increase the response rate (Chaudhury and Jenkins, 2021; Patten, 2017). For this reason, printed paper copies of questionnaires to be physically distributed to students is the distribution method of choice (see section 3.9.2 for further details).

3.6.1 Demographic data

An aim of this research is to explore feelings of student belonging and mattering across a range of demographics, requiring demographic data of the students' needs to be captured within the questionnaire. Demographics can be collected in closed questions that will allow for categorisation of the student population (Denscombe, 2014). Student course information, detailing the course and level of

study will be requested to allow for representation of the sample across the departments to be determined. Within Chapter 2 demographics such as gender and ethnicity were highlighted as possible variables where differences on belonging and mattering may be seen (Cwik and Singh, 2022; Sedgwick et al., 2014). Furthermore, students who are first generation, mature students, commuter students and those with caring responsibilities have all been highlighted as having variances in engagement and achievement (Borrott et al., 2016; Crawford et al., 2022; Pedler et al., 2022), and so this information will be requested. The importance of being adequately prepared for university and the difficulties of fitting in with the university cultures and expectations were also discussed as having a possible impact on student achievement (Wong et al., 2021), and so participants will be asked if they have prior experience within the clinical setting or the university setting. Participants will also be asked whether they have seriously considered dropping out as increased belonging has been linked to student retention (Suhlmann et al., 2018; Thomas, 2012), in addition to where they feel most 'at home'. Correlating scores of belonging and mattering in the different environments of university and clinical placement, about where students report feeling most 'at home', either in the university, clinical placement, neither or both will provide additional validation that the scales are measuring what they are intended to measure.

3.6.2 Use of likert scales

The questionnaire used validated likert scales (Elliott et al., 2004; Levett-Jones et al., 2009a; Yorke, 2016) to measure belonging and mattering which are discussed below, but first it is important to justify the use of likert scales. A likert scale is a psychometric scale with multiple categories that allows the participant to indicate their opinions or attitudes on a particular subject (Nemoto and Beglar, 2014). The scale provides the measurement of an attitude that is constructed from the sum of responses to multiple, related questions (Batterton and Hale, 2017). Likert scales enable data to be gathered quickly from a large number of participants, can be highly reliable with established validity, and data can be used in comparisons or correlations (Nemoto and Beglar, 2014). However, there are limitations to be aware of, such as the avoidance of extreme responses and the lack of equal intervals (Cohen et al., 2018), and these limitations will be discussed in more detail in Chapter 7.4.1. The use of a validated likert attitude scale can ensure that the approach is valid and reliable (Batterton and Hale, 2017). Validity relates to the extent to which an instrument measures what it is intended to measure, whereas reliability relates to the ability of an instrument to measure consistently (Tavakol, 2011). An instrument must be reliable to be valid but does not have to be valid to be reliable. If an instrument is measuring what is intended, then it must be consistent to do so. However, an instrument could consistently measure an unintended phenomenon. As the concepts of belonging and mattering cannot be directly measured and are instead measured using multiple questions within a 'scale' it is important to measure the

reliability of a likert scale. A reliable scale can be expected to provide the same outcome when measurements are repeated (Taber, 2018) but this can be difficult in educational research when human attitudes and perceptions can vary. The experience of undertaking a likert scale test can trigger a thought process that changes an individual's perspective by the time they come to repeat the same test a short period of time later (Taber, 2018).

As this study is focusing on two distinct human phenomena of belonging and mattering, and also measuring both in two different environments, that of the university and the clinical placement, time constraints of doctoral research and existence of adequate scales influenced the decision to utilise existing likert scales. The likert scales used in this study will now be discussed.

3.6.3 Measuring belonging at university

To measure belonging in the university, there were several likert scales discussed in section 2.10.4 that have been validated to measure feelings of belongingness in the U.S. and the UK (Hoffman et al., 2002; Malone et al., 2012; Somers, 1999; Yorke, 2016).

Yorke (2016) developed an instrument for general use in UK HE on a 5-point likert scale. As their belongingness scale is validated to be used specifically in the context of modern UK HE, it was used in the questionnaire for this research. The Yorke (2016) belongingness scale is a 6-item sub-scale of a larger 16-item instrument measuring engagement, belonging and self-confidence. The scale is validated to be used independently from the remainder of the instrument, and measures belonging on a 5-point likert scale from strongly agree to strongly disagree, with two of the six questions negatively worded and reverse scored. Each response is scored from one to five and Yorke (2016) analyses the responses to the belonging scale using an overall mean score. The scale designed by Yorke (2016) has been shown to be both valid and reliable during its development, piloted twice with 232 followed by 709 students, before being administered to 2,841 students in a first analysis, followed by 2,696 students from the same sample group in a second analysis. All the results were consistent with a high Cronbach's alpha. The scale designed by Yorke (2016) has been shown to be both valid and reliable during its development, piloted twice with 232 followed by 709 students, before being administered to 2,841 students in a first analysis, followed by 2,696 students from the same sample group in a second analysis. All the results were consistent with a high Cronbach's alpha.

3.6.4 Measuring belonging on clinical placement

To measure belonging in the clinical placement environment, either a general belonging scale could be used, with participants asked to answer with the clinical placement environment in mind, an existing scale could be adapted, or a scale specific to the clinical placement environment could be

used. There is currently one likert scale that has been specifically designed for measuring belonging in students in clinical placement, the 34-item BS-CPE devised by Levett-Jones et al. (2009a). The BS-CPE was developed using nursing students within Australia and the UK.

The BS-CPE (Levett-Jones et al., 2009a) is a 34-item scale that contains three subscales of esteem (18-items), connectedness (16-items), and efficacy (8-items), having itself been adapted from Somers' (1999) belongingness scale that was originally based on the work of Baumeister and Leary (1995). The BS-CPE measures belonging on a 5-point scale from 'never true' to 'always true', with three of the 34 questions negatively worded and therefore reverse scored. Each response is scored from one to five and Levett-Jones et al. (2009a) analyses the responses to the scale using an overall mean score. The BS-CPE devised by Levett-Jones et al. (2009a) was used in the questionnaire for this research as it has been shown to retain validity in its subsequent use in English (Borrott et al., 2016; Grobecker, 2016; McKenna et al., 2013; Sedgwick, 2013) and when translated by both Kim and Jung (2012) and Ashktorab et al. (2015).

3.6.5 Measuring mattering

As detailed in section 2.11.3, several existing likert scales measuring mattering have been identified in the literature (Elliott et al., 2004; France and Finney, 2010; Marshall, 2001; Richards et al., 2017; Tovar et al., 2009), and Elliott et al.'s (2004) 24-item Mattering scale was used in the questionnaire for this research. Marshall's (2001) 11-item Mattering to Others Questionnaire (MTOQ) was designed specifically aimed at young adolescents and so may not be valid for use in older adults, and Richards et al.'s (2017) Perceived Mattering Questionnaire – Physical Education (PMQ-PE) was designed specifically for physical education teachers, and so may not be valid for use in undergraduate healthcare students. Elliott et al.'s (2004) mattering scale is a generic mattering scale with three elements of awareness, importance and reliance, and this was adapted by France and Finney (2010) for use in the university setting, with the only adaptation being the the enviornment students were asked to consider in relation to their feelings on mattering, rather than the scale items or terminology. This was used successfully with high validity. Tovar et al. (2009) developed a mattering scale specifically for use in HE, however, due to sub scales referring specically to counsellors and instructors that are part of the American HE system, Tovar et al.'s (2009) scale may not be reliable in the UK environment. There are no mattering scales that have been developed specifically for use in the clinical placement environment, and therefore participants were asked to complete Elliott et al.'s (2004) mattering scale twice, firstly thinking about the university environment, and secondly thinking about the clinical placement environment. Elliott et al.'s (2004) mattering scale has generic terminology that is appropriate for both environments.

Elliott et al.'s (2004) mattering scale is a 24-item instrument with a five-point scale from strongly agree to strongly disagree, with 12 of the 24 questions negatively worded and reverse scored. Each response is scored from one to five and Elliott et al. (2004) analyses the responses to the mattering scale using the sum of the scores across the items (Elliott et al., 2005).

3.6.6 Student grade outcome

The questionnaire contains an initial consent form (see appendix C) requesting the participant to initial several statements and provide a signature to confirm access to student academic records. On this front consent page participants are given space to provide their student identification number if consent is granted for their academic records to be accessed. The student identification number is required to identify individual academic results on the university student record system, for those who gave their consent. The following data was collected from the student academic records, for those students who gave consent:

- Average grade for the academic year
- Whether the student passed all assessments at the first attempt.
- Whether the student permanently withdrew from their studies during the academic year
- Whether the student temporarily withdrew from their studies during the academic year
- Whether the student had a claim for extenuating circumstances upheld
- Whether the student successfully proceeded to the next stage of their studies, or, in the case of final year students, received their award.

The pass grade for undergraduate modules at the university is 40%, and students who are unsuccessful at their first attempt and are required to resubmit will have their grade capped at 40% for the academic module. Where students had resubmissions, their recorded capped mark of 40% was used in the calculation of the average grade. Where students had a resubmission, but had extenuating circumstances upheld, their actual mark rather than a capped mark was used, as per the University academic regulations.

The average grade was obtained, rather than individual module marks, as each student cohort would study different modules with differing numbers of academic credits, and so direct comparisons would not be possible. Recording an average grade across the year enabled comparison across the different courses and year groups. It was decided to capture only the grade for the academic year in which the research took place, rather than including grades for previous years in the case of second- and third-year students, as students may have had very different feelings of mattering and belonging in previous years, and very different average grades, and these feelings would not be captured in the research. As the research is

cross-sectional and taking a snapshot of student feelings at the time of the research only the academic grades being gained at the time of the research is included.

The final numbers collected from the questionnaires and the academic records are detailed in section 4.3

3.7 Pilot

Piloting a questionnaire prior to data collection will enable any problems with the design of the questionnaire to be identified (Maltby et al., 2010) and best practice will ensure that opportunity is available to identify questions that may not be consistently understood by the potential participants (Fowler Jr and Fowler, 1995). After the full questionnaire was designed, a pilot of the questionnaire was organised prior to data collection.

3.7.1 Pilot setting

The questionnaire was piloted on a cohort of undergraduate 3rd year students studying Early Childhood Studies within the Faculty of the University selected for data collection. Education students undertake placement within schools as a significant part of their studies, and so questions in relation to placement were relevant and understandable to them. The pilot of the questionnaire was incorporated into a classroom activity as a useful learning opportunity for students who are required to undertake research and design questionnaires as part of their studies. Students were asked to attempt to complete the questionnaire and provide feedback on the format, length, and instructions of the questionnaire. A discussion was held between students and with the module tutor before feedback was then given to the researcher. The cohort had a maximum number of 45 students, and 30 were present for the pilot. This cohort size was large enough to provide useful feedback, but small enough to be manageable and promote a discussion.

3.7.2 Pilot feedback

During the pilot students answered the questionnaire and many made notes or comments alongside their answers. Many comments were similar, and these can be grouped into the following topics.

- Typos and wording errors.
- Length of questionnaire
- Layout and design of the questionnaire
- Wording of questions
- Choice of answers

3.7.3 Amendments

The pilot provided some useful discussion and minor amendments were made to the questionnaire as a result.

The typo error on question 21 of the mattering scale was amended.

The length of the questionnaire was considered, and it was felt that reducing the length of the questionnaire would remove valuable data relevant to the aims of the research. Therefore, the number of questions were kept the same.

The inclusion of open-ended questions would lengthen the questionnaire and provide some qualitative data. Whilst qualitative data on student perspectives would be an interesting addition to the data collection, it was felt that open-ended questions on a questionnaire would not provide the depth of narrative required to fully understand the phenomena being studied and it is more appropriate to retain a focus on the quantitative analysis.

There were some questions highlighted as difficult to understand, but these were specific questions highlighted by individual students, and there did not seem to be a consensus that any of the questions were particularly difficult. As the questions were within the validated scales, and the researcher would be present to answer any questions or provide clarification during data collection it was decided that the wording of the questions would remain unchanged but context to the scales would be given when introducing the study to participants.

For the question asking students where they feel most 'at home', additional options of 'both' and 'neither' were added.

3.8 Ethical Considerations

This study adhered to both the five principles of the British Educational Research Association (BERA) ethical guidelines for educational research (BERA, 2018) and Beauchamp and Childress' four principles of biomedical ethics (Beauchamp and Childress, 2019). These guidelines were followed as they provide a broad consideration of ethical issues and consider the participant's experience within a clinical setting as well as an educational environment and will be discussed below.

3.8.1 Ethical approval and negotiating access

Ethical approval was obtained from the university within which the research would take place (appendix A), after which approval of access was sought and granted via email from the Faculty Associate Dean for Research and Enterprise at the research site. Once these approvals had been granted, head of

departments for the Department of Radiography and the Department of Paramedic Science and Operating Department Practice were emailed and permission granted, followed by emailed permission from the undergraduate course leaders for diagnostic radiography, radiotherapy, medical ultrasound, paramedic science and operating department practitioners. This ensured that the institution's consent, ethical approval and safeguarding procedures were followed (BERA, 2018).

3.8.2 Recruitment of students

Participation in this study was open to all students meeting the aforementioned inclusion criteria, regardless of their individual interests, values, or perspectives to ensure fairness and equality (Denscombe, 2014). As students were able to participate within the study during their normal timetabled classroom activities, there was no requirement for students to use their own time to participate. Expecting participants to use their own time to participate in research will create inequality in accessing the study as students with additional responsibilities such as caring, and part-time work may struggle to give the time required. Additionally, use of own time may create additional costs on participants in increased costs of childcare, loss of part-time earnings or increased cost of travel. This would have a larger impact on lower income students and increase inequality of access. Utilising classroom time does create a risk of reducing classroom learning opportunities for students, but this was mitigated by providing choice to the lecturer in which timetabled session data collection took place, and participants could take the questionnaires away to be completed at another time if they preferred. There was no payment or incentive offered to participants of this research due to both the lack of resourcing to enable this, and to curb any impact this may have on the free decision to participate (BERA, 2018).

3.8.3 Informed consent process

All participants were required to provide consent in order to participate in this study (BERA, 2018). A Participant Information Sheet (PIS) was provided to all students (Appendix B) invited to take part in the research which fully explained the purpose of the study, what they would need to do if they took part, and how their information and research data would be used and disseminated (BERA, 2018). Contact details of the researcher were provided to enable students to ask questions prior to participating in the research and the researcher was available to discuss the study with participants and answer any questions, ensuring participants had a sufficient level of understanding of the research to exercise meaningful choice to participate (Beauchamp and Childress, 2019). The participant information sheet was attached to the questionnaire, and students were able to keep this for their own records. Students were encouraged to take the information sheet away with them after questionnaires

were distributed so that details of the research and contact details of the researcher were available to them (BERA, 2018).

3.8.4 Confidentiality and anonymity

Data from participants was kept confidential and student names or contact details were not recorded at any point. The questionnaires were coded and stored separately from the consent form that included the identification number. Only the researcher accessed student academic data using the given identification numbers, and names were not noted during this process. The academic data was retrieved, and the student record closed. It is acknowledged that students may have been concerned that during this process their name would be noted, and information from their questionnaire discussed with their course tutors. During data collection students were reassured that this would not happen, and the research would be undertaken within the stated ethical guidelines. It may be possible that in cases of small demographic groups or cohort sizes individuals may be identifiable from their questionnaire responses. In these instances, care will be taken during data analysis to combine groups if necessary and limit the reporting of individual responses.

Participants were made aware that the results from the study would be published as part of a doctoral thesis at conferences and in articles for publication as there is a responsibility to make the results of this research study public (BERA, 2018). However, only statistical data will be used in the presentation of results and no information that may identify participants will be used in any publications or presentations.

3.8.5 Withdrawal

Participants were informed in the PIS that if they wished to withdraw their consent, they were able to do so without explanation by emailing the researcher, if their student identification number was included on the consent form (BERA, 2018). If the student identification number was not included the data would be anonymous and it would not be possible to identify the data to withdraw it from the study. Withdrawable data could be withdrawn up until data analysis took place.

3.8.6 Risks to participants

The study was deemed low risk to both participants and the researcher, ensuring that the benefits of conducting this study are not outweighed by any risks involved (Beauchamp and Childress, 2019).

The researcher is an academic member of staff, and at the time of the data collection was involved in the teaching, pastoral support, and assessment of some students that were invited to participate. It is acknowledged that this creates a power imbalance, and participants may feel obligated to take part in the research (Punch, 2009). There is a risk that some participants may feel that refusing to

participate could have a negative impact on their assessed work or support available to them. Additionally, some participants may have been reluctant to answer questions such as whether they had seriously considered dropping out in case it altered the researcher's opinion of the student as an academic member of staff or their confidentiality was not respected (BERA, 2018). When distributing questionnaires this power imbalance was openly acknowledged by the researcher, and participants were reassured that the differing roles of doctoral research student and academic staff member were respected and taken seriously (BERA, 2018). The researcher's role as an academic member of staff was acknowledged to unfamiliar students in order to be transparent in the recruitment of participants (Punch, 2009). There was a risk that participants may have felt pressurised into answering the questionnaire when distributed in classroom sessions, as they could be 'seen' to be not responding. However, students were reassured that non-participation was acceptable (BERA, 2018), and also had the option of returning a blank questionnaire which would not have been immediately obvious to the researcher until questionnaires were checked and coded after each classroom session.

Questions within the likert scales asked students to reflect on their feelings of belonging and mattering, and these reflections may have prompted participants to recall unhappy events or acknowledge negative feelings that had previously been supressed. All participants were verbally signposted to student support services available at the university, or their course teams and personal tutors if they wished to discuss their experiences at the university or on clinical placement to avoid any psychological harm (Denscombe, 2014).

There were no open questions within the questionnaire that provided space for participants to include negative or derogatory comments about the university where the research took place, course team or clinical placement, which mitigated the risk of peers being criticised or defamed within this research (BERA, 2018). However, there was an opportunity for comments to be added to the questionnaire in spaces around the printed questions. Any comments or statements added to the questionnaires would be disregarded and not included within the data analysis, which reduces the risk of reputational damage (Punch, 2009). Participants who wished to discuss their experiences were signposted to the personal tutor, course team or student representative for support.

All data collection took place on the university campus, during normal working hours, and there was no lone working by the researcher to maintain the personal safety of all involved (Denscombe, 2014).

3.9 Data collection

The data collection occurred within one academic year and was staggered over a period of five months due to varying placement patterns between the 17 student cohorts on the seven courses but was planned

to take place as early into the academic year as possible. It was expected that perceptions and experiences would develop and change over the academic year, and so data collection was attempted after the first placement of the academic year, but prior to final assessments. This section will now outline the approach to recruitment and data collection.

3.9.1 Recruitment

The Head of Departments for Radiography and Paramedic Science and Operating Department Practice were contacted with details of the research, and this was cascaded down to the relevant course leaders of the previously mentioned seven undergraduate degree courses and 17 cohorts (see Table 4.1). Course leaders provided details of student placement patterns for the year one to year three students and data collection was timed so that first year students would have preferably attended clinical placement prior to answering the questionnaires to ensure that all questions were applicable, and the full questionnaire could be completed. However, those who had missed placement (this may have been due to occupational health or DBS requirements) were still able to take part and answer those questions and likert scales that were relevant to the academic environment. In discussion with the course leaders and module tutors, an appropriate point in each of the seven student cohort timetables and 17 cohorts was identified for the researcher to attend a classroom session within each cohort of students across both departments.

3.9.2 Questionnaires

In the week prior to the questionnaires being distributed, the Participant Information Sheet (PIS) (see appendix B) and researcher contact details were sent to the course leader, and the module leaders of the seven courses coordinating the identified sessions in which to speak to students in the 17 cohorts. This information was then passed on to students via email and the virtual learning environment (VLE) Moodle. This ensured that students had one week to understand the aims of the research and could decide whether they would like to take part. The PIS was also distributed in hard copy with each questionnaire, and these were distributed by the researcher within face-to-face teaching sessions on campus, either at the beginning or end of a teaching session. The researcher explained the research, handed out questionnaires, answered any questions, and collected any questionnaires that were completed. Students were encouraged to take the PIS away with them, so that if they had any questions or wished to withdraw, they had information and contact details available to them. Some students chose to take their questionnaires with them to complete at a time convenient to them, and returned them either to the researcher's office, or their module or course lead. Any students who did not attend the session were able to contact the researcher via email for a questionnaire if they wished to take part in the research.

3.9.3 Grade outcome data

For those students who allowed the researcher access to their academic records through consent on the questionnaire and provided their student number, their academic results were obtained after the first assessment attempt across the programme for the academic year. The exact timings were agreed in advance with the course leaders to ensure that they were appropriate for the assessment points and examination boards and to limit repeated access to records. In the case that the academic records were incomplete or unclear, the course leader would be approached for clarification on the status of individual students. If the student preferred that their academic results were not included in the research, they had the option to not include their student number and only the data collected by the questionnaire would be analysed. The researcher used the student number to access the student record in the internal University record system and recorded the participant's academic results for the current academic year. For those students who required a second submission, access was gained a second time once the resubmissions were completed.

3.10 Data storage and documentation

Once questionnaires were completed and collected by the researcher, each questionnaire was allocated a code, which was written onto both the consent form and the questionnaire, before the consent form was detached from the questionnaire. The paper consent forms, and the questionnaires were stored separately due to identifiable student identification numbers and signatures being on the consent form.

A table in a word document was used to record the student number and the corresponding code, so that questionnaires could be easily identified if data needed to be withdrawn.

The data collected from paper-based questionnaires was inputted by the researcher into online spreadsheets using Microsoft Office Excel 16. The grade outcome data was added into these spreadsheets. Once complete, the excel spreadsheet was uploaded into IBM SPSS statistics 28 software package (IBM UK Ltd, 2021) for analysis. The word document containing participant codes, and the excel spreadsheet containing data for analysis were kept securely (BERA, 2018) and both saved onto the University Microsoft OneDrive in a personal folder accessed only by the researcher and the supervisors, and each file was password protected. Physical copies of questionnaires and consent forms were stored via the research Integrity Officer one the university campus. As the questionnaire was printed in hardcopy it ensured that there were no General Data Protection Regulation (GDPR) breaches from emailing students.

3.11 Reflection

I approached the methodology of this research project with mixed confidence. My professional role as an academic is centred around teaching, learning and the student experience, and there was very little emphasis on research in the day-to-day workload at the time of data collection. However, I do have previous research experience from the completion of my BSc and MSc, I supervise students with undergraduate research proposals, MSc dissertations, and I have undertaken the role of deputy chair for the Faculty Academic Ethics Committee for a number of years.

Advising and supervising others is, I have found, very different to deciding upon and completing your own methodology and I suffered many moments of self-doubt. When discussing my research with colleagues, many were surprised that I was taking a quantitative approach to a subject such as belonging and mattering, and I frequently questioned whether I had chosen a quantitative design based on preference rather than appropriateness. My previous experience is predominantly in quantitative research, and I have not had the opportunity to develop my skills in qualitative analysis. I was open-minded to using qualitative research if it was the most appropriate design method, but after many supervision meetings where this was discussed, I am confident that the quantitative approach will address a gap in the current evidence base that enables the correlations between belonging and mattering in academia and clinical placement, and their relationship with grade outcome to be explored.

The use of likert scales was also the topic of many discussions within supervision meetings, particularly when converting the responses to numerical data, and I sought advice from our Faculty statistician before this approach was definitively agreed. This did improve my confidence, and after also contacting the authors of the scales used, I felt excited to be able to start data collection.

The method used was time intensive due to the inputting of data from paper-based questionnaires and the university online records system into an electronic spreadsheet, ready for analysis. However, I felt that the additional time and work required was worth it for the higher response rate and inclusion of grade outcome data, and I am pleased that I took this approach. There were times that I felt I had underestimated the monotonous and mundane activity of inputting data, and I did need to be vigilant for inputting errors, checking through the data multiple times, and working in short bursts to ensure that my concentration did not lapse.

After the work involved in attending classroom sessions, gathering questionnaires, accessing student records, and transcribing data I looked forward to analysing the data that I had painstakingly collected.

Chapter 4 Approach to data analysis

4.1 Introduction

This chapter will provide an overview of the approach taken towards data analysis, beginning with the transcription and online storage of the data and the software used for data analysis. The coding method used for the data is described, and the approach used for the analysis of likert scales is explained. Consideration is given to the measuring of the reliability of the likert scales, after which the statistical tests to be used in data analysis are discussed.

4.2 Data coding

Each of the 265 collected questionnaires are coded using a letter to indicate the course and a number. Questionnaires are numbered in the order in which they were collected. Coding of the questionnaires is described in table 4.1 below.

Table 4.1 Coding of questionnaires

Course	**Letter used for coding**	**Numbering used for coding**
Medical Ultrasound	MU	1 - 8
Radiotherapy	R	1 - 37
Diagnostic Radiography	D	1 - 104
Paramedic Science	P	1 - 34
Operating Department Practice (BSc (Hons)	BO	1 - 26
Operating Department Practice (Dip HE)	DO	1 - 56

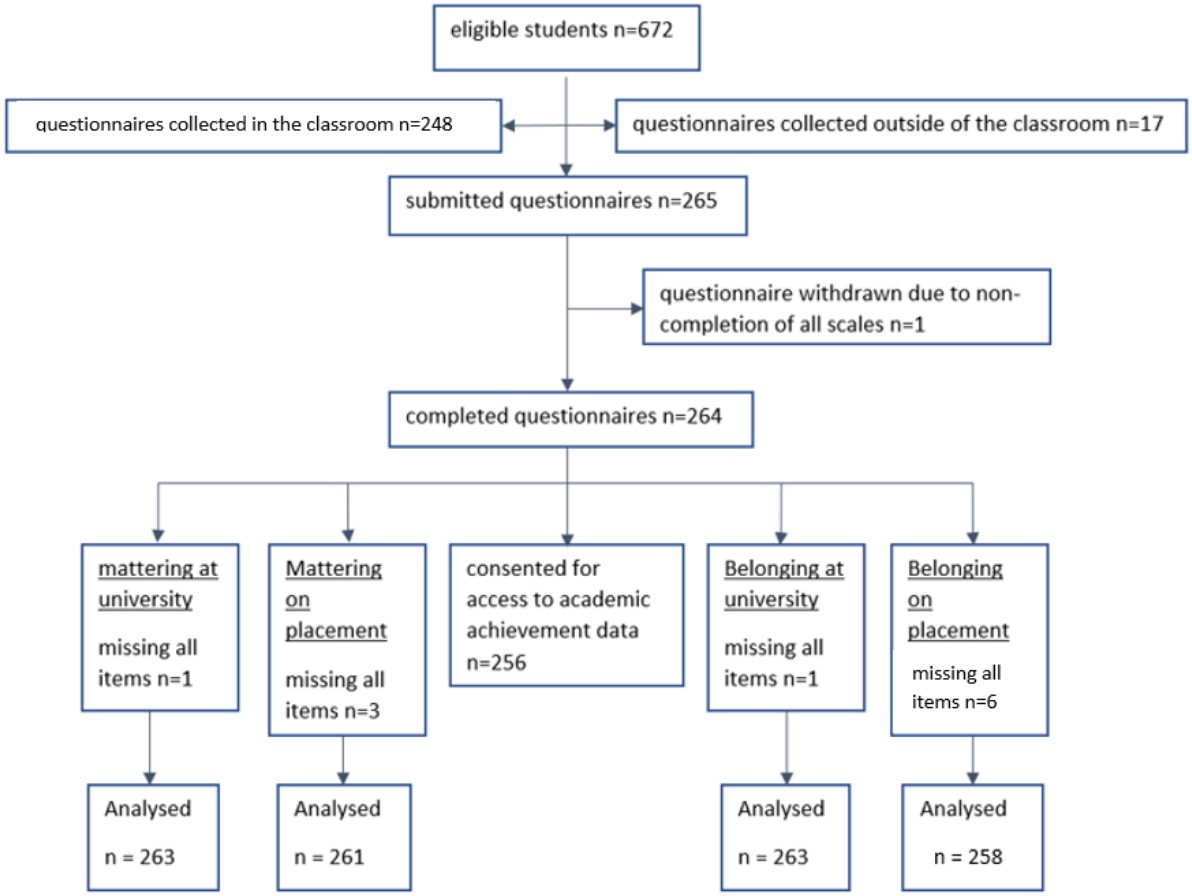
All responses from the questionnaires, including responses from the likert scales, are numerically coded to enable descriptive and inferential data analysis, with yes = 1, no = 0 and likert scales numbered 1-5. The data entry coding used for SPSS is detailed within appendix E.

4.3 Data Collected

A total of 265 questionnaires were collected with 264 of those considered to be complete. A CONSORT flow diagram below details the elements within the questionnaire available for analysis. This shows

that after assessing missing data, there were, 263 mattering at university, 261 mattering on clinical placement, 263 belonging at university and 259 belonging on clinical placement scales completed and available for analysis.

Figure 4.1 Flow diagram of total number of analysed questionnaires



Six participants answered some, but not all the likert scales. Whilst there were 264 completed questionnaires:

- Participant B06 missed out the belonging on clinical placement scale
- Participant B07 completed the belonging at university scale but none of the other scales
- Participant B08 did not complete the mattering at university and on clinical placement scales
- Participant D80 did not complete the belonging at university and on clinical placement scales
- Participant P17 did not complete the mattering or belonging on clinical placement scales
- Participant DO50 did not complete the belonging on clinical placement scale.

Hence each scale has slightly less than 264 completed scales for analysis.

The numbers of students from each course and academic level enrolled on their studies was compared against the numbers within the sample to assess for representation of the sample. The table 4.2 below demonstrates the numbers of students enrolled and invited to participate in the research, in comparison to those within the sample.

Table 4.2 Representation of sample across courses and level of study

Demographics		**Total number of students invited to participate**	**Percentage % of students invited to participate**	**Total number of students within sample**	**Percentage % of students within sample**
Course	Radiotherapy	64	9.8%	37	14.0%
	Diagnostic Radiography	338	51.8%	104	39.4%
	Medical Ultrasound	15	2.3%	8	3.0%
	BSc (Hons) Paramedic Science	93	14.2%	33	12.5%
	BSc (Hons) Operating Department Practice	65	10%	26	9.8%
	Dip HE Operating Department Practice	78	11.9%	56	21.2%
Year of study	1st year (level 4)	253	38.7%	105	39.8%
	2nd year (level 5)	222	34%	103	39.0%
	3rd year (level 6)	178	27.3%	56	21.2%

Table 4.2 shows the sample was representative of the numbers of students in each cohort and studying at each level. Data on the gender, age, ethnicity, and other demographics of the enrolled students within the courses was not available to the researcher, and so further comparisons of the representativeness of the sample could not be made.

Students from Diploma of Higher Education (Dip HE) Paramedic Science were not recruited due to difficulties in gaining access to that cohort of students.

4.4 Dealing with missing values

4.4.1 Amount of missing data

Of the 14 participants that missed a demographics question, 11 missed one question and 3 missed two questions. There appears to be no pattern to the missing data in this section and the demographics of those missing answers were wide ranging. The missing values appear to be missing completely at random (MCAR) where the probability of missingness is unrelated to the variables of this research (Saunders et al., 2006).

Missing data is a regular occurrence in survey-based research (Raaijmakers, 1999), and a small number of missing values can significantly impact the effective sample size (Cheema, 2014). Dodeen (2003) considers a large proportion of missing data to be 30% of the overall data. Including demographics and all four likert scales, the questionnaire contained 102 items and 96 of the questionnaires were missing at least 1 item. There were 264 completed questionnaires of 102 items in length which is a total of 26,928 individual items. There was a total of 420 individual items missing which is 1.56% and is a very small percent of the overall data collected.

Missing data can be considered in relation to the whole questionnaire, the section or scale within the questionnaire that the missing item is part of, or as an individual item. The approach in this study is to consider the questionnaire per section. Only one questionnaire was removed for missing all subsequent sections after the demographics, as this questionnaire could not be used within analysis of any correlations. Those questionnaires missing 30% or more of each section were removed, as per figure 4.1.

4.4.2 Strategies for dealing with missing data

Due to the missing values appearing to be MCAR, from a small number of participants (5.3%) and the spread of the missing data being across a range of the demographics collected, they are unlikely to influence the results and ignorability can be considered for this data (Sidi and Harel, 2018). A specific value of -1 was used in the data set for missing demographic data and this was specified as a missing value in SPSS (Pallant, 2020).

Deletion of the entire participant data containing a missing item (listwise deletion) (Cheema, 2014) would reduce the sample to 168 participants. This would reduce both the representativeness of the sample and power of the analysis (Cheema, 2014) and would result in some usable data being lost (Tsikriktsis, 2005). Therefore, listwise deletion is only appropriate for large samples with small amounts of missing data (Saunders et al., 2006), so that representativeness of the sample and the power of analysis is maintained. As the missing data here is spread across a large proportion of the

questionnaires this would not be appropriate in this situation, and so an alternative approach was sought.

When considering each section or scale within the questionnaire pairwise deletion would delete only the aspect of the questionnaire with missing data, so the completed demographics and scales could still be used for corelations between those sets of data (Tsikriktsis, 2005). The drawback with pairwise deletion is that results will not be drawn from the same sample, as this will vary depending upon the inclusion, or not, of individual datasets (Berchtold, 2019). Due to the small numbers of participant data that were missing large amounts of items within a scale, it was decided that pairwise deletion would retain as much data as possible with minimal impact on the overall sample, and was the approach used across the data set, resulting in 264 questionnaires.

4.4.3 Missing values in likert scales

The BS-CPE scale (Levett-Jones et al., 2009a) and Yorke's (2016) belonginess scale were validated using the overall mean of all items. This method allows for ignorability of missing values within the likert scales, as they are taken account of when calculating the overall mean. However, in Elliott's (2004) mattering scale, analysis was completed using the total sum of all items, and ignoring missing values would reduce the overall score for the scale. Valid mean substitution (VMS) was used for missing items in Elliott's (2004) mattering scale, where 126 missing items were replaced with the mean value for that individual participant. As the overall mean will be used for all the four scales, VMS is not required, and the missing data will be ignored. When Levett-Jones et al (2009a) validated the Belongingness Scale – Clinical Placement, questionnaires with 20% or more missing data were excluded and this approach has been applied to the four scales within this questionnaire. Each scale with more than 20% of missing data was considered to be missing all items, and pairwise deletion was applied.

4.4.4 Patterns within missing values

When considering missing values in likert scales it is important to check for patterns within the missing data, and any questions that appear to have been missed more often than others. Table 4.3 below was created to enable these patterns to be checked and highlights how many times each question item was missed for each of the four likert scales, and the average score across all 264 participants for that item.

Table 4.3 Patterns of missing data

Question number	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34
Mattering at university																																		
No. missing items	0	2	3	6	4	10	1	2	5	0	2	0	1	3	0	2	1	2	2	1	1	1	1	1										
Average score	3.3	3.8	3.8	3.6	3.8	3.6	3.6	3.6	3.6	2.1	2.2	2.1	3.8	3.3	3.6	3.6	4.0	3.4	3.4	3.5	3.3	3.3	3.3	3.8										
Mattering on clinical placement																																		
No. missing items	2	1	8	1	0	0	1	0	1	0	1	0	0	6	1	1	0	1	2	1	1	0	1	0										
Average score	3.4	3.4	3.2	3.7	3.6	3.5	3.7	3.3	3.6	3.1	3.3	3.5	3.6	3.3	3.9	3.5	3.6	3.2	2.5	3.2	2.8	2.7	2.9	3.1										
Belonging at university																																		
No. missing items	0	1	0	5	0	0																												
Average score	3.4	3.5	3.3	3.9	4.0	3.3																												
Belonging on clinical placement																																		
No. missing items	0	0	2	2	0	1	0	1	0	0	0	1	2	1	0	2	1	0	3	0	1	7	0	2	1	1	2	1	3	3	2	0	1	0
Average score	3.6	4.4	3.8	4.0	4.3	3.6	4.0	2.1	3.8	4.2	4.1	2.0	2.1	3.5	3.7	3.2	3.4	4.0	4.2	4.3	3.8	3.2	3.3	3.3	3.5	2.5	3.7	3.6	3.2	2.8	3.9	4.4	3.9	3.6

Table 4.3 shows the missing items were spread across the scales, and items with slightly higher missing numbers are highlighted. Question 6 in the mattering on clinical placement scale has the highest number of missing items, but 10 missing items equates to only 3.8% of participants missing this item. The average scores for these questions were not dissimilar to the average scores for other questions across the scale, and the questions themselves were unremarkable in comparison to the other questions on the scale. It is therefore not clear why these questions had higher numbers of participants missing them and no patterns were established.

4.5 Types of data

The statistical tests used when testing for significance will vary depending upon the type of data to be tested. Numerical data can be categorised under six headings: nominal, ordinal, interval, ratio, discrete and continuous (Denscombe, 2014). Nominal data represents a category (Denscombe, 2014) such as the number of females versus males, and the demographic data that has been collected will be analysed as nominal data. Age will also be analysed as nominal data due to participants selecting an age category. Ordinal data is also assigned to categories, but these are ordered with categories being higher or lower than each other (Denscombe, 2014). Individual items within a likert scale are considered as ordinal data.

Ratio and interval data are ordered with the value between each item being equidistant (Denscombe, 2014), however ratio data also has a 'true zero', such as income or distance travelled (Denscombe, 2014). The grade outcome data within this research will be treated as ratio data as there is a true zero, and as the grade outcome is an average for the year, the data also has decimal points.

Finally, data can be categorised as either discrete or continuous. Discrete data occurs in whole numbers whereas continuous data occurs on a scale that could be measured in decimal points (Denscombe, 2014). The demographic data is treated as discrete, and the likert scales and grade outcome data is treated as continuous. It is acknowledged that the likert scale scores are derived from individual items of ordinal data and converted into continuous data, and the grade outcome data is an average derived from discrete data. Students receive grades in whole units and would not receive a grade with a decimal point, but taking the average grade for the year does provide a decimal point and converts the data into continuous data. In summary, this study will use both discrete and continuous data, specifically nominal, ordinal and ratio data.

4.5.1 Likert scale data

Likert scales are a common method of measurement in educational contexts and their original design proposed that the distances between each response was equal which would suggest an interval level of measurement. Additionally, analysing the sum or the arithmetic mean of the responses suggests an interval level measure (Harpe, 2015). However, as likert scales produce a response such as 'strongly agree' or 'agree', although the order of the categories is known the difference between each variable may vary. For example, the strength of feeling between 'strongly agree' and 'agree' may differ to the strength of feeling between 'agree' and 'neutral'. As the distance between two response categories may not be the same, the data could be considered as ordinal (Harpe, 2015). In order to resolve the ordinal/ interval dilemma, differentiation must be given to the individual likert item, and the overall likert scale (Brown, 2011). Within the four Likert scales used in this research, individual items within the scales will be treated as ordinal data. However, a likert scale as a whole contains multiple items that with a high Cronbach's alpha makes the overall score more reliable than the single ordinal item (Brown, 2011), and as belonging and mattering is measured by responses to an overall scale of multiple items, rather than one individual item, the overall likert scale measurement will be treated as interval data as recommended by Harpe (2015).

4.5.2 Likert scale measurement

The researchers of the validated likert scales used within the questionnaire took different approaches to the overall measurement of the scales. Elliott's (2004) mattering scale used the sum of the scores of all items during analysis of responses, whereas both Yorke's (2016) belonginess scale and Levett-Jones et al.'s (2009a) BS-CPE used the overall mean of all items. Both approaches provide the same information. Nevertheless, the benefit to using the mean is that individual items containing missing data will be factored into the calculation of the mean and corrections for missing data will not need to be applied, although it is acknowledged that missing data may impact the overall mean. When using the sum of all items, any missing data will impact on the overall sum and therefore will need to be corrected for prior to analysis. An additional benefit to using the mean is that comparison of scores across the different scales can be undertaken, whereas due to the three different scales having differing numbers of items, this could not be undertaken using the sum of the scores of all items unless the sum was converted into a percentage. For data analysis the overall mean of all items will be used as the measurement for all likert scales.

4.6 Statistical Tests

Descriptive and inferential statistics will be used to explore the data collected and to summarise the findings. Descriptive statistics will describe the profile of the data that has been collected using means, medians and standard deviations, and will enable any connections to be investigated using correlations (Denscombe, 2014). Inferential statistics will also be used to analyse the data collected within this sample and extend the findings to the broader context of undergraduate healthcare students within the UK (Wood, 2003). There are three approaches to statistical inference: Bayes theorem, confidence intervals and null hypothesis tests (Wood, 2003). Bayes theorem combines prior experience with current knowledge to create an algorithm of probability (Efron, 2013), but as there is a lack of certain prior data within this topic area Bayes theorem will not be employed. Confidence intervals enable the estimation of a data value for a whole population based on the data value obtained from a sample and will provide the size of the sampling error that is to be expected (Salkind and Frey, 2022). The analysis of this data set will not provide a specific value that can be applied to a population, and so confidence intervals will also not be employed within this analysis. Testing of the null hypothesis takes a starting point of no relationship between two or more variables, and any differences observed are random variations. The data is then analysed for variances higher than the probability of chance, and if the variances fall outside of the range that is likely to occur via chance the null hypothesis, that of no difference, can be rejected and a conclusion of statistical significance can be made (Wood, 2003). The approach of the null hypothesis will be the basis for data analysis within this research as it will enable relationships between a number of different variables to be tested from a sample without relying on previous data, and decisions on how this can be applied to a broader population can be made (Salkind and Frey, 2022).

4.6.1 Measuring internal consistency

Cronbach's alpha is commonly used to measure the reliability of a scale and will be used to assess the reliability of the mattering at university, mattering on clinical placement (Elliott et al., 2004), belonging at university (Yorke, 2016) and belonging on clinical placement scales (Levett-Jones et al., 2009a). Whilst the reliability had been tested during the original validation of all four scales, the test will be repeated on the data obtained within this research study as the scales are being used on a different sample of students than those used during validation.

4.6.2 Parametric versus non-parametric

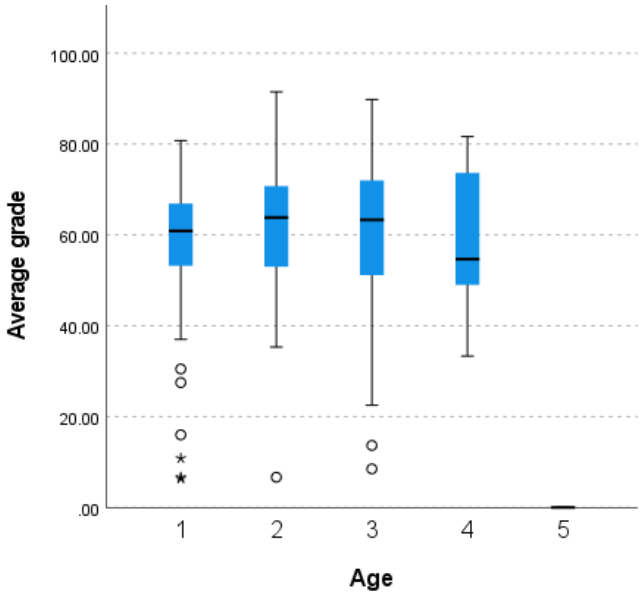
The wide variety of statistical tests available are categorised into two main groups: parametric or non-parametric (Pallant, 2020). Parametric tests are robust and powerful and require less data to make a

stronger conclusion (Kaur and Kumar, 2015). However, parametric tests require assumptions about the data to be met. The data must be normally distributed following a bell-shaped curve (Kaur and Kumar, 2015), the variances within each group must be homogenous (Salkind and Frey, 2022), there should be no significant outliers (Laerd Statistics, 2015a) and the data must be continuous (Kaur and Kumar, 2015). Non-parametric tests are less sensitive for detecting a relationship between variables but can be used when the assumptions about the data for a parametric test cannot be met (Pallant, 2020). Murray (2013) tested whether using parametric or non-parametric tests on likert scale data affected the conclusions drawn and concluded that the type of analysis conducted on likert scale data does not affect the conclusions drawn from the results, therefore the selection of parametric or non-parametric tests may not have a significant impact on the results of this study. However, the tests used within this analysis are non-parametric tests as there are some variances within groups, some significant outliers within the data, and the data is not true continuous data, having been created from originally discrete data values.

4.6.3 Inferential statistical tests

To test for statistical significance across the demographic data and the four likert scales the non-parametric tests of Mann-Whitney U and Kruskal-Wallis will be used. Both test for differences between independent groups, with Mann-Whitney U being used where there are two groups, and Kruskal-Wallis used for three groups or more (Pallant, 2020). To test for correlations between the likert scales and grade outcome data Spearman's rank order correlation is used to describe the strength and direction of any linear relationship between variables. Spearman's rank order correlation is used instead of a Pearson's correlation due to there being outliers in the data which means the data does not meet the assumptions required for the Pearson's correlation (Pallant, 2020), as the Pearson's test is for parametric, and Spearman's test for non-parametric data. An example of the outliers appearing in a box plot is provided in figure 4.2 below.

Figure 4.2 Example of outliers within data



The circles and stars at the bottom of the chart represent outliers within the data.

4.6.3.1 Testing assumptions Mann-Whitney U

There are four assumptions that must be met when conducting the Mann-Whitney U test (Laerd Statistics, 2015c).

- Assumption 1 – continuous or ordinal dependant variable. The Mann-Whitney U test will be used for statistical testing of relationships with feelings of belonging and mattering, as well as grade outcome data. The mean score from the likert scales and the average academic grade for the year are all considered continuous.
- Assumption 2 – independent variable is categorical with two groups. The Mann-Whitney U test will be used for statistical testing of relationships with demographics where there are two categorical groups, such as gender (male or female) or questions with yes or no answers, such as English as a first language.
- Assumption 3 – independence of observations, meaning that each group of the independent variable must have different participants. Within the demographics participants will select one answer, such as yes or no, and there will be no participant who is counted within both groups.
- Assumption 4 – the distributions of scores for both groups must have the same shape. Distributions were assessed by visual inspection and were deemed to have the same or similar shape across the categories, scales and grade outcome data, and therefore comparison of the medians can be used (Laerd Statistics, 2015c).

4.6.3.2 Testing assumptions Kruskal-Wallis

There are four assumptions that must be met when conducting the Kruskal-Wallis test (Laerd Statistics, 2015b).

Assumption 1 – continuous or ordinal dependant variable. The Kruskal-Wallis test will be used for statistical testing of relationships with feelings of belonging and mattering, as well as grade outcome data. The data from the likert scales and the average academic grade for the year are all continuous.

Assumption 2 – independent variable is categorical with two or more independent groups. The Kruskal-Wallis test will be used for statistical testing of relationships with demographics where there are more than two categorical groups, such as course studied, level of study and ethnicity.

Assumption 3 – independence of observations, meaning that each group of the independent variable must have different participants. Within the demographics participants will select one answer, such as studying in the 1st, 2nd or 3rd year, and there will be no participant who is counted within multiple groups.

Assumption 4 – the distributions of scores for both groups must have the same shape. Distributions were assessed by visual inspection and were deemed to have the same or similar shape across the categories, scales and grade outcome data (Laerd Statistics, 2015b).

4.6.3.3 Testing assumptions Spearman's correlation

There are three assumptions that must be met when conducting the Spearman's correlation test (Laerd Statistics, 2018).

Assumption 1 – two variables measured on a continuous or ordinal scale. The Spearman's correlation test will be used for measuring the strength and direction of relationships between feelings of belonging and mattering in addition to grade outcome. The data from the likert scales and the average academic grade for the year are all continuous.

Assumption 2 – the variables represent paired observations, meaning the same participants are represented by the two variables. Within the data, there will be a score for each variable from each participant and therefore this assumption is met.

Assumption 3 – there must be a monotonic relationship between the variables. Distributions were assessed by visual inspection and were deemed to have a monotonic relationship (as one variable increases or decreases, the value of the other variable also increases or decreases) and therefore this assumption is met (Laerd Statistics, 2018).

The following chapter will present the analysis of results and findings.

Chapter 5 Analysis of Results and Findings

5.1 Introduction

This chapter will begin by overviewing the demographics within the data, and the internal consistency of the four likert scales. Analysis will be considered in themes of; belonging and mattering across demographics; student belonging and mattering and grade outcome. This chapter will end with a summary, and a brief reflection of the analysis process.

5.2 Demographics

On the questionnaire, prior to the completion of the four belonging and mattering scales, participants were asked to provide demographic information. The following table 5.1 provides an overview of the demographics of the participants and any missing data from this section, for the 264 completed questionnaires.

Table 5.1 Overview of participant demographics and missing data

Demographics		Total number of students within sample	Percentage % of students within sample	Missing data
Course	Radiotherapy	37	14.0%	0
	Diagnostic Radiography	104	39.4%	
	Medical Ultrasound	8	3.0%	
	BSc (Hons) Paramedic Science	33	12.5%	
	BSc (Hons) Operating Department Practice	26	9.8%	
	Dip HE Operating Department Practice	56	21.2%	
Year of study	1st year (level 4)	105	39.8%	0
	2nd year (level 5)	103	39.0%	
	3rd year (level 6)	56	21.2%	
Gender	Male	77	29.2%	0
	Female	187	70.8%	
	Other / Prefer not to disclose	0	0	
Age	18-21	125	47.3%	0
	22-29	79	29.9%	
	30-39	49	18.6%	
	40-49	10	3.8%	
	50+	1	0.4%	
Ethnicity	White	132	50%	5 (1.9%)
	Asian or Asian British	58	22.0%	
	Black or Black British	46	17.4%	
	Chinese	1	0.4%	
	Mixed	10	3.8%	
	Other	12	4.5%	

First generation student	Yes	98	37.1%	0
	No	166	62.9%	
English as first language	Yes	203	76.9%	2 (0.8%)
	No	59	22.3%	
Home address same as term address	Yes	162	61.4%	0
	No	102	38.7%	
Dependants (living at home)	Yes	112	42.4%	7 (2.7%)
	No	145	54.9%	
Previously attended University course	Yes	68	25.8%	0
	No	196	74.2%	
Previously worked clinical / care environment	Yes	110	41.7%	1 (0.4%)
	No	153	58.0%	
Seriously considered dropping out	Yes	90	34.2%	1 (0.4%)
	No	173	65.8%	
Most ‘at home’	University	87	33.1%	1 (0.4%)
	Clinical placement	65	24.7%	
	Both	52	19.8%	
	Neither	59	22.4%	

This table shows that more females took part in the research than males. Whilst data on the percentage of the population within this cohort that were male / female is not available, student transparency data for this university (Birmingham City University, 2022) demonstrates a higher percentage of females (63%) to males (37%). The ethnicity distribution within this sample of 50% White, 22% Asian and 17.4% Black is also representative of the student population at this university, of 47.1% White 26.6% Asian and 13% Black. Demographics of low student numbers, such as those studying medical ultrasound, correlate with low numbers within the student population, with medical ultrasound only having a total cohort of 15 students (see table 4.2). The sample appears, therefore, to be representative.

5.3 Internal consistency of scales

Cronbach's alpha measures the inter-relatedness of items within a scale as a number between 0 and 1, and the more correlation between items within the test the higher the value of Cronbach's alpha (Tavakol and Dennick, 2011).

Views on the acceptable value of Cronbach's alpha range from 0.7 to 0.95 (Laerd Statistics, 2023; Tavakol and Dennick, 2011) and table 5.2 below highlights the Cronbach's alpha for each scale, with a comparison to the Cronbach's alpha achieved during original validation of the scale.

Table 5.2 Inter-relatedness of scale items

	No. of items	**Cronbach's Alpha**	**Cronbach's Alpha obtained at scale validation**
Mattering at university	24	0.819	0.792 – 0.872 (Elliott et al., 2004)
Mattering on clinical placement	24	0.929	0.792 – 0.872 (Elliott et al., 2004)
Belonging at university	6	0.859	0.76 and 0.78 (Yorke, 2016)
Belonging on clinical placement	34	0.917	0.92 (Levett-Jones et al., 2009a)

As Cronbach's alpha measures the inter-relatedness of the questions within the scale, it can be inferred by a high alpha value that the questions within a scale are all measuring something similar, but it cannot be inferred that they are measuring the exact same thing (Taber, 2018). Additionally, the Alpha value can be impacted by the number of items within the scale and a longer test can increase

the reliability of the test (Tavakol and Dennick, 2011). The belonging at university scale has a high Cronbach's alpha considering there are only six items within the scale.

5.4 Belonging and mattering across demographics

There are four objectives for this research. The first two objectives were to explore levels of student belonging and student mattering. The specific objectives were:

1. To explore levels of student belonging across a range of demographics within undergraduate allied health professional students, in both the university and the clinical environment.
2. To explore undergraduate allied health professional students' feelings of mattering, across a range of demographics, in both the university and the clinical environment

To avoid repetition of data tables, the results of these two objectives can be combined to consider the levels of both student belonging and mattering across a range of demographics.

When analysing the data, inferential statistical analysis was undertaken on the belonging and mattering scales in relation to the student demographics. Non-parametric tests of Kruskal-Wallis and Mann-Whitney U (Laerd Statistics, 2013) were used.

5.4.1 Exploration of demographics

An exploratory analysis of the data was undertaken to identify areas of statistical significance across the demographics and the belonging and mattering scales. The table below shows the *p*-value calculated for each belonging and mattering scale across the participant demographics. This highlights where there is a statistically significant difference in the belonging or mattering scores, according to a specific demographic. Values below 0.05 are statistically significant and are highlighted in table 5.3 below.

Table 5.3 Statistical differences between demographics and belonging and mattering at university and clinical placement

Demographic	Statistical test	Belonging at university	Belonging on clinical placement	Mattering at university	Mattering on clinical placement
Course	Kruskal-Wallis	<0.001**	0.004**	0.096	0.020*
Year of study	Kruskal-Wallis	0.010**	0.018*	0.913	0.021*
Gender	Mann-Whitney U	0.777	0.554	0.946	0.251
Age	Kruskal-Wallis	0.361	0.290	0.422	0.377
Dependants (living at home)	Mann-Whitney U	0.008**	0.839	0.046*	0.522
Ethnicity	Kruskal-Wallis	0.276	0.004**	0.436	0.002**
English as first language	Mann-Whitney U	0.964	0.021*	0.015*	0.078
Home address same as term address	Mann-Whitney U	<0.001**	0.926	0.073	0.368
Previously attended university course	Mann-Whitney U	0.708	0.124	0.976	0.587
Previously worked clinical / care environment	Mann-Whitney U	0.624	0.711	0.348	0.991
First generation student	Mann-Whitney U	0.182	0.772	0.216	0.946
Considered dropping out	Mann-Whitney U	<0.001**	0.040	<0.001**	0.019
Most 'at home'	Kruskal-Wallis	<0.001**	<0.001**	<0.001**	<0.001**

* = Relationship is significant at the 0.05 level (2-tailed) and is highlighted in orange, ** = Correlation is significant at the 0.01 level (2-tailed) and is highlighted in green.

The shading in table 5.3 indicates that the course of study, year of study, whether a student has dependants, student ethnicity, English as a first language and commuting from home during term time all significantly impact on one or more of the belonging and mattering scales. Students who had seriously considered dropping out had statistically significant different scores to those who had not across all scales, and where students said they felt most 'at home' also significantly impacted their score across all scales.

Feelings of belonging at university showed a statistically significant relationship with the student's course ($p<0.001$), year of study ($p<0.01$), whether their home address is the same as their term address ($p<0.001$), considerations of dropping out ($p<0.001$) and where they felt most 'at home' ($p<0.001$). Feelings of belonging on clinical placement showed a statistically significant relationship with the student's course ($p<0.004$), year of study ($p<0.018$), ethnicity ($p<0.004$), whether English is

their first language (p<0.021), considerations of dropping out (p<0.04) and where they felt most 'at home' (p<0.001). Feelings of mattering at university showed a statistically significant relationship with whether the student had dependants living at home (p<0.046), whether English is their first language (p<0.015), considerations of dropping out (p<0.001) and where they felt most 'at home' (p<0.001). Feelings of mattering on clinical placement showed a statistically significant relationship with the student's course (p<0.02), year of study (p<0.021), ethnicity (p<0.002), considerations of dropping out (p<0.019) and where they felt most 'at home' (p<0.001).

Each demographic that is shown to significantly impact on the scores of one or more of the belonging / mattering scales will now be considered in more detail. These include course of study, year of study, whether a student has dependants, student ethnicity, English as a first language, commuting from home during term time, having seriously considered dropping out and where students said they felt most 'at home'.

5.4.2 Belonging and mattering and course studied

Table 5.4 below shows the comparison of the belonging at university and on clinical placement and mattering on clinical placement scales across the six courses. The mean, median and standard deviations for each scale are shown. The total numbers of participants for each course are also included, with the percentage of students on each of the six courses being overviewed earlier in table 5.1. There was no significant variance in the mattering at university scale and the course studied and so this scale is not included.

Table 5.4 Comparison of the four scales against the course of study

		Belonging at university	**Belonging on clinical placement**	**Mattering on clinical placement**
Kruskal-Wallis p values <0.05		<0.001**	0.004**	0.020*
Radiotherapy	Mean	3.887	3.778	3.582
	Median	4.000	3.706	3.625
	Standard deviation	0.788	0.478	0.574
	N=37	37	37	37
Diagnostic Radiography	Mean	3.813	3.503	3.257
	Median	3.833	3.544	3.292
	Standard deviation	0.600	0.488	0.564
	N=103	102	102	103
Medical Ultrasound	Mean total	3.687	3.712	3.212
	Median	3.833	3.838	3.437
	Standard deviation	0.499	0.459	0.487
	N=8	8	8	8
Paramedic Science	Mean total	2.432	3.789	3.535
	Median	2.417	3.735	3.542
	Standard deviation	0.854	0.565	0.597

	N=34	34	33	33
BSc (Hons) Operating Department Practice	Mean total	3.795	3.390	3.098
	Median	3.833	3.588	3.312
	Standard deviation	0.734	0.615	0.775
	N=26	26	23	24
Dip HE Operating Department Practice	Mean total	3.491	3.392	3.235
	Median	3.500	3.441	3.292
	Standard deviation	0.739	0.539	0.696
	N=56	56	55	56

* = Relationship is significant at the 0.05 level (2-tailed) and is highlighted in orange, ** = Correlation is significant at the 0.01 level (2-tailed) and is highlighted in green.

Mean scores are highlighted in blue, with median scores highlighted in yellow

The scores for mattering on clinical placement were all lower (medians varying from 3.292 - 3.625) than for belonging on clinical placement (medians varying from 3.441 - 3.838) for each of the six courses. The scores for mattering on clinical placement were also lower than the scores for belonging at university (medians varying from 3.292 - 3.625) except for paramedic science, that had a particularly low median score of 2.417 on the belonging at university scale. This low score suggests some difficulties within this university course, although the paramedic science course did have high scores for the belonging and mattering on clinical placement scales (3.735 and 3.542). Students studying Dip HE operating department practice had low scores across the three belonging at university, and belonging and mattering on clinical placement scales (medians 3.5, 3.441 and 3.292 respectively), and as this is the only Dip HE course rather than a BSc (Hons) this may have an impact.

When comparing the standard deviations for the belonging at university and belonging and mattering on clinical placement scales, there are much larger deviations for belonging at university across all courses, and this suggests that university experiences are more varied across students than their experiences on clinical placement.

5.4.3 Belonging and mattering and year of study

Table 5.5 below shows the comparison of belonging and mattering scales by each of the three years of study for all of the six courses. The mean, median and standard deviations for each scale are shown, including the total numbers of participants. There was no significant variance in the mattering at university scale and the year of study and so this scale is not included.

Table 5.5 Comparison of belongingness and mattering on clinical placement against the year of study

		Belonging at university	Belonging on clinical placement	Mattering on clinical placement
Kruskal-Wallis p values <0.05		0.010**	0.018*	0.021*
1st year	Mean	3.775	3.443	3.217
	Median	3.833	3.500	3.208
	Standard deviation	0.716	0.476	0.593
	N= 105	105	102	103
2nd year	Mean Total	3.414	3.576	3.337
	Median	3.583	3.603	3.447
	Standard deviation	0.848	0.591	0.663
	N= 103	102	100	102
3rd year	Mean Total	3.476	3.706	3.468
	Median	3.833	3.706	3.542
	Standard deviation	0.955	0.507	0.623
	N= 56	56	56	56

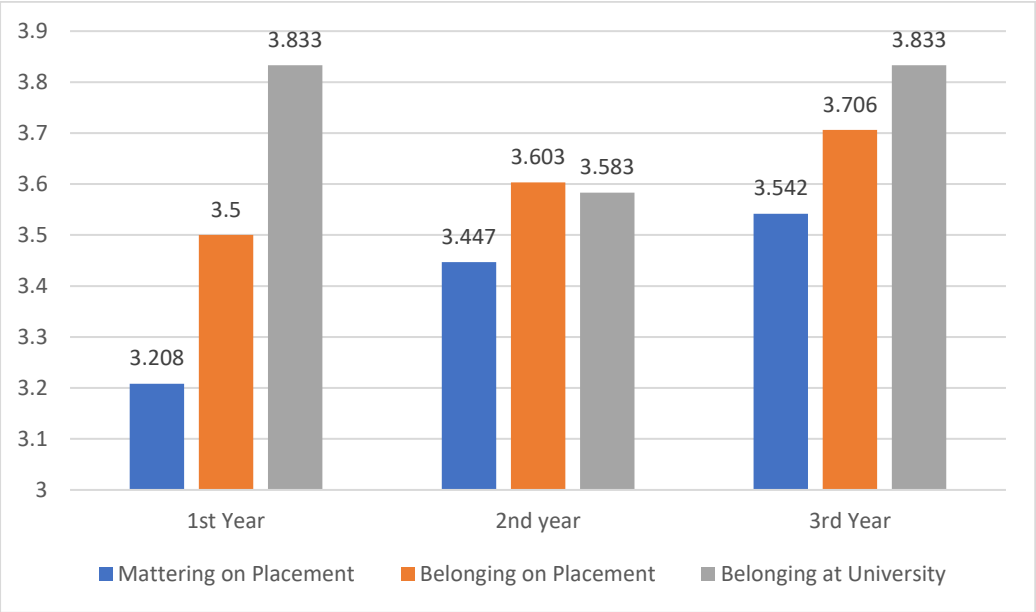
* = Relationship is significant at the 0.05 level (2-tailed) and is highlighted in orange, ** = Correlation is significant at the 0.01 level (2-tailed) and is highlighted in green.

Mean scores are highlighted in blue, with median scores highlighted in yellow

The belongingness at university and on clinical placement and mattering on clinical placement scales all showed a statistically significant variance with a p value of <0.05. Belonging at university was higher in the first year (3.833) and dipped in the second year (3.583) before increasing again in the third year (3.833). Both belonging and mattering on clinical placement progressively increased as students progressed from the first to the third year, with belonging on clinical placement scores increasing from 3.5 to 3.706, and mattering on clinical placement scores increasing from 3.208 to 3.542. Increases and decreases can be seen in both the mean and the median values. During clinical placement students mainly observe or work under direct supervision, progressing until the third year where they work as a supervised member of the team with increased knowledge of processes and procedures. This 'usefulness' as a team member is a likely factor in the increasing feelings of belonging and mattering. Again, there are much larger standard deviations for belonging at university across the year groups, and this suggests that university experiences are more varied across students than their experiences on clinical placement.

Figure 5.1 below shows a comparison of the belonging at university score and the belonging and mattering on clinical placement scores against the academic year of study using the median value.

Figure 5.1 Comparison of belongingness, mattering on clinical placement and year of study



This chart visually shows the increase in belonging and mattering scores on clinical placement from the first through to the third year, and the scale of the chart has been chosen to visually amplify the differences between scores. A dip in belonging at university scores can be seen in 2nd year participants.

5.4.4 Belonging and mattering and ethnicity

Table 5.6 below shows the comparison of belonging and mattering scales by participant's ethnicity. The data relating to Chinese students is not shown due to only 1 participant identifying themselves as Chinese, and the potential for identification. The mean, median and standard deviations for each scale are shown, including the total numbers of participants. There was no significant variance in the mattering or belonging at university scales and ethnicity and so these scales are not included.

Table 5.6 Comparison of belonging and mattering by ethnicity

		Belonging on clinical placement	**Mattering on clinical placement**
Kruskal-Wallis p values <0.05		0.004**	0.002**
White	Mean	3.649	3.422
	Median	3.618	3.542
	Standard deviation	0.570	0.674
	N= 132	131	131
Asian	Mean	3.489	3.189
	Median	3.559	3.271
	Standard deviation	0.467	0.540
	N= 58	58	58
Black	Mean	3.314	3.160
	Median	3.191	3.125
	Standard deviation	0.433	0.574

	N= 46	42	44
Mixed	Mean	3.789	3.721
	Median	3.765	3.750
	Standard deviation	0.588	0.41
	N= 10	10	10
Other	Mean	3.530	3.073
	Median	3.618	3.104
	Standard deviation	0.570	0.599
	N= 12	11	12

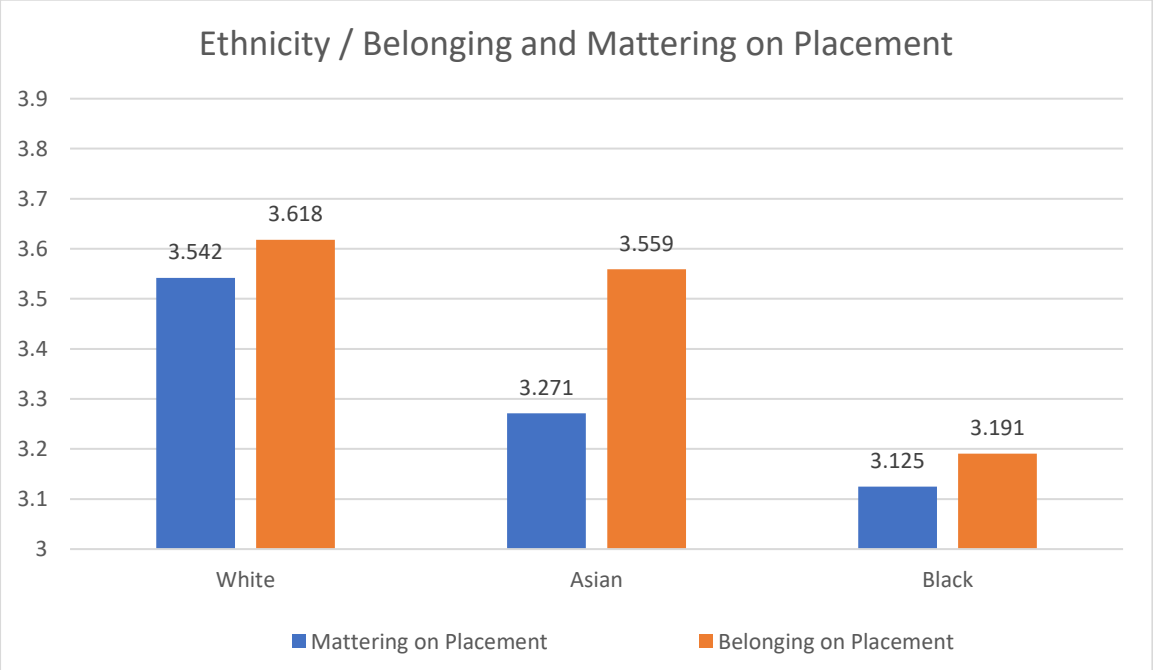
** = Correlation is significant at the 0.01 level (2-tailed) and is highlighted in green.

Mean scores are highlighted in blue, with median scores highlighted in yellow

The sample included very small numbers of mixed (n=10) and other ethnicity (n=12) participants and so statistical analysis is limited for these groups. When comparing the White, Asian and Black students, Black students have the lowest scores (both mean and median) for both belonging (3.191) and mattering (3.125) on clinical placement whilst White students have the highest scores (both mean and median) for both belonging (3.618) and mattering (3.542) on clinical placement.

Figure 5.2 below shows the three largest ethnic groups and their median scores across the belonging and mattering on clinical placement scales.

Figure 5.2 Comparison of belonging and mattering on clinical placement by ethnicity



This chart visually demonstrates the significantly lower scores (3.271) for Asian students, and even lower scores (3.125) for Black students in relation to White students (3.542) for mattering on clinical

placement. Asian students have slightly lower scores (3.559) than White students (3.618) for belonging on clinical placement, with Black students having the lowest scores (3.191). Sedgwick et al. (2014) found that minority students experienced bias that impacted on their ability to feel a sense of belonging, and these results support Sedgwick et al*'s*. (2014) findings.

5.4.5 Belonging and mattering and dependants, term address, and English as first language

Table 5.7 below shows the comparison of belonging and mattering scales with participant's who have dependants, whether their term time address is the same as their home address, and if their first language is English. The mean, median and standard deviations for each scale are shown, including the total numbers of participants. There was no significant variance in the mattering on clinical placement scale and so this scale is not included.

Table 5.7 Comparison of belonging and mattering by dependants, term time address and language

		Belonging at university	**Belonging on clinical placement**	**Mattering at university**
Mann-Whitney U p values <0.05		0.008**	0.839	0.046*
Yes (has dependants)	Mean	3.733	3.538	3.449
	Median	3.833	3.618	3.489
	Standard deviation	0.766	0.543	0.377
	N= 112	112	111	112
No (does not have dependants)	Mean	3.445	3.557	3.365
	Median	3.583	3.529	4.417
	Standard deviation	0.886	0.535	0.385
	N= 145	144	140	144
Mann-Whitney U p values <0.05		<.001**	0.926	0.073
Yes (same term time and home address)	Mean	3.722	3.547	3.428
	Median	3.833	3.588	3.458
	Standard deviation	0.766	0.529	0.397
	N= 162	162	160	162
No (different term time and home address)	Mean	3.329	3.559	3.359
	Median	3.500	3.529	3.381
	Standard deviation	0.892	0.553	0.366
	N= 102	101	98	101
Mann-Whitney U p values <0.05		0.964	0.021*	0.015*
Yes (English is first language)	Mean	3.571	3.593	3.427
	Median	3.667	3.588	3.458
	Standard deviation	0.833	0.521	0.382
	N= 203	203	201	203

No (English not first language)	Mean	3.552	3.387	3.288
	Median	3.750	3.500	3.271
	Standard deviation	0.867	0.572	0.39
	N= 59	58	55	58

* = Relationship is significant at the 0.05 level (2-tailed) and is highlighted in orange, ** = Correlation is significant at the 0.01 level (2-tailed) and is highlighted in green.

Mean scores are highlighted in blue, with median scores highlighted in yellow.

Whether or not a participant has dependants living at home is statistically significant for both belonging ($p<0.008$) and mattering ($p<0.046$) at university. Students with dependants have higher scores for belonging (3.833) at university in comparison to students without dependants (3.583), whilst students with dependants have lower scores (3.489) for mattering at university than those without dependants (4.417). The mean and median scores for students without dependants on the mattering at university scale vary. The mean score is lower (3.365) whilst the median is higher (4.417). This difference is caused by the impact of outliers, and the median is a truer representation, with 50% of scores above this value and 50% below.

Whether or not a participant has the same term time address as their home address has a strong statistical relationship with belonging at university ($p<0.001$), and students with the same term-time and home address have higher scores (3.833) than those who do not (3.5). The students commuting from home to the university score statistically higher for belongingness at university.

Whether or not a participant's first language is English has a statistical relationship with feelings of belonging on clinical placement ($p<0.021$) and mattering at university ($p<0.015$), based on median scores. Students whose first language is not English have lower median scores for belonging on clinical placement (3.5) and mattering at university (3.271) than those whose first language is English (3.588 and 3.458).

5.4.6 Belonging and mattering, seriously considering dropping out and feeling 'at home'

Table 5.8 below shows the comparison of belonging and mattering scales by whether participant's have seriously considered dropping out of the course of study, and where they feel most at home. The mean, median and standard deviations for each scale are shown, including the total numbers of participants.

Table 5.8 Comparison of belonging and mattering by considerations of dropping out and feelings of 'at home'

		Belonging at university	Belonging on clinical placement	Mattering at university	Mattering on clinical placement
Seriously considered dropping out					
Mann-Whitney U p values <0.05		<0.001**	0.040*	<0.001**	0.019*
No	Mean	3.790	3.599	3.478	3.377
	Median	3.833	3.588	3.500	3.500
	Standard deviation	0.710	0.509	0.348	0.597
	N= 173	172	169	173	171
Yes	Mean	3.149	3.455	3.246	3.194
	Median	3.167	3.471	3.250	3.208
	Standard deviation	0.905	0.580	0.410	0.680
	N= 90	90	88	89	89
Where students feel most 'at home'					
Kruskal-Wallis p values <0.05		<0.001**	<0.001**	<0.001**	<0.001**
University	Mean	3.910	3.358	3.474	3.029
	Median	4.000	3.382	3.522	3.083
	Standard deviation	0.615	0.471	0.3889	0.537
	N= 87	87	85	86	85
Clinical placement	Mean	3.333	3.908	3.362	3.684
	Median	3.500	3.809	3.333	3.646
	Standard deviation	0.984	0.453	0.368	0.582
	N= 65	65	64	65	64
Both	Mean	3.917	3.730	3.537	3.578
	Median	4.000	3.794	3.562	3.625
	Standard deviation	0.616	0.412	0.340	0.463
	N= 52	52	52	52	52
Neither	Mean	3.011	3.280	3.213	3.099
	Median	3.167	3.235	3.167	3.250
	Standard deviation	0.74	0.550	0.370	0.659
	N= 59	58	56	59	59

* = Relationship is significant at the 0.05 level (2-tailed) and is highlighted in orange, ** = Correlation is significant at the 0.01 level (2-tailed) and is highlighted in green.

Mean scores are highlighted in blue, with median scores highlighted in yellow.

Students who reported having seriously considered dropping out, and where they feel most at home is strongly statistically significant (p<0.001) across all the four scales across the whole sample of students. Students who have seriously considered dropping out have lower median scores across the four scales of belonging at university (3.167), belonging on clinical placement (3.471), mattering at university (3.250) and mattering on clinical placement (3.208) than those who had not seriously considered dropping out (3.833, 3.588, 3.5 and 3.5 respectively)

Students who reported that they felt most at home at university had higher median scores for the belonging (4.0) and mattering (3.522) at university scales, whereas students who reported that they felt most at home on clinical placement had higher median scores for the belonging (3.809) and mattering (3.646) on clinical placement scales. Students who reported that they felt at home in both environments had higher median scores across all four scales (4.0, 3.794, 3.562 and 3.625), than those who reported they felt at home in neither environment (3.167, 3.235, 3.167 and 3.25). This provides assurance in the validity of the scales, in that the scores of belongingness and mattering are correlating with where students report feeling most 'at home'. As seen previously, the standard deviations are again higher for the placement scales than for the university scales, indicating a wider range of experiences on clinical placement.

Figure 5.3 below shows the median scores across the four scales of belonging and mattering at university and on clinical placement in relation to participants who have or have not seriously considered dropping out of their studies.

Figure 5.3 Belonging and mattering and considerations of dropping out

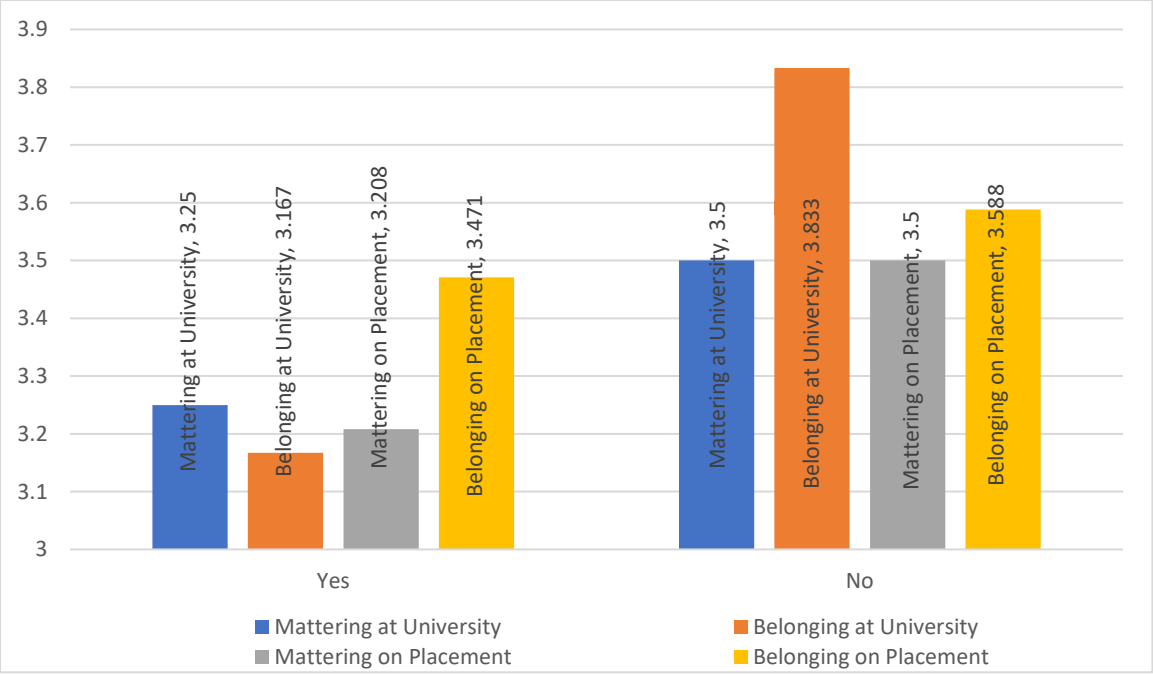


Figure 5.3 visually demonstrates the significantly lower scores across all four scales for those students who have seriously considered dropping out of their studies. The largest difference can be seen in the belonging at university scale. The scale has been chosen to visually amplify the differences between the scores.

5.4.7 Summary of Belonging and mattering across demographics

The first objective is:

1. To explore levels of student belonging across a range of demographics within undergraduate allied health professional students, in both the university and the clinical environment.

Student belonging at university is impacted by the course studied, the year or level of study, whether a student has dependants and whether a student has the same term-time address as their home address. First year students ($p<0.010$), students with dependants at home ($p<0.008$) and students who have the same term-time and home address (i.e., commuter students) ($p<0.001$) all have statistically significant higher levels of belonging at university.

Student belonging on clinical placement is impacted by the course studied ($p<0.004$), the year or level of study ($p<0.018$), the ethnicity of the student ($p<0.004$) and whether a student's first language is English ($p<0.021$). Third year students, White students and students who speak English as their first language all have statistically significant higher levels of belonging on clinical placement.

Students who had seriously considered dropping out of their studies had lower scores for belonging at university ($p<0.019$) and on clinical placement ($p<0.040$).

The second objective is:

2. To explore undergraduate allied health professional students' feelings of mattering, across a range of demographics, in both the university and the clinical environment

Student mattering at university is impacted by whether a student has dependants living at home and whether a student's first language is English. Students with dependants at home ($p<0.046$) and students who speak English as their first language ($p<0.015$) all have statistically significant higher levels of mattering at university.

Student mattering on clinical placement is impacted by the course studied ($p<0.020$), the year or level of study ($p<0.021$) and the ethnicity of the student ($p<0.002$). Third year students and White students all have statistically significant higher levels of mattering on clinical placement.

Students who had seriously considered dropping out of their studies had lower scores for mattering at university ($p<0.001$) and on clinical placement ($p<0.019$).

5.5 Student belonging and mattering

The third objective for this research is:

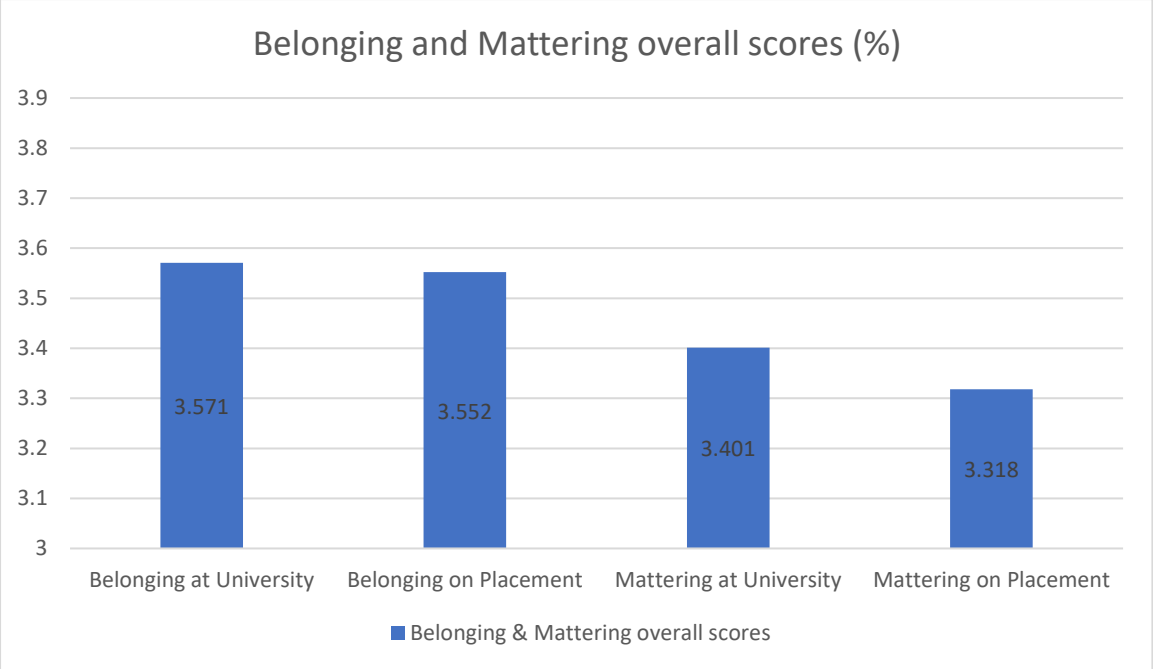
3. To investigate correlations between levels of belonging and mattering across both the university and clinical placement environments, in undergraduate allied health professional students.

5.5.1 Belonging and mattering and comparison of means scores

The overall scores for the four scales of belonging and mattering at university and on clinical placement were calculated by using the mean of all completed scales. Using the mean score enables a comparison across the four belonging and mattering scales, as each scale consists of differing numbers of items and therefore different maximum total scores.

Figure 5.4 below demonstrates a comparison of the scores across all students and all four scales.

Figure 5.4 Comparison of scores across the four belonging and mattering scales



The mean scores are higher for belonging at both university (3.571) and clinical placement (3.552) than mattering at university (3.401) and clinical placement (3.318), with both scores higher in the university setting than the clinical placement setting.

The scores across the four scales and all students can be explored further in table 5.9 below which details the descriptive statistics.

Table 5.9 Descriptive statistics of the four scales of belonging and mattering

Scale	No.	Missing	Mean	Median	Mode	Minimum	Maximum	Std. Deviation	Coefficient of variation	Skewness
Belonging university	263	1	3.571	3.667	4.00	1.000	5.000	0.837	23.4%	-0.678

Belonging clinical placement	258	6	3.552	3.582	3.71	1.818	4.912	0.537	15.1%	-0.056
Mattering university	263	1	3.401	3.417	3.63	2.174	4.292	0.386	11.4%	-0.262
Mattering clinical placement	261	3	3.318	3.375	3.625	1.375	5.000	0.632	19.1%	-0.338

Table 5.9 above highlights that the mean, median and mode are all higher for the belongingness scales than for the mattering scales. The mean for belonging at university and on clinical placement was 3.571 and 3.552 respectively, whereas the mean for mattering at university and clinical placement was 3.401 and 3.318 respectively. The median for belonging at university and on clinical placement was 3.667 and 3.582 respectively, whereas the median for mattering at university and clinical placement was 3.417 and 3.3375 respectively. The mode for belonging at university and on clinical placement was 4.0 and 3.71 respectively, whereas the mode for mattering at university and clinical placement was 3.63 and 3.625 respectively. The skewness demonstrates that all four scales are negatively skewed, which indicates that for each scale more participants scored less than the mean score than the number of participants who scored higher than the mean score. As the scales have differing numbers of items and total scores, the coefficient of variance has been used alongside the standard deviation, which indicates the size of the variability in relation to the mean. As is shown, there is higher variance in the scores for belonging at university (23.4%) than for belonging on clinical placement (15.1%), and mattering on clinical placement (19.1%), with the least variance in the scores for mattering at university (11.4%).

5.5.2 Belonging and mattering correlations

Spearman's rank order correlation was used to measure for association between the four scales (Laerd Statistics, 2018) due to the data being considered non-parametric.

Table 5.10 below shows the correlations of the four scales, including the correlation coefficient from Spearman's rank order correlation, and the significance.

Table 5.10 Correlations between the four scales of belonging and mattering

	Belonging at university	**Belonging on clinical placement**	**Mattering at university**	**Mattering on clinical placement**
Belonging at university	1	0.197 ** 0.002	0.471 ** <0.001	0.134 * 0.030

Belonging on clinical placement	0.197 ** 0.002	1	0.324 ** <0.001	0.773 ** <0.001
Mattering at university	0.471 ** <0.001	0.324 ** <0.001	1	0.286 ** <0.001
Mattering on clinical placement	0.134 * 0.030	0.773 ** <0.001	0.286 ** <0.001	1

** - correlation is significant at the 0.01 level (2-tailed)

*- correlation is significant at the 0.05 level (2-tailed)

All scales are positively correlated with each other, and so as scores for belongingness increase, so do scores for mattering, and as scores for belonging and mattering at university increase, so do scores for belonging and mattering on clinical placement. The strength of the relationship was determined using guidance by Salkind and Frey (2022). There was a strong positive correlation between mattering on clinical placement and belonging on clinical placement (r_s=0.773, p<0.001), and a moderate positive correlation between mattering at university and belonging at university (r_s=0.471, p<0.001). There was a weak positive correlation between mattering at university and belonging on clinical placement (r_s=0.324, p<0.001), and between mattering at university and mattering on clinical placement (r_s=0.286, p<0.001). There was a very weak positive correlation between belonging at university and belonging on clinical placement (r_s=0.197, p<0.002), and between belonging at university and mattering on clinical placement (r_s=0.134, p<0.030).

5.5.3 Mattering scales comparison of items

The mattering at university and mattering on clinical placement scales can be directly compared as these are the same scales, with the same number of questions and same wording of questions, contextualised to the university or clinical placement environment. Table 5.11 below ranks each item of the scale in order of the average mean score across all participants.

Table 5.11 Ranking of items in mattering at university and clinical placement scales

Item – Mattering at University		Mean score	Place diff. MU -> MP	Item – Mattering on Clinical Placement		Mean score
17	No one would notice if one day I disappeared	4.035	6	15	There are people in my life who care enough about me to criticise me when I need it	3.903
24	Often people trust me with things that are important to them	3.837	18	7	For better or worse, people generally know when I am around	3.746
5	For whatever reason, it is hard for me to get other people's attention	3.834	2	4	People are usually aware of my presence	3.745
2	In a social gathering, no one recognises me	3.811	8	9	People do not care what happens to me	3.633
3	Sometimes when I am with others, I feel almost as if I were invisible	3.794	12	5	For whatever reason, it is hard for me to get other people's attention	3.63
13	When I have a problem, people usually don't want to hear about it	3.784	0	13	When I have a problem, people usually don't want to hear about it	3.60
8	People tend not to remember my name	3.651	6	17	No one would notice if one day I disappeared	3.60
15	There are people in my life who care enough about me to criticise me when I need it	3.65	7	12	I have noticed that people will sometimes inconvenience themselves to help me	3.51
9	People do not care what happens to me	3.624	5	16	There is no one who really takes pride in my accomplishments	3.504
4	People are usually aware of my presence	3.613	7	6	Whatever else may happen, people do not ignore me	3.49
6	Whatever else may happen, people do not ignore me	3.610	1	1	Most people do not seem to notice when I come or when I go	3.368
16	There is no one who really takes pride in my accomplishments	3.567	3	2	In a social gathering, no one recognises me	3.355
7	For better or worse, people generally know when I am around	3.565	11	8	People tend not to remember my name	3.31
20	I am not someone people turn to when they need something	3.505	4	14	Much of the time, other people are indifferent to my needs	3.308
19	Quite a few people look to me for advice on issues of importance	3.445	9	11	My successes are a source of pride to people in my life	3.267
18	If the truth be known, no one really needs me	3.435	0	18	If the truth be known, no one really needs me	3.21
1	Most people do not seem to notice when I come or when I go	3.33	6	3	Sometimes when I am with others, I feel almost as if I were invisible	3.205
23	People count on me to be there in times of need	3.30	3	20	I am not someone people turn to when they need something	3.164
14	Much of the time, other people are indifferent to my needs	3.284	5	10	There are people in my life who react to what happens to me in the same way they would if it had happened to them	3.12
22	When people need help, they come to me	3.274	3	24	Often people trust me with things that are important to them	3.11
21	People tend to rely on me for support	3.272	1	23	People count on me to be there in times of need	2.875
11	My successes are a source of pride to people in my life	2.175	7	21	People tend to rely on me for support	2.80
12	I have noticed that people will sometimes inconvenience themselves to help me	2.13	15	22	When people need help, they come to me	2.68
10	There are people in my life who react to what happens to me in the same way they would if it had happened to them	2.10	5	19	Quite a few people look to me for advice on issues of importance	2.482

There are 6 items that are ranked in the top half of one scale, but the bottom half of the other scale. The following 3 items rank highly on the mattering at university scale, but low on the mattering on clinical placement scale:

- Often people trust me with things that are important to them (mean score of 3.837 on mattering at university scale, and 3.11 on mattering on clinical placement scale).
- Sometimes when I am with others, I feel almost as if I were invisible (mean score of 3.794 on mattering at university scale, and 3.205 on mattering on clinical placement scale).
- People tend not to remember my name (mean score of 3.651 on mattering at university scale, and 3.31 on mattering on clinical placement scale).

The following 3 items rank highly on the mattering on clinical placement scale, but low on the mattering at university scale:

- For better or worse, people generally know when I am around (mean score of 3.746 on mattering on clinical placement scale, and 3.565 on mattering at university scale).
- Most people do not seem to notice when I come or when I go (mean score of 3.368 on mattering on clinical placement scale, and 3.33 on mattering at university scale).
- I have noticed that people will sometimes inconvenience themselves to help me (mean score of 3.51 on mattering on clinical placement scale, and 2.13 on mattering at university scale).

A score of 3 on the scale is a neutral feeling (with neutral being the central option in the 5-point likert scale), with a score below 3 indicating a negative response. In the mattering at university scale 3 items had a mean score across all participants of below 3:

- My successes are a source of pride to people in my life (2.175).
- I have noticed that people will sometimes inconvenience themselves to help me (2.13).
- There are people in my life who react to what happens to me in the same way they would if it had happened to them (2.10).

In the mattering on clinical placement scale, 4 items had an average score across all participants of below 3:

- People count on me to be there in times of need (2.875).
- People tend to rely on me for support (2.80).
- When people need help, they come to me (2.68).
- Quite a few people look to me for advice on issues of importance (2.482).

5.5.4 Belonging scales rank of items

The items on the belonging at university and belonging on clinical placement scales cannot be directly compared as the items within the scales are different. Yorke's (2016) belonging scale consists of 6

items, with Levett-Jones et al's (Levett-Jones et al., 2009a) BS-CPE scale consisting of 34 items. However, they can be scrutinised individually. Table 5.12 below ranks each item of the belonging at university scale in order of the mean score across all participants.

Table 5.12 Ranking of items in belonging at university scale

Item – Belonging at University		Mean score
5	I am shown respect by members of staff in this department	4.00
4	I have found this department to be welcoming	3.902
2	Being at this university is an enriching experience	3.52
1	I feel at home in this University	3.40
3	I wish I'd gone to a different University	3.32
6	Sometimes I feel I don't belong in this University	3.28

All items received, on average, a positive score above the neutral score of 3. Being shown respect scored particularly highly.

Table 5.13 below ranks each item of the belonging on clinical placement scale in order of the average mean score across all participants.

Table 5.13 Ranking of items in belonging on clinical placement scale

Item – Belonging on Clinical Placement		Mean score
2	It is important to feel accepted by my colleagues	4.42
32	I ask my colleagues for help when I need it	4.36
20	I ask for my colleagues' advice	4.31
5	I make an effort to help new students or staff feel welcome	4.27
10	I feel discriminated against on placements	4.17
19	I am supportive of my colleagues	4.17
11	I offer to help my colleagues, even if they don't ask for it	4.11
18	I make an effort when on placements to be involved with my colleagues in some way	4.00
7	I get support from colleagues when I need it	3.97
4	Colleagues offer to help me when they sense I need it	3.96
33	I like where I work on placements	3.87
31	I let me colleagues know that I appreciate them	3.87
3	Colleagues see me as a competent person	3.84
21	People I work with on placements accept me when I'm just being myself	3.82
9	I like the people I work with on placements	3.79
27	It seems that people I work with on placements like me	3.75
15	There are people that I work with on placements who share my values	3.66
34	I feel free to share my disappointments with at least one of my colleagues	3.62

6	I view my placements as a place to experience a sense of belonging	3.62
28	I let colleagues know I care about them by asking how things are going for them and their family	3.58
1	I feel like I fit in with others during my placements	3.56
25	There are people on placements with whom I have a strong bond	3.48
14	On placements I feel like an outsider	3.46
17	I feel understood by my colleagues	3.43
24	Feeling 'a part of things' is one of the things I like about going to placements	3.33
23	When I walk up to a group on a placement I feel welcomed	3.33
29	Colleagues notice when I am absent from placements or social gatherings because they ask about me	3.21
16	Colleagues ask for my ideas or opinions about different matters	3.17
22	I am uncomfortable attending social functions on placements because I feel like I don't belong	3.17
30	One of more of my colleagues confides in me	2.78
26	I keep my personal life to myself when I'm on placements	2.47
8	I am invited to social events outside of my placements by colleagues	2.14
13	I invite colleagues to eat lunch / dinner with me	2.11
12	It is important to me that someone at my placement acknowledges my birthday in some way	1.97

On average participants did not feel that they were discriminated against, as this item was reverse scored.

5.5.5 Summary of correlations between belonging and mattering

The third objective for this research is:

3. To investigate correlations between levels of belonging and mattering across both the university and clinical placement environments, in undergraduate allied health professional students.

Mean scores for belonging at university, belonging on clinical placement, mattering at university, and mattering on clinical placement all positively correlate with each other, as the score for one scale increases, as do the scores for the other scales. There was a strong positive correlation between mattering and belonging on clinical placement (r_s=0.773, p<0.001) and a moderate positive correlation between mattering and belonging at university (r_s=0.471, p<0.001). There are differences across the scales in how positively individual scale items are ranked highlighting both differences in experiences in the university and the clinical placement setting, as well as differences in student expectations and behaviours deemed to be important in each setting.

5.6 Grade outcome

The fourth objective for the research is:

4. To investigate correlations between feelings of belonging and mattering and grade outcome in undergraduate allied health professional students.

5.6.1 Grade outcome and student demographics

Firstly, an exploratory analysis of the academic data was undertaken to identify areas of statistical significance across the student demographics. Table 5.14 below shows the *p*-value calculated for the mean academic grade for the year, across the participant demographics. This highlights where there is a statistically significant difference in mean academic grade, according to a specific demographic. Values below 0.05 are statistically significant and are highlighted in the table.

Table 5.14 Statistical significance of demographics on grade outcome

Demographic	Statistical test	grade outcome
Course	Kruskal-Wallis	0.017*
Year of study	Kruskal-Wallis	0.679
Gender	Mann-Whitney U	0.491
Age	Kruskal-Wallis	0.116
Dependants (living at home)	Mann-Whitney U	0.691
Ethnicity	Kruskal-Wallis	<0.001**
English as first language	Mann-Whitney U	0.021*
Home address same as term address	Mann-Whitney U	0.965
Previously attended university course	Mann-Whitney U	0.056
Previously worked clinical / care environment	Mann-Whitney U	0.108
First generation student	Mann-Whitney U	0.526
Considered dropping out	Mann-Whitney U	0.002**
Most 'at home'	Kruskal-Wallis	0.871

* = Relationship is significant at the 0.05 level (2-tailed) and is highlighted in orange, ** = Correlation is significant at the 0.01 level (2-tailed) and is highlighted in green.

The shading in table 5.14 indicates that the course of study ($p<0.017$), student ethnicity ($p<0.001$), and serious considerations of dropping out ($p<0.002$) all had a statistically significant relationship with grade outcome.

5.6.2 Grade outcome and course studied

Table 5.15 below shows the comparison of the mean grade outcome across the six courses. The mean, median and standard deviations for each scale are shown. The total numbers of participants for each

course are also included, with the percentage of students on each of the six courses being overviewed earlier in table 5.1.

Table 5.15 Comparison of grade outcome by course

		Grade outcome
Kruskal-Wallis p values <0.05		0.017*
Radiotherapy	Mean	55.844
	Median	56.750
	Standard deviation	9.910
	N=37	37
Diagnostic Radiography	Mean	60.707
	Median	59.830
	Standard deviation	10.785
	N=103	101
Medical Ultrasound	Mean total	62.521
	Median	63.500
	Standard deviation	8.921
	N=8	8
Paramedic Science	Mean total	60.216
	Median	64.165
	Standard deviation	14.629
	N=34	34
BSc (Hons) Operating Department Practice	Mean total	54.780
	Median	63.500
	Standard deviation	23.366
	N=26	25
Dip HE Operating Department Practice	Mean total	62.638
	Median	67.670
	Standard deviation	19.935
	N=56	51

* = Relationship is significant at the 0.05 level (2-tailed) and is highlighted in orange

Mean scores are highlighted in blue, with median scores highlighted in yellow

The grade outcome of students differs across the courses, with students from Dip HE operating department practice having higher average grades (67.67) and students from radiotherapy having the lowest average grades (56.75). As each course is structured with differing modules, assessments and credit structures, there are many variables that may affect differences in student academic grades across the courses. Teaching teams will also differ across the courses, each with their own expectations of quality and standards of assessments. When considering the departments that the courses are part of, the courses within the department of radiography (radiotherapy, diagnostic radiography and medical ultrasound) have lower academic grades (56.75, 59.83 and 63.6) than the department of paramedic science and operating department practice (64.165, 63.5 and 67.67).

5.6.3 Grade outcome and ethnicity

Table 5.16 below shows the comparison of the mean grade outcome by participant's ethnicity. The data relating to Chinese students is not shown due to only one participant identifying themselves as Chinese, and the potential for identification. The mean, median and standard deviations for each scale are shown, including the total numbers of participants.

Table 5.16 Comparison of grade outcome by ethnicity

		Grade outcome
Kruskal-Wallis p values <0.05		<0.001**
White	Mean	63.514
	Median	66.00
	Standard deviation	14.594
	N= 132	131
Asian	Mean	57.715
	Median	59.000
	Standard deviation	12.144
	N= 58	57
Black	Mean	52.541
	Median	55.165
	Standard deviation	17.122
	N= 46	44
Mixed	Mean	65.187
	Median	61.480
	Standard deviation	7.392
	N= 10	8
Other	Mean	51.605
	Median	54.585
	Standard deviation	17.862
	N= 12	10

** = Correlation is significant at the 0.01 level (2-tailed) and is highlighted in green.

Mean scores are highlighted in blue, with median scores highlighted in yellow

The sample included very small numbers of mixed (n=10) and other ethnicity (n=12) participants and so statistical analysis is limited for these groups. When comparing the White, Asian, and Black students, Black students have the lowest academic grade averages (55.165) whilst White students have the highest academic grade averages (66.0). Asian students had a median average grade of 59.00.

Figure 5.5 below shows the three largest ethnic groups and their median academic grade averages.

Figure 5.5 Comparison of grade outcome by ethnicity

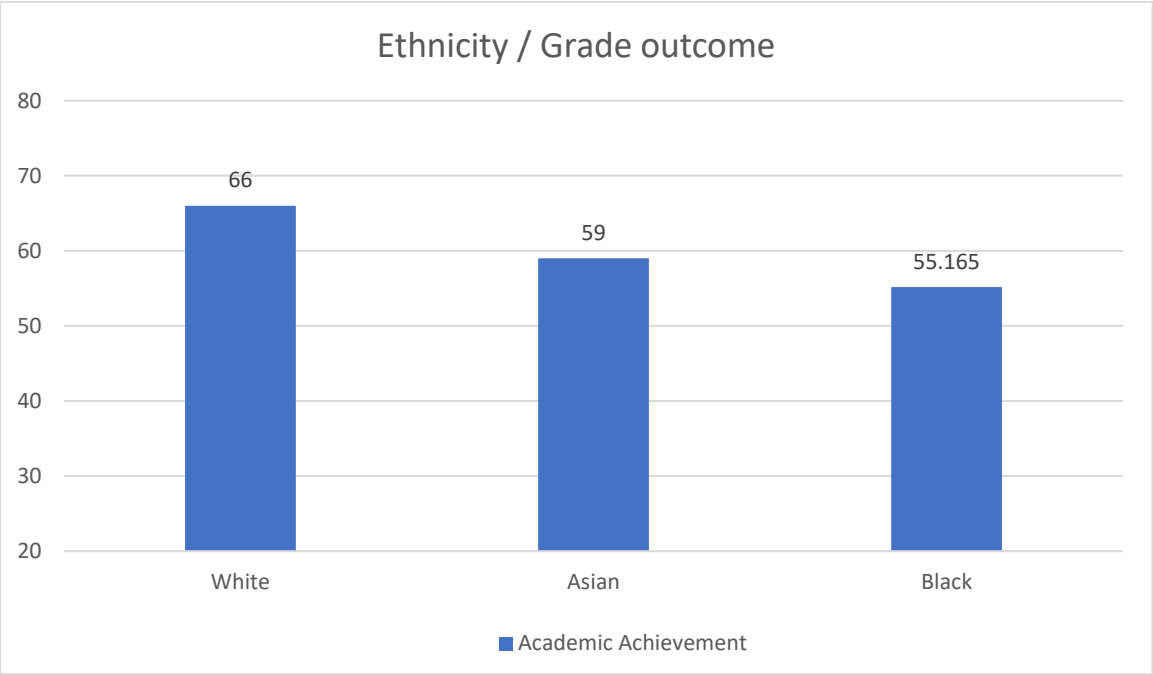


Figure 5.5 visually demonstrates the significantly lower scores (59.0) for Asian students, and even lower scores (55.165) for Black students in relation to White students (66.0) for grade outcome. This demonstrates a significant awarding gap in Asian and Black students in comparison to white students.

5.6.4 Grade outcome and seriously considering dropping out

Table 5.17 below shows the comparison of belonging and mattering scales by whether participant's have seriously considered dropping out of the course of study, and where they feel most at home. The mean, median and standard deviations for each scale are shown, including the total numbers of participants.

Table 5.17 Comparison of grade outcome by considerations of dropping out and feelings of being 'at home'

		Grade outcome
Mann-Whitney U p values <0.05		0.002**
No	Mean	62.002
	Median	63.500
	Standard deviation	13.722
	N= 173	167
Yes	Mean	55.608
	Median	59.750
	Standard deviation	16.578
	N= 90	88

** = Correlation is significant at the 0.01 level (2-tailed) and is highlighted in green.

Mean scores are highlighted in blue, with median scores highlighted in yellow.

Students who had seriously considering dropping out of their course of study had statistically significant lower average academic grades (59.750) than students who had not seriously considered dropping out (63.500).

5.6.5 Grade outcome, belonging and mattering

To investigate correlations the Spearman's rank order correlation for non-parametric data was used to determine the strength and direction of any association between the belonging and mattering scales, and the grade outcome of students. The average grades, plus mean scores for the mattering at university, mattering on clinical placement, belonging at university, and belonging on clinical placement scales were analysed.

Table 5.18 below shows the correlations of the four scales against grade outcome of students, including the correlation coefficient from Spearman's rank order correlation and the significance.

Table 5.18 Correlations between grade outcome and the four scales of belonging and mattering

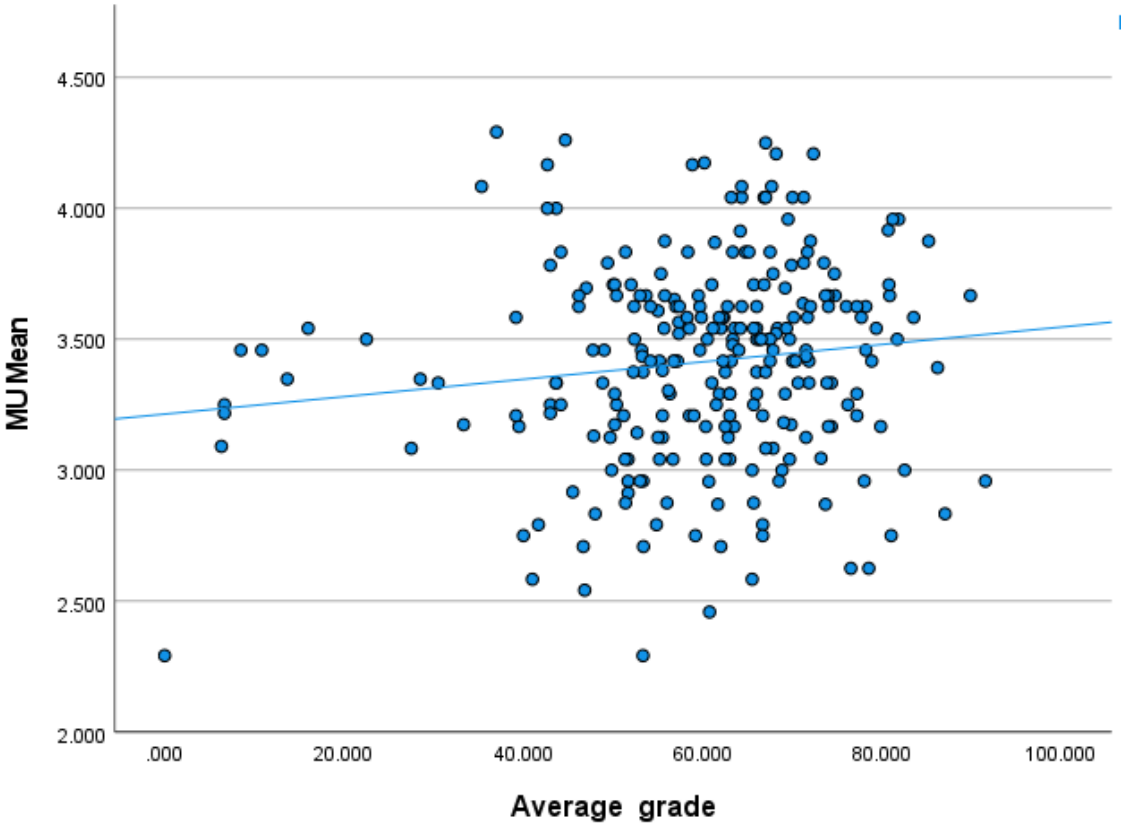
		Grade outcome
Belonging at University	Correlation Coefficient	0.004
	Significance	0.944
Belonging on Clinical Placement	Correlation Coefficient	-0.050
	Significance	0.432
Mattering at University	Correlation Coefficient	0.141 *
	Significance	0.025
Mattering on Clinical Placement	Correlation Coefficient	-0.023
	Significance	0.720

*- correlation is significant at the 0.05 level (2-tailed)

There is a very weak and positive significant correlation at the 0.05 level (2-tailed) between the mattering at university scale and grade outcome (r_s=0.141, p<0.025). There was no statistically significant correlation between grade outcome and belonging at university (r_s=0.004, p<0.944), belonging on placement (r_s=-0.050, p<0.432), or mattering on placement (r_s=-0.023, p<0.720).

Figure 5.6 below provides a scattergram visualisation of the correlation between grade outcome and mattering at university which shows a very weak but positive correlation, highlighted by the line of best fit for a linear relationship.

Figure 5.6 Scatter plot of mattering at university and grade outcome



5.6.6 Academic progression, grade outcome, belonging and mattering

Analysis of the data was undertaken to identify areas of statistical significance across the four belonging and mattering scales in addition to grade outcome, with student progression factors of passing all modules at the first attempt, withdrawing from studies during the academic year, taking interruption of studies during the academic year, having a successful claim for extenuating circumstances and successfully proceeding into the next year of studies (1st and 2nd years students), or being awarded (3rd year students). Table 5.19 below shows the *p*-value calculated for the four scales and the academic grade across the academic progression factors. This highlights where there is a statistically significant difference in the belonging, mattering or academic grade, according to a specific academic progression factor. Values below 0.05 are statistically significant and are highlighted in the table.

Table 5.19 Academic progression and mattering and belonging across the four scales

Academic progression	**Statistical test**	**Belonging at university**	**Belonging on clinical placement**	**Mattering at university**	**Mattering on clinical placement**	**Grade outcome**
Passed at first attempt	Mann-Whitney U	0.888	0.330	0.006**	0.783	0.0005**
Withdrawn during year	Mann-Whitney U	0.080	0.286	0.248	0.169	<0.001**
Interruption	Mann-Whitney U	0.779	0.922	0.292	0.352	0.292
Extenuating circumstances claims	Mann-Whitney U	0.141	0.010**	<0.001**	0.24*	0.014*
Successfully proceeded / awarded	Mann-Whitney U	0.655	0.331	0.876	0.617	0.0005**

* = Relationship is significant at the 0.05 level (2-tailed) and is highlighted in orange, ** = Correlation is significant at the 0.01 level (2-tailed) and is highlighted in green.

The shading in table 5.19 indicates that students passing at the first attempt (p<0.0005), withdrawing during the academic year (p<0.001), having a successful claim for extenuating circumstances (p<0.014) and successfully proceeding or being awarded (p<0.0005) all have a statistically significant relationship with the academic grade for the year. This is unsurprising, as students who do not pass first time will have their resubmission mark capped at 40% and withdrawn students may not complete all academic modules for the year. Additionally, students who successfully proceed or are awarded must achieve a pass grade of at least 40% in all modules to complete the year.

Mattering on clinical placement showed a statistically significant relationship with students having successful extenuating circumstances claims (p<0.024), as did belonging on clinical placement (p<0.010). Mattering at university showed a statistically significant relationship with students who passed all modules at the first attempt (p<0.006) and having successful extenuating circumstances claims (p<0.001).

5.6.6.1 Passing at first attempt

Table 5.20 below shows the comparison of the mattering at university scale and grade outcome grades by whether the participants had passed all their academic modules at the first attempt. The mean, median and standard deviations for each scale are shown, including the total numbers of participants.

Table 5.20 Comparison of mattering at university and grade outcome with passing assessments at the first attempt

		Mattering at university	**Grade outcome**
Mann-Whitney U p values <0.05		0.006**	0.0005**
Yes (Passed at first attempt)	Mean	3.457	66.464
	Median	3.500	66.00
	Standard deviation	0.372	9.246
	N=156	156	156
No (Did not pass at first attempt)	Mean	3.345	49.407
	Median	3.333	51.275
	Standard deviation	0.386	16.376
	N=100	99	100

** = Correlation is significant at the 0.01 level (2-tailed) and is highlighted in green.

Mean scores are highlighted in blue, with median scores highlighted in yellow

Students who passed all their academic modules at the first attempt had statistically significant higher average academic grades (66.00) than students who were required to re-sit or resubmit an element of their course (51.275). This is expected, as students who are required to resubmit will have the resubmission mark capped at the 40% pass mark, which will impact their average grade for the year. Students who passed all their academic modules at the first attempt also had statistically significant

scores for feelings of mattering at university (3.50) than those who were required to re-sit or resubmit an element of their course (3.333).

5.6.6.2 Withdrawn during academic year

Table 5.21 below shows the comparison of the academic grades by whether the participants had withdrawn during the academic year. The mean, median and standard deviations for each scale are shown, including the total numbers of participants.

Table 5.21 Grade outcome and student withdrawal

		Grade outcome
Mann-Whitney U p values <0.05		<0.001**
Yes (withdrawn during academic year)	Mean	19.874
	Median	19.250
	Standard deviation	13.728
	N=12	12
No (Not withdrawn during academic year)	Mean	61.765
	Median	62.790
	Standard deviation	12.067
	N=244	244

** = Correlation is significant at the 0.01 level (2-tailed) and is highlighted in green.

Mean scores are highlighted in blue, with median scores highlighted in yellow

There were only 12 students who withdrew from their studies during the academic year within which data collection took place. Students who withdrew from their studies had statistically significant lower average academic grades (19.25) than students who remained enrolled in their studies for the entire academic year (62.79). This is expected, as students who have withdrawn may not have completed all their module assessments, which will impact their average grade for the year.

5.6.6.3 Successful extenuating circumstances claims

Table 5.22 below shows the comparison of the belonging at university and mattering at university and on clinical placement scales along with academic grades by whether the participant's had a successful claim for extenuating circumstances during the academic year. The mean, median and standard deviations for each scale are shown, including the total numbers of participants.

Table 5.22 Comparison of extenuating circumstance claims with mattering, belonging on clinical placement and grade outcome

		Belonging on clinical placement	**Mattering at university**	**Mattering on clinical placement**	**Grade outcome**
Mann-Whitney U p values <0.05		0.010**	<0.001**	0.24*	0.014*
Yes	Mean	3.277	3.168	3.056	53.384

	Median	3.265	3.208	3.261	55.500
	Standard deviation	0.463	0.335	0.575	15.084
	N= 23	23	23	23	23
No	Mean	3.591	3.438	3.360	60.435
	Median	3.588	3.458	3.437	62.750
	Standard deviation	0.532	0.377	0.619	14.897
	N= 233	228	232	230	233

* = Relationship is significant at the 0.05 level (2-tailed) and is highlighted in orange, ** = Correlation is significant at the 0.01 level (2-tailed) and is highlighted in green.

Mean scores are highlighted in blue, with median scores highlighted in yellow.

There were only 23 students who had a successful claim for extenuating circumstances during the academic year within which data collection took place. Students who had a successful claim for extenuating circumstances during the academic year had statistically significant lower average academic grades (55.50) than students who did not have a successful extenuating circumstance claim (62.75). This is expected, as students who have had a successful claim for extenuating circumstances upheld have experienced difficulties during their studies that have impacted on their ability to complete assessments. It is unsurprising that students with additional challenges achieve lower academic grades. Students who submitted a claim that was not successful, or experienced challenges without making a claim cannot be considered as this is not recorded within the student record system. Students who had a successful claim for extenuating circumstances upheld also had lowers scores for feelings of belonging on clinical placement (3.265), mattering at university (3.208) and mattering on clinical placement (3.261) in comparison to students who did not have a successful extenuating circumstance claim (3.588, 3.458 and 3.437).

5.6.6.4 Successfully proceeded / awarded

Table 5.23 below shows the comparison of the grade outcome grades by whether the participant's successfully proceeded to the next level of their studies, or were awarded if in their final year, by the end of the academic year in which data collection took place. The mean, median and standard deviations for each scale are shown, including the total numbers of participants.

Table 5.23 Grade outcome and student progression

		Grade outcome
Mann-Whitney U p values <0.05		0.0005**
Yes (proceeded or awarded at end of academic year)	Mean	63.691
	Median	63.500
	Standard deviation	10.167
	N=222	222
	Mean	34.403

No (Not proceeded or awarded at end of academic year)	Median	39.335
	Standard deviation	16.869
	N=34	34

** = Correlation is significant at the 0.01 level (2-tailed) and is highlighted in green.

Mean scores are highlighted in blue, with median scores highlighted in yellow

There were only 34 students who did not successfully proceed or receive their award during the academic year within which data collection took place. Students who successfully proceeded or received their award had statistically significant higher average academic grades (63.50) than students who did not proceed or receive their academic award (39.335). This is expected, as students who have not proceeded or been awarded will not have met the academic requirements for their studies, either due to academic failure, not attempting assessments or having extenuating circumstances. Incomplete module assessments will impact their average grade for the year.

5.6.7 Summary of correlations between belonging, mattering and grade outcome

The fourth objective for the research is:

4. To investigate correlations between feelings of belonging and mattering and grade outcome in undergraduate allied health professional students.

There is a statistically significant relationship between grade outcome and the students' course of study ($p<0.017$), the ethnicity of the student ($p<0.001$), whether a student has seriously considered dropping out ($p<0.002$) and feelings of mattering at university ($p<0.025$). There is no significant relationship between feelings of belonging and grade outcome.

There is a statistically significant relationship between students who passed their assessments at the first attempt and feelings of mattering at university ($p<0.006$) as well as grade outcome ($p<0.0005$). Grade outcome also has a statistically significant relationship with students having withdrawn during the academic year ($p<0.001$), and students who have successfully proceeded or been awarded ($p<0.0005$). There is a statistically significant relationship between students who have had a successful claim for extenuating circumstances and feeling of belonging on clinical placement ($p<0.010$), mattering at university ($p<0.001$), mattering on clinical placement ($p<0.24$) and grade outcome ($p<0.014$).

5.8 Reflection / positionality

When beginning this chapter and delving into statistical analysis my confidence levels were relatively high. I had performed statistical analysis previously, in both undergraduate and MSc research projects, and I was hopeful the analysis process would be straightforward and enjoyable. In hindsight I was

naïve of the volume of data that I had collected, and the huge amount of time involved in transcribing the data into excel, cleaning the data and performing initial scoping exercises to begin to understand the data that I had.

After working in HE for 18 years, it would be disingenuous to claim no personal expectations of trends or correlations that I expected to see in the data analytics. I approached the analysis with an open mind, but there were times when I felt personal surprise by the results that I was seeing, and this has challenged some of the personal assumptions that I may make when supporting students. When transcribing answers from the questionnaires into spreadsheets, I also felt saddened by some of the low mattering scores held by individuals when I know how much each of the students matters to both me and the wider teaching team that I am a part of.

After collecting and carrying out the initial scoping of the data there was a period that this chapter was set aside before returning to compete the analysis. The death of my beloved mother during the data collection meant that for a time I could not face the prospect of completing this research without her here to see it, and so some time away from the data was necessary. When returning to the analysis I felt more removed and objective from the data as I was no longer involved in teaching the participants.

Once I was absorbed in the data analysis, I quickly realised that I was on a steep learning curve in relation to not just inferential statistics, but the use of SPSS. The analysis undertaken in this chapter was my first foray into the world of SPSS and the software took some time to get used to. I sought support and guidance from colleagues far more experienced and knowledgeable in statistical analysis and the advice I was given was invaluable in shaping this chapter.

During the data analysis I began to talk more openly with colleagues about my research and the findings that I was beginning to see, and I received a great deal of interest and positive comments. Colleagues began to ask about the publication of my research, not just out of politeness, but because they were interested in reading and referring to my work. This provided me with a much-needed motivational boost and I began to feel excited about completing the analysis and being able to move forward and fully consider the impact of my work.

Chapter 6 Discussion

6.1 Introduction

This chapter will discuss the key findings of the research and will consider how the findings contribute to existing literature. Student demographics are initially considered and the relationship between each of these with belonging, mattering and grade outcome. Subsequently belonging and mattering correlations and comparison of scale items will be explored, followed by a discussion on grade outcome, and finally predicting grade outcome. This chapter will end with a summary and a brief reflection.

6.2 Demographics

6.2.1 Course studied

Previous literature has considered a wide variety of variables that will impact belonging in both the academic and the clinical placement environments (Crawford et al., 2022; Humphrey and Lowe, 2017; Kelly and Mulrooney, 2019; Meehan and Howells, 2019). There is no similar literature into the variables that may affect mattering. Whilst there is research into variables indicating the reasons for varying levels of belonging across the different courses, research that compares how belonging and mattering may vary across the courses at a single university and placements has not previously been undertaken. Exploring how belonging and mattering varies across courses at a single university is useful because this enables the importance of course level differences that impact belonging to be identified when Faculty level differences and student backgrounds and demographics are consistent. This provides a deeper understanding of how feelings of belonging may be impacted.

Without the findings of this research, it could be assumed that students of a similar demographic profile all studying allied health courses at one HEI would have similar levels of belonging and mattering. The results highlight that this is not the case and that the programme of study of student health professionals impacts student belonging at university and belonging and mattering on clinical placement. The strongest significance was the low score for belonging at university in paramedic science, and the low scores for belonging and mattering on clinical placement for ODP. Within these findings students from radiotherapy and diagnostic radiography had higher scores of belonging at university, students from radiotherapy, medical ultrasound and paramedic science had higher scores for belonging on clinical placement, and students from radiotherapy and paramedic science had higher scores for mattering on clinical placement. Additionally, the findings revealed a statistically significant

relationship between the students' course of study and grade outcome ($p<0.017$). The courses where students achieved the lowest mean academic grades were BSc (Hons) Radiotherapy and BSc (Hons) Operating Department Practice.

The reasons behind course level and clinical profession differences on the students' sense of belonging or mattering was unknown. The differences in belonging and mattering across the courses is unrelated to the size of the cohort or the entry requirements on to the course. Students with higher-ranking items in the scales suggest they are feeling respected, welcomed, and noticed more than others, this suggests that the relationships with staff (both in the hospital and clinical settings) may have a significant impact on the differences between belonging and mattering across courses. Teaching staff across the courses and the placements may have different behaviours, and different professions have different multidisciplinary team dynamics and types of teamworking, (HEE, 2019; Wilkinson, 2023). Bourdieu's social identity theory (Bourdieu, 1986) can be utilised to consider that students from different backgrounds may be predisposed to particular educational disciplines or professions. As Bourdieu's concept of field suggests that people are defined by their positions within the space of the social world (Bathmaker, 2015) and so a student's upbring, values and exposure will shape their choice of career and pathway into higher education. Some academic disciplines will carry greater social and cultural capital within higher education than others and feel more accessible, for example prestigious medicine and law courses in comparison to art or vocational courses, and therefore students may enter higher education with unequal levels of belonging and mattering across the courses of study. A student's sense of mattering is also unlikely to be evenly distributed across courses, being shaped by habitus, capital and position within the academic field, and so students in higher status disciplines may feel inherently more valued.

With regards to grade outcome, research indicates that students with lower A level grades will have lower degree attainment (Vidal Rodeiro and Zanini, 2015), and the operating department practice course has lower entrance requirements, whilst radiotherapy struggles to recruit and so has a higher percentage of students from access courses or BTEC backgrounds. However, the DipHE courses have the lowest entry requirements (BCU, 2023) but the findings indicate the highest mean academic grades, and so entrance requirements cannot fully explain these findings. Additionally, within these findings, radiotherapy students had higher levels of belonging and mattering, but lower mean academic grades, with Dip HE operating department practice students scoring lower for belonging and mattering but having higher mean grades and so belonging and mattering cannot explain attainment differences between courses. There are curriculum differences between courses, as modules and methods of assessment will differ, as will teaching and marking teams, and these may all impact on the level of student achievement which is a more likely contributor to the variances in academic

attainment across the courses. When considering the status of the different courses, there are variances between diagnostic radiography, radiotherapy, operating department practice and paramedic science. Radiography as a degree was first validated in 1989 with a move to an all graduate entry profession by 1993 (Price, 2009) and the authority to train as supplementary prescribers since 2005 and independent subscribers since 2016 (Crowther, 2024). However, paramedic science and operating department practice did not move to degree level entry until nearly 30 years later in 2021 (HCPC, 2021b; HCPC, 2021). Radiography could therefore be seen as a higher status profession, and at the time of this research paramedic and ODP students on Diploma courses were included in the sample of participants. This may explain the higher levels of belonging in the diagnostic radiography and radiotherapy student cohorts.

The correlation of belonging, mattering and academic attainment with an allied health programme provides a new insight and strengthens the understanding of student clinical and academic experiences, building on the previous research which explored the variables such as peer groups, connections with staff and transition periods (Crawford et al., 2022; Russell and Jarvis, 2019), but not at the level of course studied. This is important new knowledge that will be of benefit to universities.

6.2.2 Year of study

The findings of this research showed student belonging at university to be impacted by the year of study ($p<0.010$), with first year students having statistically significant higher levels of belonging at university and second year students having the lowest levels. There is also a relationship between student belonging on clinical placement and the year of study ($p<0.018$), and student mattering on clinical placement and the year of study ($p<0.021$). Third year students have statistically significant higher levels of both belonging and mattering on clinical placement, with first year students having the lowest levels of both belonging and mattering on clinical placement. This may indicate that students are starting to identify with their professional colleagues and are starting the transition into a professional identity. It could be expected that first year students would have lower feelings of belonging at university due to having less cultural and social capital within the institution, which is acquired as the student progresses through the course, thus increasing belonging and mattering by the final year. As this appears to be the case in the clinical placement environment, other factors of influence need to be considered in the university environment. As first year students often receive structured support and induction activities this facilitates a shared identity and purpose with the cohort, fostering a sense of belonging and mattering. By second year these support structures diminish, with students encouraged to become more independent in their learning as academic pressure increases. Support is then reintroduced in the third year to prepare students for transition

into the workplace. This explains the dip in belonging in the university environment for second year students.

Previous literature has considered elements of this, such as levels of belonging in first year and second year students (Aker and Şahin, 2022) and the difference in their academic needs (Sterling, 2018; Willcoxson et al., 2011), belonging on clinical placement (McKenna et al., 2013; Sedgwick and Rougeau, 2010) or mattering in the workplace (Flett, 2018), but there is no previous research that has brought these elements together to consider how belonging and mattering may vary across the year groups in both university and clinical placement. The findings of this research highlight this variance, and exisiting literature can be used to understand the possible reasons behind it. There is very little research that considers how feelings of belonging may vary across first, second- and third-year students, and there is no research that specifically considers this within UK allied health students. These findings provide new knowledge on how feelings of belonging may change as students' progress through their course and in the variance of student belonging and mattering on clinical placement across the first, second and third year and indicates the complexity of the topics under investigation. This research indicates where additional support can be targeted to improve belonging in allied health students. As first years have the excitement of starting university, and third years have completion and professional qualification to look forward to, it appears that second year students receive comparatively less attention and support. HEIs need to ensure that all students have recognition of challenges at their level of the course and support is focused on their specific needs, including second year students. It is important to consider ways that first year students can feel that they have a role in the team, even when their knowledge and skills are limited, but also that first year students are shown the same level of respect and attention as final year student and qualified staff to ensure that all students feel like they matter.

6.2.3 Ethnicity

The findings of this research have shown a relationship between student belonging on clinical placement and the ethnicity of the student ($p<0.004$), student feelings of mattering on clinical placement and the ethnicity of the student ($p<0.002$) and grade outcome and the ethnicity of the student ($p<0.001$). White students have statistically significant higher levels of both belonging and mattering on clinical placement, as well as higher academic grades.

It is possible that, as students enter the clinical environment with a habitus, ethnic minority students may experience a disparity between their habitus and the dominant norms within the clinical area. This barrier can make it more difficult for students to feel a sense of belonging in the profession. This corroborates the findings of other research, with previous literature reporting that ethnic minority

students feel a lack of belonging (Pryce-Miller et al., 2023), experience discrimination and a less positive experience (Koch et al., 2015; Sedgwick et al., 2014; Walker et al., 2023), and interact less frequently with staff (Castellon, 2015). Previous literature also highlights that ethnic minority students can experience miscommunications when working in predominantly white communities (Nightingale et al., 2022), and feel a stronger sense of mattering if they shared racial or ethnic identities with university staff (Salazar et al., 2022). Ensuring racial or ethnic representation of staff reinforces an occupation of the university or clinical space that is welcoming to minority students and shapes the social construction of the university and clinical department (Puwar, 2004). However, whilst offering representation in university or clinical statistics, or tokenised images in marketing material, may ensure presence of ethnic minority students, it is likely to be too superficial to produce meaningful structural change (Rollock et al., 2018). Superficial diversity practices fail to create real authentic inclusion, and this can undermine feelings of both belonging and mattering in students. Meaningful recognition is required to enable students to effectively navigate spaces that do not reflect their identities (Rollock et al., 2018). The environment is not just constituted of the physical space, but is also social and symbolic. A student's sense of mattering and belonging is shaped by how they perceive, experience and navigate these spaces which can be exclusionary for students from minority backgrounds (Samura, 2018). As the findings of this research suggest that ethnic students feel marginalised in the clinical environment, shown by their lower belonging and mattering scores on clinical placement, it can be assumed that the difficulties many ethnic students are reported to face in the university environment are mirrored within the clinical environment. Although as clinical assessments are predominantly pass or fail, there is no specific clinical placement awarding gap that can be highlighted in student outcome data. Samatar et al. (2021) highlights how students of colour often experience university as a space of exclusion, navigating racialised microaggressions, assumptions about competence and a lack of cultural understanding, and it is likely that these dynamics are also present in the clinical environment where allied health students from ethnic minority backgrounds may encounter institutional cultures that imply they are an outsider in that professional area. Papp (2024) has also highlighted the prevalence of discrimination and microaggressions, and that whilst HEIs have been predominantly concerned with explicit forms of racism, it is the implicit and concealed discrimination that must be addressed to remove barriers and improve the feelings of belonging and mattering in students. However, much of this existing research is qualitative research that explores the experiences of ethnic minority students, which typically focuses on small numbers of participants. In contract, the findings from this research add a quantitative perspective that demonstrates a significant difference between groups when drawing on a larger student sample, which strengthens the research in this area. Whilst there is existing evidence

that highlights difficulties that ethnic minority students face on clinical placements, and a very small amount of evidence that considers mattering in ethnic minority students, there is no existing published research that brings together feelings of mattering, clinical placements, and ethnic minority students. In addition, these findings also provide a comparison between the experiences of ethnic minority students across the university and clinical placement, when previously these two environments have only been considered in isolation. The findings of this research therefore provide new knowledge and a quantitative overview of an area that has only previously been considered in its separate parts.

The ethnic awarding gap is not a trend just within this data as there is a UK wide ethnicity awarding gap in HE (Office for Students, 2021). The gap between the percentage of white students and students from Black, Asian and Minority Ethnic (BAME) backgrounds awarded a first or 2:1 in their degree was 8.8% in 2020/21, which was reduced from 13.2% in 2017/18 as more universities recognised the awarding gap and strove to introduce interventions to reduce this (Universities UK, 2022). Previous literature has studied the difficulties facing ethnic minority students, and highlighted the impact of family influences (Cotton et al., 2016), socioeconomic background (Wong et al., 2021), and systemic racism (Ugiagbe-Green and Ernsting, 2022), although Wong et al. (2021) found minority students to take personal responsibility for their own achievements. This issue is definitely complex and universities are embedding interventions such as specialist support networks for ethnic minority students, use of alumni, external speakers, mentoring and coaching for students, anti-racism training and curriculum reviews (Universities UK, 2022). Anonymous marking is now widespread across the UK HE sector and this is driven by a desire to reduce awarding gaps by removing the potential for bias against names that carry strong ethnic and religious connotations. Pilcher (2016) highlights the importance of names and the name-based discrimination that has been found to be prevalent in the UK in addition to minority or 'low status' names leading teacher to having lower expectations of attainment and therefore lower educational outcomes. The sociology of naming has value to the racialised and ethnic identity of an individual, and represents how each student is administratively processed within an institution (Pilcher, 2016). However, Elliott (2025) argues that anonymous marking is ineffective, and can actually be counter-productive to reducing awarding gaps, suggesting that relational marking may instead encourage trusting, mutual relationships between tutors and students. As Elliott (2025) quotes a student as writing *"I am a brown, disabled woman and I have always been taught that I don't matter much. But I have awarded myself a first class mark for this module because I have worked hard, thought about the assessment criteria, and I think I deserve it"* it is clear that more work can be done in HEIs to unpick the anonymity of student names in marking, the trust between tutor and students, and the relationship between mattering and grade outcomes. The

findings of this research support the existing published data around the student awarding gap and reiterate that more work needs to be done across the sector to better understand this phenomenon.

6.2.4 Student with Dependants

The research findings suggest a relationship between both student belonging and mattering at university and whether a student has dependants. Students with dependants at home have statistically significant higher levels of belonging ($p<0.008$) and mattering ($p<0.046$) at university. There was, however, no correlation between students with dependants at home and belonging and mattering on clinical placement.

It is important to note that students were asked whether they had dependants, but it did not differentiate between student parents with dependant children, or those with caring responsibilities for dependant adults such as elderly parents. The findings of this research provide new knowledge as there is currently no other data around levels of belonging or mattering in UK students with dependants studying allied health courses. The existing literature either provides a quantitative consideration of engagement and retention or a qualitative narrative of student experiences. Existing research around student parents and carers considers not just the challenges faced (Franklin et al., 2023; Marandet and Wainwright, 2010; Moreau and Kerner, 2015), but also the motivation to act as a role model (Moreau and Kerner, 2015). The existing literature does not consider feelings of mattering in UK students, particularly in allied health where the professional aspects of the allied heath courses, plus the impact that clinical placement and the maturity required has on the student, could impact on student levels of mattering. Previous research into feelings of mattering in student parents exists solely in the U.S. (Marshall and Lambert, 2006; Taylor, 2016). Whilst the findings of this study do not appear to agree with other studies that consider the general experiences of student parents, these findings are focused on UK allied health undergraduates that are so far unresearched. These findings highlight that there may be unique circumstances around allied healthcare students that need to be explored and these findings highlight an area for further investigation. As Moreau and Kerner (2015) identified that student parents value their life experiences, and students entering the allied health professions require an understanding of professional behaviours and responsibility, the life experiences of students with dependants may increase belonging in these particular courses. These life experiences align closely with the expectations of Bourdieu's field (Grenfell, 2009), and strengthens the student's sense of belonging due to their habitus fitting well within the norms and expectations of their course. Additionally, students with dependants may gain a sense of mattering from outside of the university and the confidence this creates may manifest across other aspects of

life. The more confidence displayed in integrating with others, the more positive the feedback and so mattering in one aspect of life may impact on mattering in other aspects of life.

6.2.5 Term address

The research findings suggest a relationship between levels of student belonging at university and whether a student has the same term-time address as their home address ($p<0.001$). Students who have the same term-time and home address (i.e., commuter students) have statistically significant higher levels of belonging at university. These findings disagree with previous research that suggests commuter students have a lower sense of belonging (Stalmirska and Mellon, 2022), achieve poorer outcomes, and are more likely to withdraw from their studies early (Thomas, 2018). However, Hallam (2023) proposed that commuter students already have a strong sense of belonging in the community and are in less need of feeling like they belong to the education provider. It is also possible that as commuter students have increased opportunity to develop social capital across different networks, this increases their confidence and resilience which reinforces their sense of belonging, both at home and at university. For allied health profession students, there is a requirement to attend clinical placement throughout the course, and so all students will be required to commute as part of their studies. Additionally, in this research commuter students were in the majority within this sample (61.4%), and therefore they should feel like they are studying alongside other students who are in similar circumstances to them, which is an important aspect to feelings of belonging (Hagerty et al., 1992). More research could be done on commuter students where they are the majority, rather than the minority, as current studies discuss their experiences as though they are in the minority (Stalmirska and Mellon, 2022; Thomas, 2018) which is true of many universities, but not all (Thomas, 2020b). These findings provide new knowledge in the literature around commuter students as the levels of belonging in commuter versus non commuter students in UK allied health students where commuter students are the majority has not been previously investigated. This provides a wider understanding of commuter students and challenges the perception that commuter students will always feel decreased belonging.

6.2.6 English as first language

The findings showed student mattering at university ($p<0.015$) and belonging on clinical placement ($p<0.021$) to be impacted by whether a student's first language is English. Students who speak English as their first language have statistically significant higher levels of mattering at university and belonging on clinical placement. Interestingly, it is just language, and not ethnicity that has shown a significance with mattering at university within the findings of this research. Previous literature has considered differing impacts of language barriers on students that may provide some context to this

data, but there is currently no research that quantifies the feelings of mattering at university or belonging on clinical placement for those whose first language is not English. Referring to Bourdieu's theory, linguistic capital is a form of cultural capital and enhances a student's ability to articulate their ideas, engage in discussions and build relationships (Bourdieu, 1991). This will increase a student's participation, therefore contributing to feelings of being valued and acknowledged which are key aspects of mattering. In the clinical placement environment students who are culturally and linguistically diverse struggle with communication skills that are relevant and essential the clinical environment, such as understanding colloquialisms, interpreting non-verbal cues, engaging win small talk with patients and providing information to patients and their families (Brewer, 2024). This limited linguistic capital and resulting impact of feeling valued will ultimately affect a student's sense of belonging. Both Jabeen et al. (2019) and Rose et al. (2020) found students' academic English skill to be a predictor of success, with the language barrier impacting on student's seeking academic help. Jabeen et al. (2019) also found that language barriers can hinder socialisation, and friendships can be superficial. Gravett and Winstone (2022) highlighted that achieving authentic connections with others is important as student's experience alienation when interactions are not genuine or communication breaks down. However, whilst these studies consider the experiences of students whose first language is not English, and the possible impact on their studies, they do not explicitly consider the correlation with feelings of mattering and so the findings of this research have provided new knowledge in this area. Whilst students in allied health professions will be expected to have a good level of English as part of the course entry requirements, the significance of language within these findings suggests that the socialisation of students who first language is not English needs to be considered, with recognition of potential feelings of anxiety that students may have around language barriers.

6.2.7 Seriously considering dropping out

The findings showed that students who had seriously considered dropping out of their studies had lower scores for belonging at university ($p<0.019$), belonging on clinical placement ($p<0.040$), mattering at university ($p<0.001$) and mattering on clinical placement ($p<0.019$), as well as lower grade outcomes ($p<0.002$).

Whilst there is some existing literature in this area, the findings of this research specifically consider UK allied health students, that are not currently represented in the literature on student grade outcome and considerations of dropping out. There are no specific studies that consider statistical relationships between student mattering or levels of belonging on clinical placement and considerations of dropping out, and so these results provide new knowledge in this area.

Previous literature agrees that feelings of belonging are significant in student drop-out rates or intentions to persist (Höhne and Zander, 2019; Suhlmann et al., 2018; Wolf et al., 2021), with mattering also important in persistence with studies (Hallam, 2023) and limiting academic procrastination (Yeoh et al., 2022). Student clinical placement experiences are closely linked to nursing student decisions to withdraw (Diane et al., 2023) and impact the career decisions and employment choices of students (Boyd-Turner et al., 2016; Bridge and Carmichael, 2014; McCall et al., 2009). As support can enhance the feeling of mattering (Elliott et al., 2005) it is unsurprising that if clinical placement support affects employment choices, mattering on clinical placement will be correlated with considerations of dropping out of vocational study leading into an allied health profession. Previous research has also found links between student drop-out and academic performance (Casanova et al., 2018; Ortiz-Lozano et al., 2018; Stinebrickner and Stinebrickner, 2014), and learning skills (Gallego et al., 2021).

Current research into mattering and academic engagement have so far been undertaken outside of the UK, and so these findings are the first in relation to UK allied health students. It is not possible to make a causal link around feelings of belonging and mattering and considerations of dropping out, but it is important to consider factors that appear to have a correlation with considerations of dropping out, particularly when looking at ways to reduce attrition and improve retention. Increasing a student's sense of mattering and belonging may positively impact on their drop out intentions.

As the NHS long term plan (2019) is committed to increasing the NHS workforce, limiting rates of student withdrawals is important. Courses with high attrition rates need to consider the feelings of belonging in their students, and ways to improve these. As feelings of belonging are considered to be a fundamental need (Baumeister and Leary, 1995; Maslow, 1954) it is unsurprising that feelings of belonging in students correlate with considerations of dropping out. However, the direction of the relationships is not clear, and it is possible that students are feeling lower levels of belonging because they are considering dropping out, rather than feelings of belonging impacting on drop out considerations. It could also be that students who have seriously considered dropping out are more likely to perform poorly academically, rather than poor performing students more likely to consider dropping out. Whilst student experiences may impact on levels of belonging, the links between belonging and considerations of dropping out have so far been implicit, and these findings now demonstrate an explicit statistical significance.

6.3 Belonging and mattering: comparisons and correlations

6.3.1 Belonging and mattering and comparison of means scores

The findings have shown that overall, the students' sense of mattering is lower than their sense of belonging. Whilst there is existing literature that considers feelings of mattering and belonging in students, these findings are the first to directly compare the feelings of mattering and belonging in students across the university and clinical placement settings. These findings do not provide the narrative around the data, however the wealth of literature into belonging, in comparison to the much smaller amount of literature into mattering demonstrates the focus that is currently on improving the sense of belonging in students. There is significantly less focus on improving a student's sense of mattering, and this may explain the differences in students' feelings of belonging and mattering. Additionally, it is likely that a sense of belonging may be easier for students to achieve than a sense of mattering. Bourdieu's social identity theory (Grenfell, 2009) implies that students will seek membership of a group in order to establish a sense of belonging. However, to establish a sense of mattering the student will need to feel noticed and significant within that group (Flett, 2018), which is a deeper level of recognition and value. A sense of mattering is also more individualised and subjective, as students may not always perceive themselves to be important to others, whereas belonging can be reinforced through participation and group interactions, making belonging potentially more accessible than mattering.

6.3.2 Belonging and mattering correlations

There was a strong positive correlation between mattering and belonging on clinical placement (r_s=0.773, $p<0.001$) and a moderate positive correlation between mattering and belonging at university (r_s=0.471, $p<0.001$). There were positive correlations between all four scales of belonging at university, belonging on clinical placement, mattering at university and mattering on clinical placement. It is not possible to conclude any causal relationships. However, feelings of belonging and mattering appear to be linked, so if a student feels like they matter they are also likely to feel like they belong, and feelings at university may also encourage feelings on clinical placement. Students do have support from the university whilst on placement through link or personal tutors, and so they are not separate environments. Additionally, university staff may undertake part-time employment in the clinical departments to maintain their clinical skills and professional registration, and clinical staff may be involved in university teaching as specialist lecturers, blurring the two environments further. There is a need for further focus on the student clinical environment as currently policy and research aimed

at enhancing student belonging, mattering or experience is more focused on the university environment where educators have the most control.

There is currently no published research that considers correlations between belonging and mattering in either the university or the clinical placement environment in the UK, and so this data provides new knowledge. There is also no research that considers how feelings of belonging in the university may impact feelings of belonging on clinical placement, and vice versa, and also no research on how feelings of mattering at university may impact feelings of mattering on clinical placement and vice versa. Whilst there are communications, support and working between universities and clinical placements, the university and clinical placement are two different environments with different working expectations, professional standards, hierarchical staffing structures and daily practices. However, on clinical placement a student will apply the theoretical knowledge that they have gained in the university, and in the university will use their clinical experience to enable understanding and analysis of theoretical concepts. A student must be successful in both environments to be successful in their studies. This could explain the correlations between belonging and mattering across both environments. As there are positive correlations between the two environments, a cycle of feeling comfortable and welcomed in the university may impact the confidence of the student to interact with others, thereby gaining attention, positive feedback, and a sense of value. This is turn may encourage a student to have the confidence to engage with clinical staff and embed themselves into the team, using knowledge gained from the university, therefore also gaining attention, positive feedback, and value in the clinical environment. This builds on the mattering wheel proposed by Prilleltensky (2020), suggesting a balance is needed across sources of mattering, rather than investment in mattering from just one source or environment. The findings of this research provide a new insight into how the concepts of belonging and mattering may be interrelated in students, and how the feelings arising from one environment may impact on the feelings in another environment. This has previously been unresearched.

6.3.3 Belonging and Mattering scales comparison of items

There are differences across the four likert scales in how positively individual scale items are ranked, highlighting both differences in experiences in the university and the clinical placement setting, as well as differences in student expectations and behaviours deemed to be important in each setting. In relation to mattering, for example, feeling trusted scored very highly in the university setting, but very low in the clinical placement setting, and noticing that others inconvenience themselves to help the student scored highly in the clinical placement setting, but very low in the university setting. When administering the BS-CPE, Levett-Jones et al. (2009a) found the highest scoring item on placement

was '*it is important to feel accepted by my colleagues*' and this was also the highest scoring item in this study. The lowest scoring item for Levett-Jones et al. (2009a) was '*it is important to me that someone at my placement acknowledges my birthday in some way'*, and this was also the lowest scoring item in this study. The rankings of items were very similar between this study and the original validation of the scale. The ranking of items in the belonging at university scale, from highest to lowest score, was exactly the same when administered by Yorke (2016) as the ranking in this study. The highest scored item was '*I am shown respect by members of staff in this department*' and the lowest was '*sometimes I feel I don't belonging in this university*'. It was not a specific outcome of this research to re-run the scales and compare the rankings of items from scale validation, but the similarity of answers does support the reliability of the findings. For belonging on clinical placement students score items relating to feeling accepted or asking or receiving support or advice, higher than items relating to socialising or sharing confidences. Considering that clinical staff are supervising and assessing students it is expected that there may be a professional boundary around socialising that can make the failing of assessments or giving of negative feedback difficult, as a close relationship between the assessor and student can be a barrier to failing underperforming students (Yepes-Rios et al., 2016). But, limited informal interactions and feelings of exclusion may make a student feel more like an outsider and less belonged (Levett-Jones et al., 2009b). The findings of this research show that at university, students score items relating to receiving respect and being welcomed higher than feelings of not belonging or preferring a different institution, and they were more likely to strongly agree with a positive statement, than strongly disagree with a negative statement. It is possible to directly compare the mattering scales as the same likert scale was administered for both the university and clinical placement environments. On clinical placement, all the lowest scoring items related to reliance, whereas items relating to reliance appeared higher in the university setting. It is understandable that students may not feel relied upon in the clinical setting, as they do not necessarily have the knowledge and skills to complete tasks unsupervised, however there are tasks that students can do, and increasing a student's sense that they are relied upon in clinical placement may help to increase their feeling of mattering.

6.4 Grade outcome

6.4.1 Grade outcome and student progress

The findings demonstrate a statistically significant relationship between students who passed their assessments at the first attempt and grade outcome ($p<0.0005$), students having withdrawn during the academic year ($p<0.001$), students who have successfully proceeded or been awarded ($p<0.0005$) and students who have had a successful claim for extenuating circumstances and grade outcome

($p<0.014$). This is an incidental finding of this research, and there is no specific literature that considers this issue. This is likely due to the logic that students who have passed at the first attempt will have better grade outcomes, as undergraduate resubmissions are capped at 40%, which will reduce a student's average mark. Students who have withdrawn may not have completed all academic credits, and students who proceed or gain awards will have been successful in all modules and so will have a higher grade than those who have not. Students will not have progressed due to a module not being completed or academic failure. Extenuating Circumstances (EC) claims are there for students who experience difficult and unexpected circumstances. It is unsurprising that these students may perform academically worse than those students who have not had an EC claim. Although, we only know about those claims that were successful, there may be students who suffered difficult circumstances but did not have the evidence to have their claim upheld or may not have submitted a claim.

6.4.2 Grade outcome and belonging

The findings do not demonstrate a significant relationship between feelings of belonging, either at university or on clinical placement, and grade outcome. Other research findings have reported differing results in this area, although none have specifically considered the impact that levels of belonging on clinical placement have on grade outcome, instead focusing on belonging at university, or not specifying the specific environment. Strayhorn (2020) found a statistically significant relationship between belonging and grade outcome and Aker and Şahin (2022) found as a sense of belonging increases, grade outcome increases in pre-clinical medical students. However, Carrie (2017) found no statistical significance between sense of belonging and academic performance in Canadian undergraduate students. Khalandi,(2021) reported a significant but moderate positive correlation between belonging and student grade point average. Much other research focuses on belonging and academic motivation or engagement, rather than actual attainment, and the correlation between belonging and grade outcome may be tenuous and does not appear to be a strong statistical relationship. Attainment is likely to be impacted by multiple factors, such as support and mentorship within the programme, and it is possible that for vocational allied health programmes, belonging is not an important factor in grade outcome, but that does not mean it is not an important factor for other students on different courses. The findings of this research are the first to specifically consider the correlation between belonging at university and belonging on clinical placement in UK allied health students, and so these findings provide new knowledge in this area. As the current literature around belonging and grade outcome in general are inconclusive, these findings provide additional evidence to the role of belonging in grade outcome, and other factors that may influence success.

The findings have demonstrated a statistically significant relationship between students who have had a successful claim for extenuating circumstances and feeling of belonging on clinical placement ($p<0.010$). Only 23 students had a successful claim in comparison to 233 with no successful claim, and so the power of the statistical test is limited, however, those with a successful claim appeared to have lower scores for belonging on clinical placement. There is no existing literature relating to feelings of belonging either at university or on clinical placement, and extenuating or mitigating circumstances in students, and so these findings add knowledge to an unresearched area. It is possible that those students who have difficult circumstances within their lives struggle to meet the professional demands of clinical placement, particularly around shift patterns, travelling to placement and emotionally demanding work, as it is known that students with mitigating circumstances can lack focus on their studies (Achinewhu-Nworgu and Nworgu, 2015). Students experiencing difficult circumstances may feel excluded within their placement if there is a lack of flexibility or understanding into their circumstances, as the student's habitus will not be aligned with that of the clinical team. Clinical placement staff may not be aware of difficulties a student is facing, as confidentiality means that personal information is not disclosed without the student's permission, and due to multidisciplinary team working the whole team may not be aware of the circumstances of students. These new findings provide evidence relating to an unexplored aspect of how student academic performance and clinical placement may intersect.

6.4.3 Grade outcome and mattering

In contrast to belonging, there is a statistically significant relationship between feelings of mattering at university and grade outcome ($p<0.025$) and students who passed their assessments at the first attempt ($p<0.006$). Students who passed at the first attempt had higher scores of mattering than those who did not. The findings agree with Swanson and Cole (2022) who found that the frequency of interactions and feelings of academic validation from staff are positively related to student feelings of mattering to campus and student grade point average. There is minimal research that specifically considers mattering and grade outcomes, however, these findings suggest that mattering may be more impactful on grade outcome than belonging, and so more research needs to be conducted in this area. Mattering is individual, and so students who gain more individual attention may therefore be advantaged in their academic studies. Universities may need to work on ensuring individual support is available to students to increase their sense of mattering, as this may impact on their attainment. Interventions around personal tutoring and peer support targets the student as an individual, and this may be why personal tutoring is so effective. Arhin et al.(2021), Holland et al. Leung (2019), Olulowo et al. (2020) and Seo and Kim (2019) all report a positive relationship between personal tutoring and

grade outcome. It is not possible to conclude whether students with an increased sense of mattering have higher academic attainment, or whether students with high academic attainment will therefore have an increased sense of mattering due to the positive feedback that is received from their tutors, either in their feedback or in the classroom. This is something to be explored further, as there is currently minimal research into mattering and grade outcome, and there is no evidence on this in relation to UK undergraduate students. The findings of this research have provided new knowledge in this area and indicate that mattering and grade outcome warrants further research.

The findings show a statistically significant relationship between students who have had a successful claim for extenuating circumstances and both mattering at university ($p<0.001$) and mattering on clinical placement ($p<0.24$). Students with successful claims had lower feelings of mattering both on clinical placement and in the university, comparable to feelings of belonging. This is unsurprising, as these students with difficult circumstances are likely to be most in need of additional support and interactions, however, may not be able to prioritise their studies, either at university or on clinical placement (Achinewhu-Nworgu and Nworgu, 2015).

6.6 Summary

The findings of this study provide new knowledge in many different aspects of belonging and mattering in students at university and on clinical placement. Where there is existing research, the findings of this study largely support those findings, or provide additional evidence where findings are inconclusive, particularly in UK allied health students, where existing research is extremely limited. This research does bring together matters that have previously been investigated separately and offers insight into issues that are not explored in the current literature.

This study highlights that feelings of belonging and mattering appear to be linked, and so students who feel like they belong are also likely to feel like they matter. Belonging at university, on clinical placement, and mattering on clinical placement all differ between courses of study, which is understandable as variables that impact belonging and mattering will differ depending upon the course structure and the workplace environment of the clinical placement site. Belonging at university is lower in second year students, and this supports other research suggesting second year students require support to enhance their academic development and progression. However, belonging and mattering on clinical placement is higher in third year students, potentially due to their developed skills and knowledge making them a more useful part of the clinical team. Students with dependants showed higher levels of belonging and mattering at university. This differs to other studies showing student parents to have lower levels of belonging, and possibly lower levels of mattering, although

research into mattering in student parents is very limited. This may be a phenomenon unique to this profile of students, or to allied health students. Commuter students showed higher levels of belonging at university, and there are inconsistent conclusions from other research. The commuter students in this sample were in the majority and this may have positively impacted on their sense of belonging. Students who had seriously considered dropping out had lower scores for belonging at university, belonging on clinical placement, mattering at university, and mattering on clinical placement. This supports other research into student dropouts, and it is important to consider belonging when attempting to improve student rates of attrition. Students who had seriously considered dropping out also had lower academic attainment, which is supported by other research suggesting drop out can be attributed to academic performance. Supporting students in their learning skills, and tutoring students in academic skills could reduce their thoughts of dropping out. White students have higher levels of mattering and belonging on clinical placement, and those whose first language is English have higher levels of belonging on clinical placement and mattering at university. Other studies highlight discrimination and bullying on clinical placement, and a poorer experience for ethnic minorities, plus communication and language barriers for those who speak English as a second language. There are also possible barriers around social integration and authentic connections at university. There is also a clear awarding gap within this data, with White students outperforming ethnic minority students. This is a national trend with universities implementing interventions to address this. There is a statistically significant relationship between mattering at university and academic attainment.

Universities need to consider increased individual attention and support to students that may increase their sense of mattering and potentially their academic attainment. Schemes such as personal tutoring and peer support that are individual level interventions and have been proven as positively impacting academic attainment may increase feelings of mattering. More research on student parents and commuter students may help to better understand their experience, and ways to embed support more effectively for second year student's needs to be considered. There is a clear need to focus on the student clinical environment, particularly around the experiences of ethnic minority students, the role of first year students and the support mechanisms in place. Cultural awareness training is necessary for clinical staff, in addition to interventions targeted at improving cultural awareness and reducing discrimination. Processes should be available to students where they can raise concerns or poor experiences, knowing they will be dealt with effectively to instigate change within the clinical environment. It is the university's responsibility to ensure their students feel protected and respected when attending placements.

Improving feelings of belonging and mattering may reduce considerations of dropping out, and therefore ultimately positively impact on student retention. Improving feelings of mattering in students may also increase attainment and may be utilised in closing the awarding gap.

6.7 Reflection

Overall, I believe that this research has made some important findings, many of which are currently under researched within HE, and particularly in the context of allied health professional students in the UK. Many of the findings would benefit from further exploration to understand the personal qualitative narratives around the relationships that this research has highlighted. I believe that mattering is extremely important to individuals, and so I am unsurprised that this appears to impact on student academic attainment. I believe that focussing on students as individuals, and ensuring that each student feels important, valued, and that they matter as an individual to both staff and their peers can improve their experience as well as their motivation and ability to be successful.

Chapter 7 Conclusion

7.1 Introduction

This chapter will firstly revisit the objectives and discuss what has been found and what it means for current knowledge and practice. The chapter will also summarise the contribution to knowledge established by this research and will acknowledge the strengths and limitations of this research. The implications and recommendations resulting from this research will be discussed, in addition to the dissemination of the findings. This final chapter will conclude with a summary and a brief reflection.

7.2 Research objectives

This research aimed to determine levels of belonging and mattering across the academic and the clinical environment in undergraduate allied health professional students. The objectives of this research were:

1. To explore levels of student belonging across a range of demographics within undergraduate allied health professional students, in both the university and the clinical environment.

   This research has identified several student demographics that significantly correlated with higher or lower feelings of belonging, both in the academic and the clinical placement environment. These include course and year of study, having dependants living at home, commuting to university, seriously considered dropping out of their course of study, having English as a first language and ethnicity. This knowledge enables the HE sector to better understand the factors that may or may not influence feelings of belonging, and target interventions and support to student groups that are vulnerable to lower feelings of belonging.

2. To explore undergraduate allied health professional students' feelings of mattering, across a range of demographics, in both the university and the clinical environment

   This research has identified several student demographics that significantly correlated with higher or lower feelings of mattering, both in the academic and the clinical placement environment. These include course and year of study, having dependants living at home, seriously considered dropping out of their course of study, having English as a first language and ethnicity. This knowledge enables the HE sector to better understand the factors that may or may not influence feelings of mattering, and target interventions and support to student groups that are vulnerable to lower feelings of mattering.

3. To investigate correlations between levels of belonging and mattering across both the university and clinical placement environments, in undergraduate allied health professional students.

This research has identified a statistically significant positive corelation between feelings of belonging and mattering, both in the academic and the clinical placement environments. This provides an increased understanding of the way in which the concepts of belonging and mattering may intertwine, and the impact that the two environments of university and clinical placement may have on each other.

4. To investigate correlations between feelings of belonging and mattering and grade outcome in undergraduate allied health professional students.

This research has Identified a statistically significant relationship between student feelings of mattering at university and their academic attainment. This is important for the HE sector, as it is possible that student academic success may be improved by increasing a students' sense of mattering.

7.3 Contribution to knowledge

This research has contributed to existing knowledge in four distinct fields: belonging, mattering, student clinical placement experiences and student grade outcome. This research has also brought together all four fields and investigated the relationships between them.

This research has identified that second year students have lower feelings of belonging in HE and a possible reason for this is less comparative support for second year students than for transitioning first year students or third year students preparing for professional qualification. This research has also identified student parents and commuter students with higher levels of belonging, which is surprising, and may be explained by the support and motivations provided by their community and personal relationships. This research has also identified a relationship between feelings of belonging and student's seriously considering dropping out of their studies which is important when scrutinising levels of student attrition in allied health students, and the need to increase the NHS workforce.

This research has identified that student parents have higher levels of feelings of mattering within the university. It is possible that parents receive feelings of mattering from interactions with their children outside of the university and this impacts their feelings of mattering across other aspects of life. This

research also identified that students who speak English as their first language have higher levels of feelings of mattering at university, and it is suggested that students speaking English as a second language may face increased barriers or challenges when socialising with others or seeking support. This research has also identified a relationship between feelings of mattering in the university environment and student's seriously considering dropping out of their studies and it is proposed that interventions aimed at supporting the student as an individual may positively impact student retention.

This research has identified that feelings of both mattering and belonging on clinical placement increase as students' progress from the first through to the third year. This is unsurprising as students increase in their knowledge and skills, and therefore embed into their role as a valuable team member. However, interventions aimed at identifying specific roles for inexperienced students may help to increase feelings of both mattering and belonging. This research has identified that white students have higher feelings of both belonging and mattering on clinical placement, in comparison to ethnic minority students, and that students who speak English as their first language have higher levels of feelings of belonging on clinical placement. This corroborates the findings of other research that suggest students from ethnic minorities may experience covert or overt racism, may experience a lack of understanding of their culture and may be placed in placements in White communities with a lack of diversity. Interventions to ensure a welcoming and understanding environment for students of all race and cultures may reduce the difference in experiences between students of different ethnic backgrounds. This research has also identified a relationship between both feelings of mattering and belonging on clinical placement and students' seriously considering dropping out of their studies.

This research demonstrates that feelings of mattering in students is related to their grade outcome, an area in which there is a lack of research. This research also demonstrates a relationship between feelings of belonging and mattering in allied health students that is unresearched within UK HE. Previously these concepts have been researched individually. This research has also investigated the relationship between the academic and clinical placement environment in allied health students that is unresearched within UK HE. Previously these two environments have been researched individually.

7.4 Strengths and limitations

7.4.1 Limitations

This research has limitations in relation to the concepts of belonging and mattering, social identity theory, the use of likert scales as a research tool, and the sample of students used.

Belonging as a theoretical concept is subjective, complex, and also difficult to define, measure or implement into policy. Chin (2019) note that differing theoretical and empirical approaches define belonging narrowly without fully encompassing that the extent and strength of belonging will vary by individual and group, with some individuals making a particular group-belonging central to their identity, and others not, and some groups demanding more or less centrality in the self-definition of their members. All people have the need to belong, but this need could be expressed differently under different conditions, and peoples' levels of needing to belong vary based on their social conditions and interactions (Pardede and Kovac, 2023). The concept of mattering is also difficult to define as it overlaps with other concepts such as belonging or self-esteem, making the concept difficult to isolate and measure as a distinct experience (Flett, 2018). Both belonging ad mattering are not static feelings, and can change over time, with an added complexity of individuals maintaining multiple identities and therefore belonging or mattering in one environment but potentially feeling excluded or insignificant in another. This impacts the ease of measuring belonging an mattering, and suggesting how the need for belonging can be satisfied (Allen et al., 2021). Additionally, the systemic barriers, such as racism or ableism that may impact a student's sense of mattering or belonging is often unaccounted for, and this will limit the opportunities available to feel like they matter or belong (Cook-Sather et al., 2023).

This study has deployed Bourdieu's social identity theory (Bourdieu, 1986), which does have some limitations. Social identity theory prioritises group membership over the individual identity and the personal agency of the individual, and therefore may not fully consider the impact of individual experiences, plus multiple overlapping identities (such as gender, profession, class etc.) (Ashmore et al., 2004). As allied health students may possess many multiple identities it is unclear how this dynamic impacts on Bourdieu's theory and the implications for student belonging and mattering. Additionally, the complex interactions between groups, and also between sub-groups is not fully captured within social identity theory, and so the full impact of issues such as racism is not properly understood in the processes of social influence (Brown, 2000).

Self-reporting likert scales measure feelings in a particular moment of time. Student feelings may be impacted positively or negatively by daily events, such as assessment periods and teaching schedules and therefore may vary daily. As the participants are self-reporting, it is also not possible to guarantee that a person's true beliefs are being reported, rather than the beliefs that the participants feels that they should have or wishes to convey (Theofanidis and Fountouki, 2018). The use of likert scales may also limit the participant responses as many participants avoid extreme responses such as *strongly agree* or *strongly disagree*, and instead opt for more neutral answers (Theofanidis and Fountouki, 2018). Changing and concealed viewpoints are limitations within any research that involves the investigation of human emotions and attitudes and whilst this research has been designed to limit

these variances, nevertheless this element of uncertainty must be acknowledged. The use of a quantitative likert tool provides data that describes correlations and relationships within belonging, mattering, grade outcome and clinical placements. However, it is not possible to draw any conclusions around cause-effect relationships from these findings and further data gathering is necessary to provide a more complete understanding of these areas (Nemoto and Beglar, 2014).

The students within the sample of participants used were all in attendance at the university during the time of data collection and were either attending taught sessions or engaging with their email communications. Non-engaging students who were not in attendance to receive a questionnaire, or who were not actively checking their emails to be aware of the research would not have been able to take part in this research. Therefore, this sample may not fully represent students at all levels of academic engagement, and the findings may not represent the feelings of non-engaged students. It is difficult to include the non-engaging students within research, and email communications were sent to all students to ensure that non-attending students were aware of the research and had the option to participate. This research specifically focused on the experiences of students studying to join the allied health professions. Whilst the findings relating to the feelings of students within the university may be applicable to all students, as the experience of health students is unique it is not possible to suggest that these findings are representative of all undergraduate students. Additionally, as the sample was derived from one HEI with a diverse student profile and a high percentage of commuter students, the sample is not necessarily representative of students at all HEIs. For this reason, caution mut be taken when generalising these findings.

7.4.2 Strengths

This research provides strengths in the understanding of belonging and mattering in relation to Bourdieu's social identity theory. Consideration of Bourdieu's concepts of field, habitus and capital provides a framework to enable an understanding of how a student's background, upbringing and their cultural norms may influence their behaviour and perception. Theories such as cultural and social capital may provide an explanation as to why some students might feel marginalised in the university or undertaking clinical placement. As allied health programmes attract students from diverse socioeconomic and cultural backgrounds (UCAS, 2020) this can particularly influence their success within their studies. Bourdieu's framework can also illuminate how a student's prior experience may both help and hinder their integration into the university or clinical environment (Wordsworth, 2013).

The concepts of belonging and mattering provide an insight into the social dimensions of the student experience, and how they perceive their value and connection with their peers and tutors. These

concepts bring attention to the daily, interpersonal experiences of the student whilst they are also central to the development of professional identity within the allied health professions. When students feel that their contributions are meaningful and their presence is acknowledged, they may internalise the values of their future profession (Belgraver et al., 2022; Sternszus et al., 2024). The concepts of belonging and mattering also encourage HEIs to consider how students feel valued and included within their studies, and support efforts in fostering equity and diversity within higher education. Highlighting concepts, such as belonging and mattering, that works towards an inclusive learning environment is a strength of student-focused research.

This research brings together the academic and the clinical placement environments, of which a comparison of these two environments is lacking within the current literature. As students move between both environments during their studies, it is important to not only gain an understanding of each environment, but to also understand how these environments interrelate, and how the experience within one environment may impact on the other.

This research also brings together the two concepts of belonging and mattering, and again the relationship between the two is lacking in current literature. Understanding the relationship between belonging and mattering, and how these feelings may impact on grade outcome and considerations of dropping out will inform educators on strategies to improve the attainment and retention of students.

There is no other research that brings together and investigates the relationships between belonging, mattering and grade outcome, and the environments of university and clinical placement. This research presents findings into relationships that have previously been unexplored.

7.5 Implications and recommendations

This research highlights the importance of feelings of mattering within students, and the potential impact that low feelings of mattering may have on grade outcome. This research recommends that Universities must focus on support systems and interventions that centre on the student as an individual, increasing the student's sense of being noticed and valued, to increase their feelings of mattering.

This research highlights a dip in the belonging levels of second year students, and as second year students are embedding their academic skills and focused on the progression of their studies it is important that these students feel acknowledged and supported. This research recommends that the specific needs of second year students are identified and integrated into the support offered at both

university and course level, with a specific focus on activities and structures aimed at increasing feelings of belonging.

This research has identified a need to focus on the student experiences during clinical placement, and a requirement to work with clinical staff to identify approaches that will enhance student feelings of being welcomed, supported, and valued. Clinical placement experiences affect student employment intentions after graduation, and so to ensure that the NHS workforce is maintained it is imperative that students feel positive about gaining employment within the profession that they have studied. Working with placement providers to better understand how students can feel that they belong and matter during their placements must be a priority for providers of allied health courses. Whilst there has been a focus on the student experience on clinical placement over the years, in addition to some concerns over the experiences of ethnic minority students, student feelings of mattering, and the challenges for first year students have not been discussed and as a result of this research need to be a priority.

This research has highlighted an academic awarding gap in addition to differing levels of belonging and mattering on clinical placement for ethnic minority students, and therefore this research recommends further investigation to better understand the experiences of ethnic minority students, both in the university and on clinical placement. This quantitative research highlights the correlations in the data, and further qualitative research will enhance understanding of the individual experiences and stories of ethnic minority students. As these findings support existing literature that points to the structural and cultural barriers faced by ethnic minority students within higher education and clinical placement environments, there is clearly a need for a more in-depth understanding of how these inequalities manifest and are experienced by individuals. The university and clinical placement spaces that are inhabited by students are not neutral, but are instead shaped by power dynamics and cultural and social norms that privilege some students, whilst marginalising others. Superficial solutions such as tokenistic recruitment strategies and policies such as anonymous marking do not fully focus on truly inclusive transformation of university and placement structures that centre the voices of ethnic minority students. This research emphasises a need for resources and strategies to enhance both the attainment and clinical experiences of ethnic minority students, examining the root of inequalities and co-creating solutions that promote the value of all students, irrespective of their race, ethnicity or background.

As HEIs continue to develop the post-Covid student experience (as previously discussed in section 2.12) it is important to consider that student attendance and engagement has decreased in many areas (Jones and Bell, 2024), which may impact on the students' sense of belonging and mattering due to reduced opportunity to make connections with others. The shift to blended or hybrid learning in

many university programmes since Covid-19, whilst providing welcome flexibility for some students, can limit the formation of a strong learning connection and social connection (Office for Students, 2022b). Therefore, a greater emphasis on student support, course activities, community building and inclusive practices, both in the university and placement environments, will be essential to ensure that students can access meaningful learning where they can feel valued, included and supported.

7.5.1 Recommendations for university senior management teams

- Assess the belonging levels of students across courses using validated scales to identify areas where improvements can be made, and practice can be shared.

As the findings in this research demonstrate that levels of belonging vary across courses, understanding where the variances are and how resources can be prioritised will ensure a more individualised approach to the student experience. Embedding belonging metrics into student surveys, identifying patterns across student demographics, establishing departmental working groups to review belonging data and develop action plans and developing structured forums to share best practice will ensure awareness and accountability or improving student belonging. As a student's habitus and capital will shape their choice of study and career, with the status of carer affecting student value (Bathmaker, 2015) targeting support rather than taking a rigid centralised approach will close equity gaps across courses and improve student engagement and retention.

- Provide additional resourcing, such as academic skills support and peer mentors to support students who speak English as an additional language (EAL).

Collaboration between course teams and central academic support services will ensure EAL is embedded into student support and course design. Recruitment of trained staff to support students with English as a second language, developing staff training to assist non-native English speakers to improve their academic writing and communication, and peer led language groups where multilinguism is respected and valued as a form of capital rather than a deficit will create inclusive learning environments. Increasing the student's ability to participate in their studies (Bourdieu, 1991) will ultimately improve their sense of mattering and belonging.

- Provide additional resourcing for students to receive individual support that will enhance feelings of mattering, thereby increasing academic attainment.

As the findings of this research confirm a statistically significant relationship between mattering and grade outcome, this reinforces the need for individualised support that foster's the student's sense of being noticed and valued due to mattering requiring recognition at an individual level (Flett, 2018). This individual support may be in the form of personal tutoring, peer mentorship, academic advisors

that all provide individual student attention. Formalising personal tutoring with clear guidance and minimum standards, ensuring staff training on inclusive student-centred approaches to tutoring, formal peer mentoring programmes with trained peer mentors and regular staff forums to share practice will embed an individualised student support culture into higher education.

7.5.2 Recommendations for university academic tutors

- Provide targeted support for second year students, to improve feelings of belonging, incorporating the course specific needs of students.

As this research evidences a second-year slump in belonging, activities to boost belonging should be integrated into second year modules, such as group projects, collaborative work, curriculum co-creation, co-curricular events or reflective discussion sessions on student needs and priorities. Regular tutor meetings and peer support networks will ensure students receive academic and social support, maintaining their connection with the university and peers. This support will ensure that second year students receive encouragement in becoming independent learners (Sterling, 2018) and a maintained level of attention from tutors that they were introduced to when transitioning into the first year.

- Assess feelings of both belonging and mattering in students to identify those with lower scores who may be most at risk of drop-out, enabling targeted intervention.

Formally integrating validated scales into personal tutoring frameworks to assess belonging and mattering, and ensuring a pathway for supporting students with low scores will provide students with data informed individualised support and provide an environment in which students feel seen and valued. As the findings of this research indicate that lower levels of belonging and mattering correlate with students seriously considering dropping out of their studies, identifying students with lower scores and providing the personalised mentorship and attention required to encourage persistence will improve student retention.

7.5.3 Recommendations for clinical placement providers

- Assess feelings of both belonging and mattering in students across clinical departments and clinical teams, using validated scales, to identify areas where improvements can be made, and practice can be shared.

Implementing student surveys, embedding belonging and mattering questions into end of placement feedback forms, training staff to interpret the data and create action plans, developing reports for clinical teams, and setting up regular forums to share best practice will improve transparency, accountability and will ultimately enhance student inclusion, belonging and mattering in the clinical

environment. As these research findings demonstrate that first year students and Black and Asian students have lower feelings of belonging and mattering on placement, and students whose first language is not English have a lower sense of belonging on clinical placement, it is important to recognise that this environment forms an integral aspect of the overall student experience for allied health students. As belongingness on clinical placement is related to a student's future career decisions, and capacity and motivation for learning (Levett-Jones and Lathlean, 2009), the clinal environment is equally as significant as the university environment to ensure students feel important and valued.

- Scrutinise the inclusivity of clinical departments and clinical teams and provide cultural awareness training for all staff.

Conducting regular inclusivity audits to examine the culture within the clinical department, training staff in inclusive practice, embedding mandatory cultural awareness and anti-discriminatory training specific to student training and allowing opportunities for the student voice and student representatives on placement will create changes in the clinical environment to allow students lacking social or cultural capital to thrive. The possible disparity between the habitus of ethnic minority students and dominant norms of the clinical area must be challenged to enable all students to complete their studies feeling valued and respected by peers, tutors and clinical staff.

7.5.4 Recommendations for clinical tutors

- Provide targeted support for first year students, to improve feelings of both belonging and mattering.

Providing structured induction packages, incorporating regular one-to-one tutorials and small group reflective sessions where students can share placement experiences, tailored roles and responsibilities for students at all stages to encourage feelings of being a purposeful and useful team member will shape feelings of inclusion in students and prevent disengagement from the clinical placement and ultimately the profession. As these findings show that students scored likert scale items relating to reliance lower in the clinical setting, providing first year students with a specific role in the team will increase their sense of being relied upon, which will lead to an increased sense of mattering.

- Access training to understand the cultural needs of students from ethnic minorities and ensure all students feel welcomed and respected.

Attending training packages for staff working with students to include topics such as unconscious bias and cultural understanding will help to prevent students from feeling excluded in the clinical

setting. Working with the university to co-create training and ensure student experiences and feedback shape their clinical learning package will provide a student focussed learning environment that is responsive and inclusive. As ethnic minority students report experiences of discrimination in the clinical setting, raising awareness of those staff working directly alongside students will strengthen relationships and build the social and cultural capital of students.

7.5.5 Recommendations for researchers

- Using qualitative methods, investigate feelings of belonging in student parents due to the lack of research in this area, and inconsistent findings within current literature.
- Using qualitative methods, investigate feelings of mattering in student parents due to the lack of research in this area, and inconsistent findings within current literature.
- Investigate feelings of belonging in commuter students, particularly where commuter students form the majority of the cohort, due to the lack of research in this area, and inconsistent findings within current literature.

Whilst quantitative data can show patterns, qualitative narratives are needed to understand the complex and individual student lived experiences that impact the belonging and mattering of student parents and commuter students, and how their relationships and support systems outside of the university impact on their sense of belonging inside the university. Further knowledge of how life experiences outside of the university can better enable a student's habitus to meet the norms and expectations of their course of study (Grenfell, 2009) will aid understanding of how student parents and commuter students can be supported during their studies.

- Investigate the awarding gap between White and ethnic minority students within the UK to better understand where and how interventions may be deployed.

Complementing quantitative academic metrics with qualitative inquiry to understand not just the lived experiences of students, but the barriers and successes that impact belonging, mattering and academic attainment. Tracking belonging and mattering longitudinally across the student journey, investigating transition points, assessing teaching practices and working collaboratively with students will provide evidence required to create a truly inclusive curriculum and learning environment. As superficial diversity practices can undermine real progress in the inclusion of students from minority backgrounds (Rollock et al., 2018), a more in-depth approach is required to tackle the awarding gap that has been confirmed within this research.

7.6 Dissemination

It is a responsibility of educational researchers to disseminate findings, and make the results of research available to the public (British Educational Research Association (BERA), 2018), and the researcher is keen to share the knowledge gained, due to the positive impact it may have on the student experience. The findings of this research have been presented as a live webinar as part of the UK Advising and Tutoring (UKAT) association's 'Tutoring Matters' webinar series (United Kingdom Advising & Tutoring (UKAT), 2023). This session had international attendance and was also recorded and made available to members of UKAT. This webinar resulted in being invited to speak at the EduExe Festival for the University of Exeter (University of Exeter, 2023), where staff are now identifying feelings of mattering in their students to ascertain priority areas for embedding additional student support. The findings of this research have also been presented at the Researching, Advancing and Inspiring Student Engagement (RAISE) 2023 conference in Leeds, UK (RAISE, 2023) and the NETworking and Innovation in Healthcare Education Conference (NET2023) conference in Liverpool, UK (AdvanceHE, 2023). In addition, one paper from this research has been published (Zawada, 2024) and three further papers that present and discuss the findings of this research have been submitted for review to peer reviewed journals relating to HE.

7.7 Summary

This chapter has summarised the findings and the contribution to knowledge of this research. The strengths and limitations have been discussed as well as the recommendations made and the dissemination of findings.

In conclusion, this research has provided increased knowledge of the feelings of belonging and mattering within allied health undergraduate students, the impact of belonging and mattering on grade outcome, and the relationship between belonging and mattering across the two environments of university and clinical placement. This research has shown a statistically significant relationship between student feelings of mattering at university and their grade outcome, which can inform university strategies in improving student attainment by an increased focus in improving the feelings of mattering in students. This research has reiterated the current awarding gap that exists between White and ethnic minority students and highlighted a difference in the feelings of mattering and belonging on clinical placement that exists between White and ethnic minority students. This demonstrates a need for further exploration of the experience of students on clinical placement and how the experience of students can be improved. This research has also demonstrated differences between student demographics and feelings of belonging and mattering that warrant further

exploration to better understand the student experience and inform future student support strategies.

7.8 Reflection

I feel that the findings of this research have important implications for the ways in which we support students, particularly around ensuring that each student feels an individual sense of mattering, and that students receive appropriate support and respect during clinical placements. I have been delighted to receive exceptionally positive feedback to the presentations that I have delivered on the findings of this research, and I am looking forward to seeing this research published and informing wider practice within higher education. My intention is to build on this research with qualitative explorations of the narrative behind feelings of mattering and belonging, that I hope will provide a complete picture of the relationship between belonging and mattering within the university and clinical placement environments.

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Appendices

Appendix A Ethical approval

BIRMINGHAM CITY University

Faculty of Health, Education & Life Sciences Research Office
Seacole Building, 8 Westbourne Road
Birmingham
B15 3TN

HELS_Ethics@bcu.ac.uk

14/Oct/2018

Mrs. Clair Zawada

clair.zawada@bcu.ac.uk

Dear Clair ,

Re: Zawada /1783 /R(A) /2018 /Sep /HELS FAEC - Student belonging and mattering in Higher Education. A study into their relationship with academic achievement in allied health professional students.

Thank you for your application and documentation regarding the above activity. I am pleased to take Chair's Action and approve this activity.

Provided that you are granted Permission of Access by relevant parties (meeting requirements as laid out by them), you may begin your activity. In this case you will need to obtain Permission of Access from Professor Alex Kendall as Associate Dean for Research and Enterprise in the HELS Faculty.

I can also confirm that any person participating in the project is covered under the University's insurance arrangements.

Please note that ethics approval only covers your activity as it has been detailed in your ethics application. If you wish to make any changes to the activity, then you must submit an Amendment application for approval of the proposed changes.

Examples of changes include (but are not limited to) adding a new study site, a new method of participant recruitment, adding a new method of data collection and/or change of Project Lead.

Please also note that the Health, Education & Life Sciences Faculty Academic Ethics Committee should be notified of any serious adverse effects arising as a result of this activity.

If for any reason the Committee feels that the activity is no longer ethically sound, it reserves the right to withdraw its approval. In the unlikely event of issues arising which would lead to this, you will be consulted.

Keep a copy of this letter along with the corresponding application for your records as evidence of approval.

If you have any queries, please contact HELS_Ethics@bcu.ac.uk

I wish you every success with your activity.

Yours Sincerely,

Mr. Stuart Mitchell

On behalf of the Health, Education & Life Sciences Faculty Academic Ethics Committee

Appendix B Participant Information Sheet (PIS)

BIRMINGHAM CITY University

Participant Information

Student belonging and mattering in Higher Education. A study into their relationship with academic achievement in allied health professional students.

I would like to invite you to take part in a research study. Before you decide I would like you to understand why the research is being done and what it will involve. Talk to others about the study if you wish, and please ask if there is anything that is not clear.

What is the purpose of the study?

This study aims to assess the relationship between student belonging, mattering and academic achievement in allied health professional students at University. This is important to know because students who do not feel a sense of belonging are more likely to leave the course and not complete their studies, and students who do not feel like they matter may have higher levels of academic stress.

Why have I been invited?

ALL undergraduate students currently studying within the Department of Radiography and the Department of Paramedic Science & ODP have been invited to take part.

Do I have to take part?

You do not have to take part, but your participation would be welcome. The more students who take part, the more useful the results of the study will be. Choosing not to take part will not have any adverse effects for you or your studies.

What will I have to do?

You will be asked to complete a questionnaire that asks a series of questions relating to you and your sense of belonging and feelings of mattering in University and on clinical placement.

Your academic results for 2018/19 will be accessed to coincide with the exam boards for your course. This will enable questionnaire responses to be compared with academic achievement.

If you are willing for your academic results to be accessed as part of this research, you will need to write your student number on the consent form on the front of the questionnaire.

What are the possible disadvantages and risks of taking part?

Completing this questionnaire may cause you to reflect on how you feel about yourself, your peers, the University and your clinical placement. You may benefit from talking about your feelings, and your personal tutor, course leader, Student Union and ASK service are available to support you.

What are the possible benefits of taking part?

You will be helping to determine the levels of student belonging and mattering in health sciences, and how this may impact on student achievement. This may inform the way in which we support students during their studies.

Will my taking part in the study be kept confidential?

There will be no list of students who have or have not completed a questionnaire. Any questionnaire that includes a student number will be kept strictly confidential to only the researcher and the research supervisor. If you agree for your academic results to be accessed, these will only be viewed by the researcher and your name will not be added to any data. Individual questionnaire responses will not be shared with anybody outside of the research team, and all data will be anonymised.

Will my data be protected?

Your data will be protected under the Data Protection Act 1998. Your data will be stored securely on the BCU server, and will only be accessed by the researcher and the research supervisor. Your academic results will be accessed after all assessments for your course have been completed at the first attempt. If you require a second attempt, your results will be accessed for a second time after the resubmissions. There will be no further access for the purpose of this research. The questionnaires and raw data will be permanently deleted or shredded in confidential waste on completion of the doctoral study.

What will happen if I change my mind about taking part in the study?

Once you have completed the questionnaire, your responses can be removed from the study on request, provided you have included your student number on the consent form. Unfortunately the data cannot be removed once data analysis has been completed in October 2019. Requesting your data to be removed will in no way affect you or your studies here at the university.

What if there is a problem?

If you have a concern about any aspect of this study, you should ask to speak to the researcher who will do their best to answer your questions. Alternatively, you can contact the research supervisors;

Anne-Marie Cannaby (ann-marie.cannaby@bcu.ac.uk) or Mark O'Hara (Mark.O'Hara@bcu.ac.uk).

If you wish to complain formally, you can do this by contacting HELS_Ethics@bcu.ac.uk.

What will happen to the results of the research study?

The results of the study will be analysed by the researcher, the results will then be put forward for presentation at conference and for publication. The results will also be used as part of a doctoral thesis. Publications and presentations will not include any information that may identify participants. A copy of the research publication is available on request.

Who has reviewed the study?

All research in the University is looked at by an independent group of people, called a Research Ethics Committee, to protect your interests. This study has been reviewed and given favourable opinion by Birmingham City University Research Ethics Committee. Indemnity insurance is being provided by Birmingham City University

Researcher contact details:

Clair Zawada clair.zawada@bcu.ac.uk

Thank you for taking the time to read this.

Appendix C Consent form

BIRMINGHAM CITY University

Participant Questionnaire

'Student belonging and mattering in Higher Education. A study into their relationship with academic achievement in allied health professional students.'

Participant Consent

To participate in this research you need to provide your consent, and confirm that you have read and understood the information that has been provided to you.

Please initial within each box to confirm the following statements;

- ☐ I have read and understood the participant information sheet (PISv1 14-09-18)
- ☐ I have had the opportunity to ask questions
- ☐ I agree for my questionnaire responses to be used as part of this research project
- ☐ I agree for my academic results for the academic year 2018/19 to be accessed and included with my questionnaire responses.
- ☐ I understand that I have the right to withdraw my data, providing this is prior to data analysis taking place
- ☐ I understand my right to anonymity / confidentiality
- ☐ I understand that taking part in this research is voluntary

Student signature _____ Student number S_____

This questionnaire consists of 5 short sections. Each section should only take a few minutes to complete. Try not to think too hard about each question, and go with your first reaction. Try to answer all of the questions to ensure that your responses provide valid data.

Appendix D Questionnaire

BIRMINGHAM CITY University

Section 1 - Information about you

Course	☐ Radiotherapy	☐ Diagnostic Radiography	☐ Medical Ultrasound		
	☐ BSc (Hons) Paramedic Science	☐ Dip HE Paramedic Science			
	☐ BSc (Hons) ODP	☐ Dip HE ODP			
Year of study:	☐ 1st Year (level 4)	☐ 2nd Year (level 5)	☐ 3rd Year (level 6)		
Gender	☐ Male	☐ Female	☐ Other / Prefer not to disclose		
Age:	☐ 18 – 21	☐ 22 – 29	☐ 30-39	☐ 40-49	☐ 50+
Dependents (living at home):	☐ Yes	☐ No			
Ethnicity	☐ White	☐ Asian or Asian British	☐ Black or Black British		
	☐ Chinese	☐ Mixed	☐ Other		
	☐ Prefer not to disclose				
Is English your 1st language?	☐ Yes	☐ No			
Is your home address the same as your term time address?	☐ Yes	☐ No			
Have you attended a University course **prior** to studying this course?	☐ Yes	☐ No			
Have you worked in a clinical / care environment **prior** to studying this course?	☐ Yes	☐ No			
Are you the first person in your immediate family to attend University?	☐ Yes	☐ No			
Have you ever seriously considered dropping out from your course?	☐ Yes	☐ No			
Where do you feel most 'at home'?	☐ University	☐ Clinical Placement			
	☐ Both	☐ Neither			

BIRMINGHAM CITY University

Section 2 - Mattering at University (Elliot et al (2004) 24-item mattering index)

Please tick the appropriate box on the scale from strongly agree to strongly disagree, thinking about the University.

'People' and 'Others' may refer to your fellow students, lecturers or other BCU staff.

		Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
1	Most people from University do not seem to notice when I come or when I go					
2	At a University social gathering, no one recognises me					
3	Sometimes when I am with others, I feel almost as if I were invisible					
4	People are usually aware of my presence at University					
5	For whatever reason, it is hard for me to get other people's attention at University					
6	Whatever else may happen, people do not ignore me at University					
7	For better or worse, people at University generally know when I am around					
8	People from University tend not to remember my name					
9	People from University do not care what happens to me					
10	There are people from University in my life who react to what happens to me in the same way they would if it had happened to them					
11	My successes are a source of pride to people in my life from University					
12	I have noticed that people will sometimes inconvenience themselves to help me at University					
13	When I have a problem, people at University usually don't want to hear about it					
14	Much of the time, other people at University are indifferent to my needs					
15	There are people in my life from University who care enough about me to criticise me when I need it					
16	There is no one at University who really takes pride in my accomplishments					
17	No one at University would notice if one day I disappeared					
18	If the truth be known, no one really needs me at University					
19	Quite a few people from University look to me for advice on issues of importance					
20	I am not someone people from University turn to when they need something					
21	People from University tend to rely on me for support					
22	When people from University need help they come to me					
23	People from University count on me to be there in times of need					
24	Often people trust me with things that are important to them					

Section 3 - Mattering at Clinical Placement (Elliot et al (2004) 24-item mattering index)

Please tick the appropriate box on the scale from strongly agree to strongly disagree, thinking about your clinical placement.

If you have not yet attended clinical placement as part of your course, then please move on section 4.

		Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
1	Most clinical colleagues do not seem to notice when I come or when I go					
2	At a clinical placement social gathering, no one recognises me					
3	Sometimes when I am with clinical colleagues, I feel almost as if I were invisible					
4	Clinical colleagues are usually aware of my presence					
5	For whatever reason, it is hard for me to get clinical colleagues' attention					
6	Whatever else may happen, clinical colleagues do not ignore me					
7	For better or worse, clinical colleagues generally know when I am around					
8	Clinical colleagues tend not to remember my name					
9	Clinical colleagues do not care what happens to me					
10	There are clinical colleagues on placement who react to what happens to me in the same way they would if it had happened to them					
11	My successes are a source of pride to clinical colleagues on placement					
12	I have noticed that clinical colleagues will sometimes inconvenience themselves to help me					
13	When I have a problem, clinical colleagues usually don't want to hear about it					
14	Much of the time, clinical colleagues are indifferent to my needs					
15	There are clinical colleagues on placement who care enough about me to criticise me when I need it					
16	There are no clinical colleagues who really take pride in my accomplishments					
17	No one would notice on placement if one day I disappeared					
18	If the truth be known, no one really needs me on placement					
19	Quite a few clinical colleagues look to me for advice on issues of importance					
20	I am not someone clinical colleagues turn to when they need something					
21	Clinical colleagues tend to rely on me for support					
22	When clinical colleagues need help they come to me					
23	Clinical colleagues count on me to be there in times of need					
24	Often clinical colleagues trust me with things that are important to them					

Section 4 - Belongingness at University (Yorke (2016) 6-item scale)

Please tick the appropriate box on the scale from strongly agree to strongly disagree, thinking about the University.

		Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
1	I feel at home in this University					
2	Being at this university is an enriching experience					
3	I wish I'd gone to a different University					
4	I have found this department to be welcoming					
5	I am shown respect by members of staff in this department					
6	Sometimes I feel I don't belong in this University					

Section 5 - Belongingness at Clinical Placement (Levett-Jones et al (2009) 34-item BS-CPE scale)

Please tick the appropriate box on the scale from never true to always true, thinking about your clinical placement.

If you have not yet attended clinical placement as part of your course, then you do not need to complete this section.

		Never True	Rarely True	Sometimes True	Often True	Always True
1	I feel like I fit in with clinical colleagues during my placements					
2	It is important to feel accepted by clinical staff					
3	Clinical staff see me as a competent person					
4	Clinical staff offer to help me when they sense I need it					
5	I make an effort to help new students or staff feel welcome					
6	I view my placements as a place to experience a sense of belonging					
7	I get support from clinical colleagues when I need it					
8	I am invited to social events outside of my placements by clinical colleagues					

Please turn over

		Never True	Rarely True	Sometimes True	Often True	Always True
9	I like the people I work with on placements					
10	I feel discriminated against on placements					
11	I offer to help my clinical colleagues, even if they don't ask for it					
12	It is important to me that someone at my placement acknowledges my birthday in some way					
13	I invite clinical colleagues to eat lunch / dinner with me					
14	On placements I feel like an outsider					
15	There are people that I work with on placements who share my values					
16	Clinical colleagues ask for my ideas or opinions about different matters					
17	I feel understood by the clinical staff					
18	I make an effort when on placements to be involved with my clinical colleagues in some way					
19	I am supportive of my clinical colleagues					
20	I ask for my clinical colleagues' advice					
21	People I work with on placements accept me when I'm just being myself					
22	I am uncomfortable attending social functions on placements because I feel like I don't belong					
23	When I walk up to a group on a placement I feel welcomed					
24	Feeling 'a part of things' is one of the things I like about going to placements					
25	There are people on placements with whom I have a strong bond					
26	I keep my personal life to myself when I'm on placements					
27	It seems that people I work with on placements like me					
28	I let clinical colleagues know I care about them by asking how things are going for them and their family					
29	Clinical colleagues notice when I am absent from placements or social gatherings because they ask about me					
30	One or more of my clinical colleagues confides in me					
31	I let my clinical colleagues know that I appreciate them					
32	I ask my clinical colleagues for help when I need it					
33	I like where I work on placements					
34	I feel free to share my disappointments with at least one of my clinical colleagues					

Thank you for taking the time to complete this questionnaire

Appendix E Data entry coding for SPSS

Data Entry Coding for SPSS

SECTION 1		
Course	Radiotherapy	1
	Diagnostic Radiography	2
	Medical Ultrasound	3
	BSc (Hons) Paramedic Science	4
	Dip HE Paramedic Science	5
	BSc (Hons) ODP	6
	Dip HE ODP	7
Year of study	1st year (level 4)	1
	2nd year (level 5)	2
	3rd year (level 6)	3
Gender	Male	0
	Female	1
Age	18-21	1
	22-29	2
	30-39	3
	40-49	4
	50+	5
Ethnicity	Other	0
	White	1
	Asian	2
	Black	3
	Chinese	4
	Mixed	5
Dependents	No	0
	Yes	1
English as 1st language	No	0
	Yes	1
`		
Same term and home address	No	0
	Yes	1
Prior University course	No	0
	Yes	1
Prior clinical experience	No	0
	Yes	1
1st generation	No	0
	Yes	1

Considered dropping out	No	0
	Yes	1
Most 'at home'	University	0
	Clinical	1
	Both	2
	Neither	3
SECTION 2		
Mattering at University	Strongly agree	5
	Agree	4
	Neutral	3
	Disagree	2
	Strongly disagree	1
SECTION 3		
Mattering at Clinical Placement	Strongly agree	5
	Agree	4
	Neutral	3
	Disagree	2
	Strongly disagree	1
SECTION 4		
Belonging at University	Strongly agree	5
	Agree	4
	Neutral	3
	Disagree	2
	Strongly disagree	1
SECTION 5		
Belonging at Clinical Placement	Always true	5
	Often true	4
	Sometimes true	3
	Rarely true	2
	Never true	1
ACADEMIC RESULTS		
Passed at 1st attempt	No	0
	Yes	1
Withdrawn during year	No	0
	Yes	1
Interruption	No	0
	Yes	1
ECs	No	0
	Yes	1
Proceed or award at end of year	No	0
	Yes	1

Appendix F Data tables: Belonging and Mattering Across Demographics

5.4.2 Belonging and mattering and course studied

Radiotherapy

Statistics

		MU Mean	MP Mean	BP Mean	BU Mean
N	Valid	37	37	37	37
	Missing	0	0	0	0
Mean		3.530	3.582	3.777	3.887
Median		3.542	3.625	3.706	4.000
Std. Deviation		0.380	0.5737	0.478	0.788

Diagnostic Radiography

Statistics

		MU Mean	MP Mean	BP Mean	BU Mean
N	Valid	103	103	102	102
	Missing	0	0	1	1
Mean		3.422	3.257	3.503	3.813
Median		3.458	3.292	3.544	3.833
Std. Deviation		0.353	0.564	0.488	0.600

Medical Ultrasound

Statistics

		MU Mean	MP Mean	BP Mean	BU Mean
N	Valid	8	8	8	8
	Missing	0	0	0	0
Mean		3.359	3.212	3.712	3.687
Median		3.500	3.437	3.838	3.833
Std. Deviation		0.328	0.487	0.459	0.499

Paramedic Science

Statistics

		MU Mean	MP Mean	BP Mean	BU Mean
N	Valid	34	33	33	34
	Missing	0	1	1	0
Mean		3.277	3.535	3.789	2.432
Median		3.250	3.542	3.735	2.417
Std. Deviation		0.429	0.597	0.565	0.854

BSc (Hons) Operating Department Practice

Statistics

		MU Mean	MP Mean	BP Mean	BU Mean
N	Valid	25	24	23	26
	Missing	1	2	3	0
Mean		3.422	3.098	3.390	3.795
Median		3.500	3.312	3.588	3.833
Std. Deviation		0.411	0.775	0.615	0.734

Dip HE Operating Department Practice

Statistics

		MU Mean	MP Mean	BP Mean	BU Mean
N	Valid	56	56	55	56
	Missing	0	0	1	0
Mean		3.349	3.235	3.392	3.491
Median		3.312	3.292	3.441	3.500
Std. Deviation		0.403	0.696	0.539	0.739

5.4.3 Belonging and mattering and year of study

1st Year

Statistics

		MU Mean	MP Mean	BP Mean	BU Mean
N	Valid	104	103	102	105
	Missing	1	2	3	0
Mean		3.409	3.217	3.443	3.775
Median		3.458	3.208	3.500	3.833
Std. Deviation		0.403	0.593	0.476	0.716

2nd Year

Statistics

		MU Mean	MP Mean	BP Mean	BU Mean
N	Valid	103	102	100	102
	Missing	0	1	3	1
Mean		3.402	3.337	3.576	3.414
Median		3.381	3.447	3.603	3.583
Std. Deviation		0.365	0.663	0.591	0.848

3rd Year

Statistics

		MU Mean	MP Mean	BP Mean	BU Mean
N	Valid	56	56	56	56
	Missing	0	0	0	0
Mean		3.385	3.468	3.706	3.476
Median		3.426	3.542	3.706	3.833
Std. Deviation		0.399	0.623	0.507	0.955

5.4.4 Belonging and mattering and ethnicity

White

Statistics

		MU Mean	MP Mean	BP Mean	BU Mean
N	Valid	132	131	131	132
	Missing	0	1	1	0
Mean		3.442	3.422	3.649	3.579
Median		3.458	3.542	3.618	3.750
Std. Deviation		0.383	0.674	0.570	0.872

Asian

Statistics

		MU Mean	MP Mean	BP Mean	BU Mean
N	Valid	58	58	58	58
	Missing	0	0	0	0
Mean		3.345	3.188	3.489	3.566
Median		3.361	3.271	3.559	3.750
Std. Deviation		0.386	0.540	0.467	0.865

Black

Statistics

		MU Mean	MP Mean	BP Mean	BU Mean
N	Valid	45	44	42	45
	Missing	1	2	4	1
Mean		3.360	3.160	3.314	3.655
Median		3.348	3.125	3.191	3.833
Std. Deviation		0.370	0.574	0.433	0.733

Chinese

Statistics

		MU Mean	MP Mean	BP Mean	BU Mean
N	Valid	1	1	1	1
	Missing	0	0	0	0
Mean		3.625	3.708	3.382	4.000
Median		3.625	3.708	3.382	4.000

Mixed

Statistics

		MU Mean	MP Mean	BP Mean	BU Mean
N	Valid	10	10	10	10
	Missing	0	0	0	0
Mean		3.430	3.721	3.788	2.983
Median		3.354	3.750	3.765	3.000
Std. Deviation		0.441	0.491	0.588	0.8442

Other

Statistics

		MU Mean	MP Mean	BP Mean	BU Mean
N	Valid	12	12	11	12
	Missing	0	0	1	0
Mean		3.396	3.073	3.530	3.681
Median		3.534	3.104	3.618	4.000
Std. Deviation		0.484	0.599	0.570	0.783

5.4.5 Belonging and mattering and dependants, term address, and English as first language

Dependants (living at home)

Yes (has dependants)

Statistics

		MU Mean	MP Mean	BP Mean	BU Mean
N	Valid	112	112	111	112
	Missing	0	0	1	0
Mean		3.449	3.272	3.538	3.733
Median		3.489	3.292	3.618	3.833
Std. Deviation		0.377	0.653	0.543	0.765

No (does not have dependants)

Statistics

		MU Mean	MP Mean	BP Mean	BU Mean
N	Valid	144	142	140	144
	Missing	1	3	5	1
Mean		3.365	3.343	3.557	3.445
Median		3.417	3.417	3.529	3.583
Std. Deviation		0.385	0.6010	0.535	0.886

Home address same as term address

Yes (same term time and home address)

Statistics

		MU Mean	MP Mean	BP Mean	BU Mean
N	Valid	162	161	160	162
	Missing	0	1	2	0
Mean		3.428	3.342	3.547	3.722
Median		3.458	3.435	3.588	3.833
Std. Deviation		0.397	0.650	0.529	0.766

No (different term time and home address)

Statistics

		MU Mean	MP Mean	BP Mean	BU Mean
N	Valid	101	100	98	101
	Missing	1	2	4	1
Mean		3.359	3.278	3.559	3.329
Median		3.381	3.333	3.529	3.500
Std. Deviation		0.366	0.603	0.553	0.892

English as first language

Yes (English is first language)

Statistics

		MU Mean	MP Mean	BP Mean	BU Mean
N	Valid	203	202	201	203
	Missing	0	1	2	0
Mean		3.427	3.349	3.593	3.571
Median		3.458	3.426	3.588	3.667
Std. Deviation		0.382	0.628	0.521	0.833

No (English not first language)

Statistics

		MU Mean	MP Mean	BP Mean	BU Mean
N	Valid	58	57	55	58
	Missing	1	2	4	1
Mean		3.288	3.182	3.387	3.552
Median		3.271	3.208	3.500	3.750
Std. Deviation		0.369	0.635	0.572	0.867

5.4.6 Belonging and mattering, seriously considering dropping out and feeling 'at home'

Seriously considered dropping out

No

Statistics

		MU Mean	MP Mean	BP Mean	BU Mean
N	Valid	173	171	169	172
	Missing	0	2	4	1
Mean		3.478	3.377	3.599	3.790
Median		3.500	3.500	3.588	3.833
Std. Deviation		0.348	0.597	0.509	0.710

Yes

Statistics

		MU Mean	MP Mean	BP Mean	BU Mean
N	Valid	89	89	88	90
	Missing	1	1	2	0
Mean		3.246	3.194	3.455	3.149
Median		3.250	3.208	3.471	3.167
Std. Deviation		0.410	0.680	0.580	0.905

Where students feel most 'at home'

University

Statistics

		MU Mean	MP Mean	BP Mean	BU Mean
N	Valid	86	85	85	87
	Missing	1	2	2	0
Mean		3.474	3.029	3.358	3.910
Median		3.522	3.083	3.382	4.000
Std. Deviation		0.389	0.537	0.471	0.615

Clinical Placement

Statistics

		MU Mean	MP Mean	BP Mean	BU Mean
N	Valid	65	64	64	65
	Missing	0	1	1	0
Mean		3.362	3.684	3.908	3.334
Median		3.333	3.646	3.809	3.500
Std. Deviation		0.368	0.582	0.453	0.984

Both

Statistics

		MU Mean	MP Mean	BP Mean	BU Mean
N	Valid	52	52	52	52
	Missing	0	0	0	0
Mean		3.537	3.578	3.730	3.917
Median		3.562	3.625	3.794	4.000
Std. Deviation		0.340	0.463	0.412	0.616

Neither

Statistics

		MU Mean	MP Mean	BP Mean	BU Mean
N	Valid	59	59	56	58
	Missing	0	0	3	1
Mean		3.213	3.099	3.280	3.011
Median		3.167	3.250	3.235	3.167
Std. Deviation		0.370	0.659	0.550	0.744

Appendix G Data tables: Student Belonging and Mattering

5.5.1 Belonging and mattering and comparison of means scores

Belonging and mattering overall scores

Statistics

		MU Mean	MP Mean	BP Mean	BU Mean
N	Valid	263	261	258	263
	Missing	1	3	6	1
Mean		3.401	3.318	3.552	3.571
Median		3.417	3.375	3.582	3.667
Std. Deviation		0.386	0.632	0.537	0.837

Descriptive Statistics

	N	Range	Minimum	Maximum	Mean	Skewness	
	Statistic	Statistic	Statistic	Statistic	Statistic	Statistic	Std. Error
MU Mean	263	2.118	2.174	4.292	3.401	-0.262	0.150
MP Mean	261	3.625	1.375	5.000	3.318	-0.338	0.151
BU Mean	263	4.000	1.000	5.000	3.571	-0.678	0.150
BP Mean	258	3.094	1.818	4.912	3.552	-0.056	0.152
Valid N (listwise)	258						

Mode calculated via Microsoft excel.

Statistics for MU Mean

N	Mean	Std. Deviation	Coefficient of Variation Mean Centered
263	3.401	0.386	11.4%

Statistics for MP Mean

N	Mean	Std. Deviation	Coefficient of Variation Mean Centered
261	3.318	0.632	19.1%

Statistics for BU Mean

N	Mean	Std. Deviation	Coefficient of Variation Mean Centered
263	3.571	0.837	23.4%

Statistics for BP Mean

N	Mean	Std. Deviation	Coefficient of Variation Mean Centered
258	3.552	0.537	15.1%

5.5.2 Belonging and mattering correlations

Correlations

			MU Mean	MP Mean	BU Mean	BP Mean
Spearman's rho	MU Mean	Correlation Coefficient	1.000	0.286**	0.471**	0.324**
		Sig. (2-tailed)	.	<0.001	<0.001	<0.001
		N	263	261	262	258
	MP Mean	Correlation Coefficient	0.286**	1.000	0.134*	0.773**
		Sig. (2-tailed)	<.001	.	0.030	<0.001
		N	261	261	260	258
	BU Mean	Correlation Coefficient	0.471**	0.134*	1.000	0.197**
		Sig. (2-tailed)	<0.001	0.030	.	0.002
		N	262	260	263	258
	BP Mean	Correlation Coefficient	0.324**	0.773**	0.197**	1.000
		Sig. (2-tailed)	<0.001	<0.001	0.002	.
		N	258	258	258	258

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

Appendix H Data tables: Grade outcome

5.6.1 Grade outcome and student demographics

	Null Hypothesis	Test	Sig.[a,b]	Decision
1	The distribution of Average grade is the same across categories of Course.	Independent-Samples Kruskal-Wallis Test	0.017	Reject the null hypothesis.

a. The significance level is .050.

b. Asymptotic significance is displayed.

	Null Hypothesis	Test	Sig.[a,b]	Decision
1	The distribution of Average grade is the same across categories of Year of Study.	Independent-Samples Kruskal-Wallis Test	0.679	Retain the null hypothesis.

a. The significance level is .050.

b. Asymptotic significance is displayed.

	Null Hypothesis	Test	Sig.[a,b]	Decision
1	The distribution of Average grade is the same across categories of Gender.	Independent-Samples Mann-Whitney U Test	0.491	Retain the null hypothesis.

a. The significance level is .050.

b. Asymptotic significance is displayed.

	Null Hypothesis	Test	Sig.[a,b]	Decision
1	The distribution of Average grade is the same across categories of Age.	Independent-Samples Kruskal-Wallis Test	0.116	Retain the null hypothesis.

a. The significance level is .050.

b. Asymptotic significance is displayed.

	Null Hypothesis	Test	Sig.[a,b]	Decision
1	The distribution of Average grade is the same across categories of Dependents.	Independent-Samples Mann-Whitney U Test	0.691	Retain the null hypothesis.

a. The significance level is .050.

b. Asymptotic significance is displayed.

	Null Hypothesis	Test	Sig.[a,b]	Decision
1	The distribution of Average grade is the same across categories of Ethnicity.	Independent-Samples Kruskal-Wallis Test	<0.001	Reject the null hypothesis.

a. The significance level is .050.

b. Asymptotic significance is displayed.

	Null Hypothesis	Test	Sig.[a,b]	Decision
1	The distribution of Average grade is the same across categories of English as 1st Language.	Independent-Samples Mann-Whitney U Test	0.021	Reject the null hypothesis.

a. The significance level is .050.

b. Asymptotic significance is displayed.

	Null Hypothesis	Test	Sig.[a,b]	Decision
1	The distribution of Average grade is the same across categories of Same term and home address.	Independent-Samples Mann-Whitney U Test	0.965	Retain the null hypothesis.

a. The significance level is .050.

b. Asymptotic significance is displayed.

	Null Hypothesis	Test	Sig.[a,b]	Decision
1	The distribution of Average grade is the same across categories of Prior Uni course.	Independent-Samples Mann-Whitney U Test	0.056	Retain the null hypothesis.

a. The significance level is .050.

b. Asymptotic significance is displayed.

	Null Hypothesis	Test	Sig.[a,b]	Decision
1	The distribution of Average grade is the same across categories of Prior clinical.	Independent-Samples Mann-Whitney U Test	0.108	Retain the null hypothesis.

a. The significance level is .050.

b. Asymptotic significance is displayed.

	Null Hypothesis	Test	Sig.[a,b]	Decision
1	The distribution of Average grade is the same across categories of 1st generation.	Independent-Samples Mann-Whitney U Test	0.526	Retain the null hypothesis.

a. The significance level is .050.

b. Asymptotic significance is displayed.

	Null Hypothesis	Test	Sig.[a,b]	Decision
1	The distribution of Average grade is the same across categories of Considered dropping out.	Independent-Samples Mann-Whitney U Test	0.002	Reject the null hypothesis.

a. The significance level is .050.

b. Asymptotic significance is displayed.

	Null Hypothesis	Test	Sig.[a,b]	Decision
1	The distribution of Average grade is the same across categories of Most 'at home'.	Independent-Samples Kruskal-Wallis Test	0.871	Retain the null hypothesis.

a. The significance level is .050.

b. Asymptotic significance is displayed.

5.6.2 Grade outcome and course studied

Radiotherapy

Statistics

Average grade

N	Valid	37
	Missing	0
Mean		55.844
Median		56.750
Std. Deviation		9.909

Diagnostic Radiography

Statistics

Average grade

N	Valid	101
	Missing	2
Mean		60.707
Median		59.830
Std. Deviation		10.785

Medical ultrasound

Statistics

Average grade

N	Valid	8
	Missing	0
Mean		62.521
Median		63.500
Std. Deviation		8.9209

Paramedic science

Statistics

Average grade

N	Valid	34
	Missing	0
Mean		60.216
Median		64.165
Std. Deviation		14.6292

BSc (Hons) Operating Department Practice

Statistics

Average grade

N	Valid	25
	Missing	1
Mean		54.780
Median		63.500
Std. Deviation		23.3658

Dip HE Operating Department Practice

Statistics

Average grade

N	Valid	51
	Missing	5
Mean		62.638
Median		67.670
Std. Deviation		19.935

5.6.3 Grade outcome and ethnicity

Other

Statistics

Average grade

N	Valid	10
	Missing	2
Mean		51.605
Median		54.585
Std. Deviation		17.862

White

Statistics

Average grade

N	Valid	131
	Missing	1
Mean		63.514
Median		66.000
Std. Deviation		14.594

Asian

Statistics

Average grade

N	Valid	57
	Missing	1
Mean		57.715
Median		59.000
Std. Deviation		12.144

Black

Statistics

Average grade

N	Valid	44
	Missing	2
Mean		52.541
Median		55.165
Std. Deviation		17.122

Chinese

Statistics

Average grade

N	Valid	1
	Missing	0
Mean		52.330
Median		52.330

Mixed

Statistics

Average grade

N	Valid	8
	Missing	2
Mean		65.187
Median		61.480
Std. Deviation		7.392

5.6.4 Grade outcome and seriously considering dropping out

No

Statistics

Average grade

N	Valid	167
	Missing	6
Mean		62.002
Median		63.500
Std. Deviation		13.722

Yes

Statistics

Average grade

N	Valid	88
	Missing	2
Mean		55.608
Median		59.750
Std. Deviation		16.578

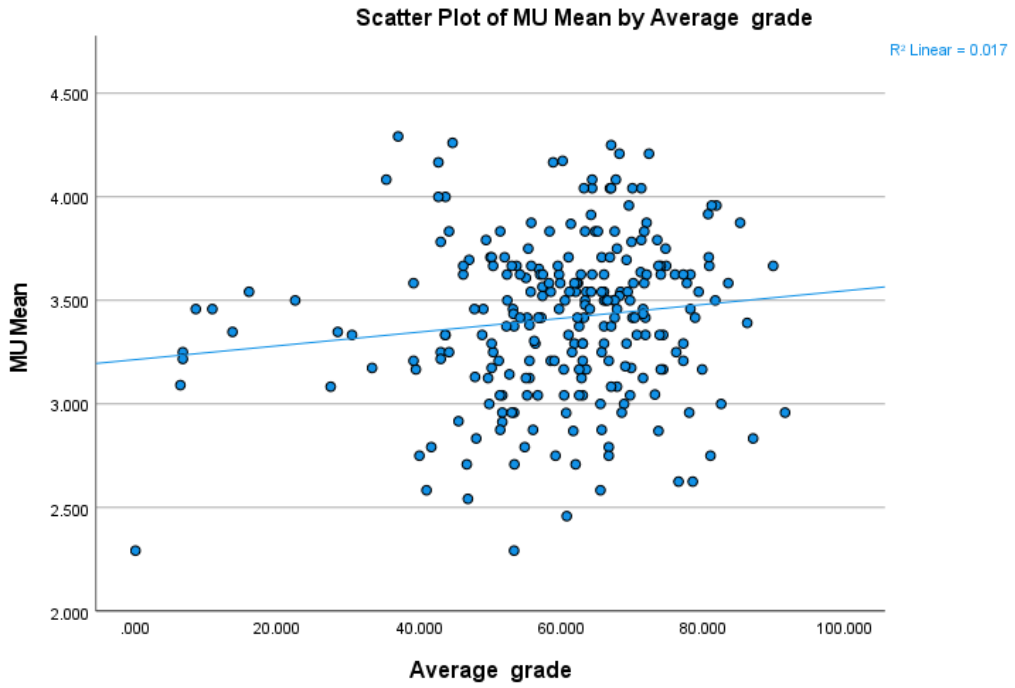
5.6.5 Grade outcome, belonging and mattering

Correlations

			MU Mean	MP Mean	BU Mean	BP Mean	Average grade
Spearman's rho	MU Mean	Correlation Coefficient	1.000	0.286**	0.471**	0.324**	0.141*
		Sig. (2-tailed)	.	<0.001	<0.001	<0.001	0.024
		N	263	261	262	258	255
	MP Mean	Correlation Coefficient	0.286**	1.000	0.134*	0.773**	-0.023
		Sig. (2-tailed)	<0.001	.	0.030	<0.001	0.720
		N	261	261	260	258	253
	BU Mean	Correlation Coefficient	0.471**	0.134*	1.000	0.197**	0.004
		Sig. (2-tailed)	<0.001	0.030	.	0.002	0.944
		N	262	260	263	258	255
	BP Mean	Correlation Coefficient	0.324**	0.773**	0.197**	1.000	-0.049
		Sig. (2-tailed)	<0.001	<0.001	0.002	.	0.438
		N	258	258	258	258	251
	Average grade	Correlation Coefficient	0.141*	-0.023	0.004	-0.049	1.000
		Sig. (2-tailed)	0.024	0.720	0.944	0.438	.
		N	255	253	255	251	256

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).



5.6.6 Academic progression, achievement, belonging and mattering

Hypothesis Test Summary

	Null Hypothesis	Test	Sig.[a,b]	Decision
1	The distribution of Average grade is the same across categories of Passed at first attempt.	Independent-Samples Mann-Whitney U Test	0.000	Reject the null hypothesis.
2	The distribution of MU Mean is the same across categories of Passed at first attempt.	Independent-Samples Mann-Whitney U Test	0.006	Reject the null hypothesis.
3	The distribution of MP Mean is the same across categories of Passed at first attempt.	Independent-Samples Mann-Whitney U Test	0.783	Retain the null hypothesis.
4	The distribution of BU Mean is the same across categories of Passed at first attempt.	Independent-Samples Mann-Whitney U Test	0.888	Retain the null hypothesis.
5	The distribution of BP Mean is the same across categories of Passed at first attempt.	Independent-Samples Mann-Whitney U Test	0.330	Retain the null hypothesis.

a. The significance level is .050.

b. Asymptotic significance is displayed.

Hypothesis Test Summary

	Null Hypothesis	Test	Sig.[a,b]	Decision
1	The distribution of Average grade is the same across categories of Withdrawn during year.	Independent-Samples Mann-Whitney U Test	<0.001	Reject the null hypothesis.
2	The distribution of MU Mean is the same across categories of Withdrawn during year.	Independent-Samples Mann-Whitney U Test	0.248	Retain the null hypothesis.
3	The distribution of MP Mean is the same across categories of Withdrawn during year.	Independent-Samples Mann-Whitney U Test	0.169	Retain the null hypothesis.
4	The distribution of BU Mean is the same across categories of Withdrawn during year.	Independent-Samples Mann-Whitney U Test	0.080	Retain the null hypothesis.
5	The distribution of BP Mean is the same across categories of Withdrawn during year.	Independent-Samples Mann-Whitney U Test	0.286	Retain the null hypothesis.

a. The significance level is .050.

b. Asymptotic significance is displayed.

Hypothesis Test Summary

	Null Hypothesis	Test	Sig.[a,b]	Decision
1	The distribution of Average grade is the same across categories of Interruption.	Independent-Samples Mann-Whitney U Test	0.292	Retain the null hypothesis.
2	The distribution of MU Mean is the same across categories of Interruption.	Independent-Samples Mann-Whitney U Test	0.292	Retain the null hypothesis.
3	The distribution of MP Mean is the same across categories of Interruption.	Independent-Samples Mann-Whitney U Test	0.352	Retain the null hypothesis.
4	The distribution of BU Mean is the same across categories of Interruption.	Independent-Samples Mann-Whitney U Test	0.779	Retain the null hypothesis.
5	The distribution of BP Mean is the same across categories of Interruption.	Independent-Samples Mann-Whitney U Test	0.922	Retain the null hypothesis.

a. The significance level is .050.

b. Asymptotic significance is displayed.

Hypothesis Test Summary

	Null Hypothesis	Test	Sig.[a,b]	Decision
1	The distribution of Average grade is the same across categories of ECs.	Independent-Samples Mann-Whitney U Test	0.014	Reject the null hypothesis.
2	The distribution of MU Mean is the same across categories of ECs.	Independent-Samples Mann-Whitney U Test	<0.001	Reject the null hypothesis.
3	The distribution of MP Mean is the same across categories of ECs.	Independent-Samples Mann-Whitney U Test	0.024	Reject the null hypothesis.
4	The distribution of BU Mean is the same across categories of ECs.	Independent-Samples Mann-Whitney U Test	0.141	Retain the null hypothesis.
5	The distribution of BP Mean is the same across categories of ECs.	Independent-Samples Mann-Whitney U Test	0.010	Reject the null hypothesis.

a. The significance level is .050.

b. Asymptotic significance is displayed.

Hypothesis Test Summary

	Null Hypothesis	Test	Sig.[a,b]	Decision
1	The distribution of Average grade is the same across categories of Proceed / award.	Independent-Samples Mann-Whitney U Test	0.000	Reject the null hypothesis.
2	The distribution of MU Mean is the same across categories of Proceed / award.	Independent-Samples Mann-Whitney U Test	0.876	Retain the null hypothesis.
3	The distribution of MP Mean is the same across categories of Proceed / award.	Independent-Samples Mann-Whitney U Test	0.617	Retain the null hypothesis.
4	The distribution of BU Mean is the same across categories of Proceed / award.	Independent-Samples Mann-Whitney U Test	0.655	Retain the null hypothesis.
5	The distribution of BP Mean is the same across categories of Proceed / award.	Independent-Samples Mann-Whitney U Test	0.331	Retain the null hypothesis.

a. The significance level is .050.

b. Asymptotic significance is displayed.

5.6.6.1 Passing at first attempt

No

Statistics

		MU Mean	Average grade
N	Valid	99	100
	Missing	1	0
Mean		3.345	49.407
Median		3.333	51.275
Std. Deviation		0.386	16.3760

Yes

Statistics

		MU Mean	Average grade
N	Valid	156	156
	Missing	0	0
Mean		3.457	66.464
Median		3.500	66.000
Std. Deviation		0.372	9.246

5.6.6.2 Withdrawn during academic year

No

Statistics

Average grade

N	Valid	244
	Missing	0
Mean		61.765
Median		62.790
Std. Deviation		12.067

Yes

Statistics

Average grade

N	Valid	12
	Missing	0
Mean		19.874
Median		19.250
Std. Deviation		13.728

5.6.6.3 Successful extenuating circumstances claims

Statistics

		MU Mean	MP Mean	BP Mean	Average grade
N	Valid	23	23	23	23
	Missing	0	0	0	0
Mean		3.168	3.056	3.277	53.384
Median		3.208	3.261	3.265	55.500
Std. Deviation		0.335	0.575	0.463	15.084

Statistics

		MU Mean	MP Mean	BP Mean	Average grade
N	Valid	232	230	228	233
	Missing	1	3	5	0
Mean		3.438	3.360	3.591	60.435
Median		3.458	3.437	3.588	62.750
Std. Deviation		0.377	0.619	0.532	14.897

5.6.6.4 Successfully proceeded / awarded

Average grade

N	Valid	34
	Missing	0
Mean		34.403
Median		39.335
Std. Deviation		16.869

Average grade

N	Valid	222
	Missing	0
Mean		63.691
Median		63.500
Std. Deviation		10.167

4.6.3.1 Testing assumptions Mann-Whitney U

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	3875.261	3	1291.754	14.937	<0.001[b]
	Residual	18419.847	213	86.478		
	Total	22295.108	216			

a. Dependent Variable: Average grade

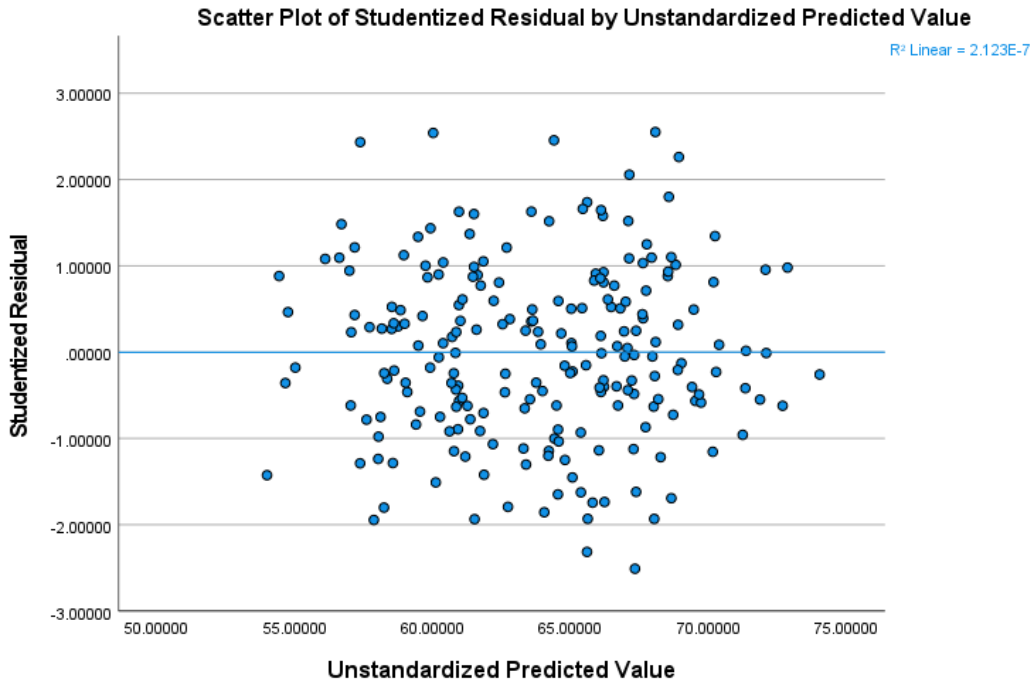
b. Predictors: (Constant), Ethnicity=White, MU Mean, BP Mean

Coefficients[a]

Model	Unstandardized Coefficients		Standardized Coefficients			95.0% Confidence Interval for B		Correlations			Collinearity Statistics	
	B	Std. Error	Beta	t	Sig.	Lower Bound	Upper Bound	Zero-order	Partial	Part	Tolerance	VIF
(Constant)	56.048	6.392		8.769	<0.001	43.449	68.647					
MU Mean	6.026	1.773	0.223	3.399	<0.001	2.531	9.520	0.159	0.227	0.212	0.902	1.109
BP Mean	-4.645	1.301	-0.236	-3.571	<0.001	-7.210	-2.081	-0.118	-0.238	-0.222	0.885	1.130
Ethnicity= White	7.038	1.280	0.346	5.498	<0.001	4.515	9.562	0.319	0.353	0.342	0.980	1.020

a. Dependent Variable: Average grade

Checking for linearity



Multicollinearity

Correlations

		Average grade	MU Mean	BP Mean	Ethnicity=White
Pearson Correlation	Average grade	1.000	0.159	-0.118	0.319
	MU Mean	0.159	1.000	0.313	0.029
	BP Mean	-0.118	0.313	1.000	0.140
	Ethnicity=White	0.319	0.029	0.140	1.000
Sig. (1-tailed)	Average grade	.	0.010	0.041	<0.001
	MU Mean	0.010	.	0.000	0.335
	BP Mean	0.041	0.000	.	0.020
	Ethnicity=White	0.000	0.335	0.020	.
N	Average grade	217	217	217	217
	MU Mean	217	217	217	217
	BP Mean	217	217	217	217
	Ethnicity=White	217	217	217	217