

Medical students' experience and achievement: the effect of ethnicity and social networks

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iii. List of abbreviations

ABG	arterial blood gas
CHAT	cultural historical activity theory
CoP	communities of practice
EI	emotional intelligence
EM	ethnic minority
GI	gastrointestinal
HEI	higher education institute
LPP	legitimate peripheral participation
MB ChB	medical degree (bachelor of medicine & surgery)
MMS	manchester medical school
OSCE	objective structured clinical examination
PASN	personal academic support network
PBL	problem based learning
RSA	royal society for the encouragement of the arts, manufactures and commerce
SNA	social network analysis
SPSS	statistical package for the social sciences
TED	technology entertainment design
TM	Thomas Main
UK	United Kingdom

iv. Short Abstract

Medical students' experience and achievement: the effect of ethnicity and social networks

There is a well-established 'achievement gap' in medical education, with 'ethnic minority' students achieving less well in examinations than their white counterparts. The processes underlying this difference are currently unknown. Most research to date has taken a student-deficit approach, suggesting that lower performing students lack the cognitive or cultural capacity of their higher achieving peers. These models have so far failed to explain the variation in achievement by ethnicity.

In order to address this gap in the literature and further our understanding of ethnic minority students' underachievement, this thesis takes a sociocultural approach to the problem. It addresses two research questions: firstly, how does ethnicity impact on medical school achievement? Secondly, how do social networks affect achievement? This research uses qualitative interviews (n=33 medical students), quantitative survey methods and social network analysis (n=160 medical students) to explore ethnicity and the achievement gap within medical education. Sociocultural theories of learning, specifically concepts from communities of practice and Pierre Bourdieu are employed in the design and analysis phases.

This thesis demonstrates that medical students' achievement is best conceptualised as part of a wider learning trajectory toward becoming a doctor. Relationships are important channels through which the resources and support can flow, these in turn facilitate learning and achievement. Lower achieving students are less well connected to their PBL peers and have fewer tutors or clinicians in their network. The medical world has a tightly prescribed, yet often hidden, set of legitimate dispositions; students must learn to embody these norms, values and behaviours in order to succeed. This process relies on experiences of participation, facilitated by relationships with peers and seniors. Socialisation is clearly mediated by culture. Ethnic minority students, due to their differing cultural practices and identities, have fewer experiences of participation, often experience the medical domain as outsiders and find it harder to interact with tutors and clinicians. This is reflected in their social networks as some minority students have fewer seniors in their network. These factors interact to cut ethnic minority students off from potential and actual resources that facilitate learning and achievement.

If the situation is to be improved, medical schools must do more to acknowledge the extra difficulties many 'ethnic minority' students face in becoming an insider. Processes of identification and participation must be supported as these students negotiate the extra distance and tensions between their home world and those of medical education and medicine.

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PhD Medical Education Research, The University of Manchester

12th August 2013

v. Declaration

No portion of the work referred to in this thesis has been submitted in support of an application for another degree or qualification of this or any other university or other institute of learning.

Suzanne Vaughan, 12th August 2013

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vii. Acknowledgements

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Chapter 1

Introduction

1.1 Introduction

Since the seminal ethnographic work 'Boys in White' (Becker 1977), ethnic minority (and women) students have become a much larger proportion of the student body within medical education. For 'ethnic minority' (EM) students this was not without difficulty as research showed institutional racism across many institutions disadvantaging 'ethnic minority' applicants (Esmail et al. 1995; McManus et al. 1995; Esmail 2001). Whilst many of these explicitly prejudicial processes have now been exposed and eliminated, selection processes using previous educational attainment continue to favour students from more privileged backgrounds (Sandhu et al. 2010). Once at medical school, research continues to depict an 'achievement gap', with white students outperforming their ethnic minority counterparts (Woolf et al. 2011). At Manchester Medical School (MMS), the setting for this study, a retrospective analysis of the achievement of a cohort of students entering in 2001 (n=345) demonstrated that 'ethnic minority' students had lower average performance and pass rates than their white peers (Bagley et al. 2007). Ethnicity was also significantly associated with being delayed a whole academic year due to resits, with EM students more than twice as likely to be delayed in this way. This is a concern, as approximately 40% of the students at MMS come from an ethnic minority background.

This pattern is also seen in many other areas of higher education (Richardson 2008). However, medical education is an ideal domain from which to research this problem, as many other differences (such as previous academic experience and attainment) are minimised due to the highly selective nature of UK medical schools. Assuming then that all students have a similar level of ability and potential, why are these ethnic inequalities so persistent? This question is highly topical, as medical schools, along with the rest of higher education, attempt to widen participation into neighbourhoods and demographic groups traditionally underrepresented (Sandhu *et al.* 2010). There is a danger that opportunity is being misrepresented, as equality of access may not be translating into equality of experience or achievement. From an economic perspective, universities must now recruit underrepresented groups; this year a new tuition fee structure was introduced in England permitting institutions to charge up to £9000 per annum. However, in order to maintain this permission, universities must meet widening participation targets (Hoare and Johnston 2011). There may be ethical concerns around actively recruiting these students, only for them to fail or experience difficulty (Archer 2007). For these reasons, it is of utmost

importance that empirical research is undertaken to better understand the processes underlying these ethnic inequalities in achievement.

There has been a clear shift in thinking around brain and behaviour, with academic disciplines such as economics, business, bioscience and public health considering the impact of wider, social connections on individuals. Beyond academia this has been mirrored in the popularity of organisations such as the RSA and TED¹ which frequently develop and disseminate ideas about the social nature of learning, creativity and innovation. Medical education is also experiencing this paradigm shift, as educators and researchers move away from an acquisition paradigm towards a more social, constructivist model of learning (Bleakley *et al.* 2010). This has been evidenced in the direction of change in medical school curricula delivery globally, as institutions provide opportunities for small group collaborative learning in the form of Problem Based Learning (PBL) sessions (Savery and Duffy 1996), and move towards learning distributed geographically and temporally facilitated by emerging technologies (Boulos *et al.* 2006).

Though changing, published empirical research in the medical education domain continues to be dominated by studies rooted in the positivist domain (Bunniss and Kelly 2010). However, there is a limit to the scope and depth of research questions that can be addressed in this way. This thesis emerged from the needs I described above in order to address the achievement gap from a situated, social perspective. To do this, it was also necessary to refocus the research gaze from the individual to the social. Taking such an approach focuses on interactions and relationships in order to explain outcomes. Networks have been shown to be powerful in shaping behaviour and beliefs. social network analysis (SNA) is now a theory and method that is applied to a wide range of phenomena, from dating and politics to epidemics and terrorist organisations (Marin and Wellman 2009). Applying SNA, alongside more traditional qualitative and quantitative methods, to the achievement gap positions this thesis as a bridge between individual action and wider patterns of achievement. In doing so I attempt to go beyond existing descriptive work to evidence the mechanisms by which advantage and disadvantage are conferred and, importantly, provide the conceptual tools to address them.

¹ RSA is the Royal Society for the encouragement of the Arts, Manufactures and Commerce (www.thersa.org). TED (Technology, Entertainment, Design) is an organization devoted to 'Ideas worth spreading' (www.ted.com). They disseminate ideas and innovations through new media such as Youtube and social media.

1.2 Positioning and reflexivity

Addressing my positioning as a researcher has been an important (and ongoing) process throughout this research. I began with very little knowledge about the medical education process; though I had some background in health research and service delivery, my only contact with doctors and medical students had been as a patient. In this sense I was an ‘outsider’.

I view knowledge as co-constructed. Research data are constructed between researcher and participant, situated within wider cultural and historical discourses. For this reason, it was important for me to maintain a reflexive awareness of my own role in this research. I brought my own intersectional identity, including being a ‘white’, British, middle-class female. This positioned me as similar in these ways to many UK medical students, yet clearly there were more groups in which I could not be an insider. My experiences also positioned me at a distance from participants as I had not worked particularly hard at school, and had never contemplated becoming a doctor.

Having been influenced by feminist and critical theory in my undergraduate training, and having worked as an advocate for people marginalised by society, I was sensitive to power and privilege and maintained a critical stance to the new world of medical education I entered. I was also aware of my own position of power within this world, as I had access to medical students’ personal narratives about their experiences and engaged with staff charged with designing and delivering their education. In this way I was part of the ongoing struggle to legitimise certain discourses over others.

Throughout this research I tried to maintain a level of reflexivity by recording and renegotiating my assumptions, keeping a reflexive diary and regularly discussing and presenting emerging ideas. Most importantly, I was located within a wider network of individuals and communities that facilitated my engagement in different, distinct disciplines and world views. As my research progressed I became more embedded in groups within medical education as I formed relationships with students, doctors and faculty. These networks not only kept me and my research grounded within practice, but also provided ongoing opportunities to reflect upon my work with individuals who encountered the phenomena I was describing as part of their lived experience. In this way I gradually became an ‘outsider-inside’, and used this tension to facilitate further reflection.

1.3 Structure of the thesis

This thesis begins with a narrative literature review, chapter two, to situate this work within existing understandings of ethnic underachievement in medical education. A sociocultural theoretical framework is introduced in chapter three, focusing on communities of practice (CoP), the concepts of Pierre Bourdieu and those from social network analysis (SNA). Chapter four describes the methods utilised in this study and provides more detail on the setting and ethical considerations. Results are presented in chapters five to seven, beginning by exploring students' learning and achievement in terms of trajectories through the different 'worlds' of home, medical school and clinical practice. In chapter six the resources, or capital, afforded to students through their relationships are considered in terms of how these impact on achievement. Chapter seven examines students' social networks using SNA to investigate the links between networks, ethnicity and achievement. Chapter eight draws the thesis together in a discussion and conclusion.

Chapter 2

Literature review

2.1 Introduction

This chapter presents a narrative review of the literature concerning ethnic minority (EM) student experiences and achievement within medical education and in higher education more broadly. I begin with a consideration of the achievement gap between white and EM students. I then critique the term ‘ethnicity’ in order to outline the position I take in the rest of the thesis. The chapter explores three key themes that emerged from the literature: *being in the minority*, *barriers to participation* and *social interaction*.

2.2 Literature review methods

An initial search of the literature was undertaken in 2009 using online databases OVID and MEDLINE and internet academic searching tool Google Scholar. A number of keywords were used in combination, including: “culture”, “ethnicity”, “experiences”, “hidden curriculum”, “medical education”, “medical students”, “perceptions”, and “race”. These keywords returned over 2000 articles which were then narrowed down by relevance to 211. Papers were also obtained using a snowball method. In order for an article to be selected, the abstract was read and a number of criteria were used (although this is not exclusively true in all cases as some articles appeared to be both relevant and interesting without adhering to these and were kept). These criteria were: written in English, medical education article, includes medical students, focus on experiences. These papers were then read in full and were entered into an Excel spreadsheet if they addressed ethnic minority students’ experiences and/or medical student achievement, with certain characteristics recorded to enable further analysis. This method reduced the number of papers to 78 (see Appendix 1). I maintained an awareness of literature emerging after this initial review by setting up automatic alerts using the original keywords and using selected medical education journals’ automated issue alerts. A final review of the literature was undertaken in 2012 with the additional keywords “participation”, “identity”, “relationships” and “social network”.

2.3 The achievement gap

Over the last decade, research has emerged to indicate an ‘achievement gap’ between white and ‘ethnic minority’ (EM) medical students’ and postgraduate trainees’ examination scores. This achievement pattern is not unique to medical education, being replicated across Higher Education (Richardson 2008); however, it is of major concern as institutions aim to recruit and train a medical student body broadly

representative of the population as a whole (Sandhu *et al.* 2010). A recent meta-analysis found that being 'non-white' was linked to lower achievement in medical students and doctors alike, with 22 reports (n=23,742 students and trainees) indicating that EM candidates as a group under-performed compared with white candidates (Woolf *et al.* 2011). Their findings indicated that, under certain statistical circumstances, 'ethnic minority' students were 2.5 times more likely to fail an exam than white students. It is now widely accepted that there is an 'ethnicity effect' with regard to medical students' achievement; it is not my desire to restate this, instead I would like to focus on the current understanding of how and why this difference in achievement exists.

The cause for the systematic difference in achievement by 'ethnic minority' students is unclear and cannot be explained by discrimination alone, though several studies have identified this as an issue (Wass *et al.* 2003), as the effect remains when multiple choice questions are anonymously marked (McManus *et al.* 1996). Although second language difficulties are a problem for some overseas 'ethnic minority' students (Hawthorne *et al.* 2004), along with additional personal and social issues (Omeri *et al.* 2003), differences in attainment remain for UK-born EM students. Curriculum and teaching methods have also been examined in relation to overseas students; whilst there are concerns about the neo-colonial aspects of exporting a Western curriculum to culturally different and distinct countries (Bleakley *et al.* 2008), no conclusive negative effects have been established, and as such it is currently difficult to determine a link between a student's culture and curriculum effect.

Across the domain of higher education, it has been acknowledged that there is no single factor, or set of factors, that adequately predict success or retention; rather it is a complex interaction of academic, emotional and social factors (Pritchard and Wilson 2003). Despite this, previous academic achievement continues to be used as a method of selecting students into medical education, along with other methods to demonstrate "a well-rounded personality" (Parry 2006). UK medical schools employ minimum grade boundaries at A-level (and, in many cases, GCSE). This is problematic, however, as using previous academic achievement to predict performance in medical school tends to underestimate for white students and overestimate success of ethnic minority students (Ferguson *et al.* 2002). This raises the question of whether there are factors impacting on 'ethnic minority' students differently whilst at medical school that link to learning and achievement, it is this broad question this thesis considers.

2.4 ‘Ethnicity’

It is important to state that ethnicity is a contested term, historically interwoven with ‘race’, nationality and religion (Eriksen 2002). Within groups identified as EM, factors such as generation immigrant status have been shown to have an impact on academic performance (Ryabov 2009; Ryabov 2011), with non-UK ‘ethnic minority’ students performing better than UK ethnic minority students in some cases (McManus *et al.* 1996). Maintaining an awareness of this and other potential intersections (such as gender, social class and sexuality) (Tsouroufli *et al.* 2011) whilst reading this chapter is key; though I will make references throughout to ‘ethnic minority’ students, I do so with an understanding that ‘ethnicity’ is a dynamic element of students’ identities. What follows is a review of the literature on how and why students from non-white backgrounds might achieve less well. I will draw upon literature from outside the medical domain, sometimes from outside the higher education domain, in order to establish current thinking around this problem and situate my own work within this existing knowledge. This chapter begins by establishing the impact of *being in the minority* on educational success, moving on to consider known *barriers to participation* in medical school, before taking a more sociological perspective on learning and achievement to consider the impact of *interaction, socialisation and social networks*.

2.5 Being in the minority

Medicine in the UK has historically been a white (male) profession. This cultural tradition is maintained in medical education, where curricula continue to reinforce this norm by omitting references to ethnicities, cultures or sexualities unless they relate to a specific disease (Turbes *et al.* 2002). ‘Whiteness’ (Rivière 2008; Picower 2009) is normalised by its very omission, and continuously positions non-white ethnicities as the ‘other’ (Street and Hallam 2000). Until recently, ethnic minority students have been a very visible numerical minority; although this is changing in many medical schools as the proportion of certain ethnic minority groups rises (Seyan *et al.* 2004). In the UK colour of skin, or markers of (non-Christian) religion are still often used as a proxy of minority status. This is not without good reason, as simply increasing the number of non-white students does not deal with the ways in which aspects of non-white culture are minoritised from medical education. A

number of studies point to the marginalisation and segregation of minority students within the medical school (Beagan 2003; Beagan 2005), with minority referring to both ethnic and socio-economic minorities. This is described as an ‘everyday’ process, occurring through the reproduction of the majority (white, middle-class) culture, making these students’ experiences more difficult than their majority peers.

2.6 Stereotyping

The literature suggests stereotyping has important consequences for learning and achievement. Negative ethnic stereotypes have been shown to be prevalent in medical schools, as found by Woolf *et al.* (2008: 611), where students reported a well-developed stereotype (shared by students and tutors regardless of ethnicity) of the ‘typical’ Asian medical student,

...considered over-reliant on books, poor at communicating with patients, too quiet during clinical teaching sessions, and unmotivated owing to being pushed into studying medicine by ambitious parents.

Further studies suggest that the intersection between ethnicity, religion and gender may make Muslim females more susceptible to being negatively stereotyped (Tyrer 2006). These stereotypes have been shown to impact on how teachers interact with students, as educators “offer a patronising form of social support directed less toward... academic achievement than toward a kind of social expediency in the classroom” (Ream 2003). In this study of Mexican-American students’ achievement, teachers behaved differently towards this group of students, expecting and accepting different forms of behaviour that were not conducive to learning.

The negative effects on achievement of being in the minority have been examined across a wide range of disciplines, with studies providing evidence that, for example, women perform less well in traditionally male tasks in the presence of men (Logel *et al.* 2012). This has been explained by a theory known as ‘stereotype threat’, suggesting that the activation of negative stereotypes leads to stigmatised groups performing less well (Schmader *et al.* 2008). Woolf *et al.* (2008) go on to suggest that stereotype threat may be responsible for underachievement, with students’ performance affected by their fear of being negatively typecast. However, this is challenged by authors such as (Zwick and Sklar 2005), who would suggest this implies that stereotype threat has a greater impact on students at medical school than

those at school or college (as previous exam scores overestimate for ethnic minority students).

Throughout the literature, there are examples of how majority students also feel disadvantaged or unable to raise concerns around their own treatment legitimately, because of their majority status. The impact of stereotype threat has also been suggested by other authors to impact directly on white students, who fear being perceived as the ‘white racist’ (Burgess *et al.* 2010). This takes a psychological perspective on what Roberts *et al.* discovered in two UK medical schools, where white students were afraid to talk about issues of ethnicity (Roberts *et al.* 2008). This is a clear barrier to achieving ‘cultural competency’, the ability to effectively communicate with others from different cultures, not only with peers and seniors, but also with patients (Wear *et al.* 2012). In the United States, where affirmative action (to admit more black and other ethnic minority students to medical school) continues to be debated, white students fear that they lack the same support and face potential discrimination in applying for work (Dyrbye *et al.* 2007). Although the focus of this study, and therefore this literature review, is on ethnic minority students, I would like to make it clear that being in the majority does not automatically remove all of the difficulties associated with medical education. However, in order to maintain a focused approach on ethnic minority students’ experiences of learning and achievement, I made the decision to include literature mainly pertaining to minority groups.

Not only is exam performance impacted upon differently for minority students; there are also a number of barriers to participation in the activities of medical education more broadly. As I will consider in more detail in chapters 5 and 6, participation is crucial for learning from a sociocultural perspective; the next section considers known barriers to participation identified in the literature.

2.7 Barriers to participation

How students participate in their medical education varies according to minority status (Arulampalam *et al.* 2007). Female and ethnic minority students showed a greater decline in interest during the undergraduate premedical years according to a study by Barr *et al.* (2008), a finding that remained unexplored and unexplained in their research; the authors suggested that negative experiences of chemistry courses were responsible, but could not explain why these were experienced differently according to gender and ethnic group. Similarly in the UK, a large prospective study

showed (non-white) ethnicity to be a significant predictor of experiencing academic and personal difficulties at medical school and of leaving the course. Again, an explanation for this relationship was not offered (Yates and James 2006). Why minority students experience more barriers to participation in medical school is therefore something I felt must be investigated in the literature, beginning by identifying the forms and processes of obstruction.

2.7.1 Stress and distress

Whilst a certain level of stress has been suggested to be beneficial for learning (Saipanish 2003), it is generally agreed that the pressures faced by students have a negative effect on their well-being and subsequently their achievement. There is a large body of research indicating that medical students experience a high level of distress during their training (Dyrbye *et al.* 2007; Dunn *et al.* 2008; Klink *et al.* 2008); several studies point to the pressure to succeed academically and master a challenging curriculum as primary stressors, with stress exacerbated during transitions between non-clinical and clinical phases (Radcliffe and Lester 2003). Stress is a main contributor to depressive symptoms (Dahlin *et al.* 2005) and other mental health problems, and ethnic minority students are more likely to report suicidal thoughts than white students (Goebert *et al.* 2009), indicating potentially harmful consequences to negative experiences during medical school.

2.7.2 Harassment and racism

Direct harassment is also a feature of medical students' experiences (Corbie-Smith *et al.* 1999; Bickel 2001; Larsson *et al.* 2003; Epstein 2007; Wear *et al.* 2007; Dyrbye *et al.* 2007), particularly for minority students, women and religious minorities (Richardson 2008; Richardson *et al.* 1997). In a study by Dyrbye *et al.* of 1,701 medical students across five institutions, ethnic minority students were significantly more likely to report that their race had adversely affected their medical school experience. The forms this perceived racism took varied according to minority or majority status, with minority students reporting feeling harassed, experiencing direct bigotry and receiving lower performance evaluations. Majority students on the other hand reported indirect inequities, indicating that their personal and career related needs were being ignored by their medical school (in favour of ethnic minority students). Although white students also reported their ethnicity to have adversely impacted on their experience of medical education, these experiences were not linked to indicators of poor mental health or burnout; this was in stark opposition to ethnic minority students, whose experiences were linked to negative indicators in these areas

(Dyrbye *et al.* 2007), despite ethnic minority students as a group being less likely to report symptoms of burnout.

Sexual harassment has been shown to be commonplace for women in medicine (van Ineveld *et al.* 1996), with authors suggesting that “crude language and sexualised banter occurs with regularity and is indeed normalised”, with many female students dealing with, or joining in with these discourses in order to participate in the learning environment (Wear *et al.* 2007). Those who tried to avoid experiences of harassment did so by compromising their participation.

...women students often do what they can to avoid those whose behavior is offensive: they 'stand a little farther away' from the resident or attending who touches too much; they sign up, when possible, for shifts to avoid working with someone offensive; or they 'remove [themselves] from conversations and situations in which such banter is taking place.' (Wear *et al.* 2007: 24)

This study did not consider how the intersection between gender and culture might affect students' experiences disproportionately. The authors suggest a cultural shift in attitudes towards more overt sexuality and casual sex may be leading female students to accept these behaviours, yet this is unlikely to be the case for students from more traditional cultural backgrounds, where modesty and reduced inter-gender interaction remains important (Keddie 2009). 'Removing themselves' from conversations and situations where such banter is taking place may be leading students to exclude themselves from potential moments of interaction and learning that other students can gain access to. The study conducted by Wear *et al.* (2007) has further important implications for other forms of harassment, as the authors found that non-reporting and tolerance for offensive behaviour was very common. Taken as part of the wider culture where abuse of medical students has been shown to be common (Silver and Glick 1990), students and medical professionals alike may not have the tools needed to recognise or challenge incidences of racism and harassment, especially if they occur in more subtle forms (Wear *et al.* 2012).

2.7.3 Financial worries

EM students are more likely to come from lower socio-economic backgrounds compared to their white counterparts (Sandhu *et al.* 2010), making financial concerns more pertinent for this group. Financial stability is a factor that attracts many students into medicine, particularly those from lower-middle and working-class

backgrounds (Sianou-Kyrgiou and Tsiplakides 2009); however, the level of commitment in terms of time and length can make the course financially problematic. Financial worries amongst students are well-reported (Plaut 1990; Greenhalgh *et al.* 2004; Beagan 2005; Parry 2006; Hung *et al.* 2007; Odom *et al.* 2007). Not only does this impact upon the likelihood a student will choose to enter into medical education (Cooper 2003; Ferguson *et al.* 2012), but the financial burden faced by some students has a compounding negative effect on all other areas of their student life. Beagan (2005) describes the experiences of medical students from lower socio-economic classes and their perception of 'not fitting in'. For these students, money was seen as the most obvious difference that impacted both upon their direct experiences and their subsequent ability to fully participate in the discourses and culturally specific small talk common to medical school. Students who are forced to support themselves financially were less likely to be able to participate in extra-curricular (and often expensive) activities, such as golf or skiing, with clear immediate consequences for a student's ability to socially integrate and more long-term disadvantages of being less able to establish common ground with senior colleagues. As Beagan (2005: 780) stated:

Students also raised the importance of being able to chat about golf in the operating room in order to connect with staff doctors, and described school activities such as ski trips as key to connecting with classmates. These are expensive, usually upper middle-class, activities. A few students spoke of feeling at home at receptions and formal social gatherings – and even simply feeling comfortable around doctors – due to their upper-class or middle-class back-grounds.

In a domain such as medical education, where over 70% of students come from the top three social classes (Sandhu *et al.* 2010), seeking support from their institution when in financial difficulty may prove hard for students (Watson *et al.* 2009).

2.7.4 Emotion

These experiences of stress, harassment and marginalisation have the potential to create strong negative emotions within ethnic minority students. The emotional importance of learning has been explored by the medical education community through concepts such as Emotional Intelligence (EI) (Dulewicz and Higgs 2000), with articles providing varying evidence to suggest that measures of EI can help predict success. The relationship between emotion, achievement and adjusting to the

new cultural environment of medical school has been described by Austin *et al.* (2005), suggesting students with high EI scores perform better in initial medical school exams. How emotions themselves impact on the achievement of medical trainees, however, has received very little attention. Artino *et al.* (2012) provide a framework to explain how emotions are currently understood to impact on achievement. Of particular relevance to ethnic minority students is that strong negative emotion impacts upon students' ability to utilise their memory (important in exam contexts) and adds extra cognitive load to slow down processing. Not only this, but it also prevents the deeper level of processing that is linked to better levels of understanding and retention, and makes students less likely to be intrinsically motivated.

Negative experiences impact differently on ethnic minority students, suggesting a new perspective must be employed to look beyond the individual barriers encountered by students. The literature considered above has, for the most part, taken an individualistic perspective, focusing on the experiences of the student and their resulting thoughts, emotions and actions. Taking a sociocultural perspective on learning, it is important to consider learners as situated in a wider social practice; the learning and experience of an individual cannot be considered without looking at the other people involved in the student's experiences. It is to this that I will now turn, asking the question: how do relationships impact on medical students' achievement?

2.8 Social interaction and achievement

The importance of students' relationships in their development is beginning to be recognised in the medical education literature, with authors suggesting that students learn from within a complex 'web' of relationships that can impact on professional identity formation (Lempp and Seale 2006; Haidet *et al.* 2008). This section will consider how interaction with others within and outside of the medical domain impacts on students' learning and achievement. Addressing the problem of retention in HE, Tinto (2006) proposes a number of solutions, stressing the importance of support (financial, social and academic), and suggest taking a social learning perspective on curriculum design. Over a decade of research into the problems faced by students, particularly those from minority backgrounds, as they enter the higher education environment indicates institutions that can support their students across this boundary promote student success (Tinto 2010). Support is also crucial for success in medical education. Family support has been linked to students' coping

efficacy, with students who report more support from family members being more likely to feel they are able to cope with the perceived barriers to studying medicine (Klink *et al.* 2008). Within medicine, two broad ‘types’ of relationship are described in the literature, namely interactions with senior colleagues and interactions with peers. The majority of papers I reviewed focused on relationships centred around formal learning and achievement (for methodological reasons and due to the nature of the intended readership), however many of the conclusions drawn in these papers can be easily extrapolated to students’ wider networks of interaction.

2.8.1 Relationships with peers

The influence of peers is an important factor in students’ entry into and later success in medical education. School pupils’ achievement has been shown to be linked to the achievement of their classroom peers. In settings where quasi-random methods are used to assign individuals to a class, it has been shown that an increase in the average attainment of their peers leads to an increase in the achievement of an individual. This effect is not universal, however, as lower achieving students benefit more from being dispersed within higher achieving peer groups, whereas higher achieving students benefit more from being grouped together (Kang 2007). When making decisions to study medicine, evidence suggests that peer norms and pressures can have a large impact on students’ decision making (Greenhalgh *et al.* 2004; Schmader *et al.* 2008; Ferguson *et al.* 2012).

Once at medical school, peer interaction is the most frequent and accessible form of interaction and is particularly important for students engaged in curricula that demand frequent small group learning, such as PBL² courses. There have been various initiatives to encourage formal and informal peer-to-peer tutoring, particularly important in the current climate of increasing student numbers and decreasing available budgets. Several studies have demonstrated a positive relationship between improved achievement and access to formal peer-assisted learning schemes (Peets *et al.* 2009; Weyrich *et al.* 2009). From a psychological perspective, the benefits of peer tutoring are many. Learning may be facilitated by the social and cognitive proximity of the teacher to the learner, known as ‘congruence’ (Lockspeiser *et al.* 2008); learners may be better able to disclose academic weaknesses or ask questions; and peer tutors can benefit from assuming

² Problem-based learning is a student-centred approach to learning in which learners are encouraged to take responsibility for their own learning in seeking solutions to real-world problems. In medical education, this involves groups addressing learning outcomes by considering the health needs of a patient (or case).

the role of 'expert' (Cate and Durning 2007). There is evidence of a benefit to peer tutors, with links to increasing student tutors' academic abilities and predicting a competitive specialty (Sobral 2002).

From an identity perspective, Haidet *et al.* (2008) describe how students enter their medical training with an idea of the type of doctor they want to be, and that this is reinforced by being attracted to other students with similar views. Social comparison may also be a factor in the 'big fish, little pond' effect in achievement, where students who perceive themselves to achieve well in comparison to their peer group have a higher academic self-concept than those who may achieve equally well but compare themselves less favourably to their peer group (Wouters *et al.* 2011). This has important implications for medical students, who are often the highest achievers within their school or college before joining a medical school cohort who are equally high achieving. In this respect, interaction with others can be a source of support, but also a cause of stress in medical students. Specifically, with regard to achievement, the common method of marking students against each other has been reported to increase a culture of competition and anxiety (Saipanish 2003).

According to the literature, students support the view that there are benefits to participating in a diverse student body (Whitla *et al.* 2003; Chang *et al.* 2006; Hung *et al.* 2007; Barr *et al.* 2008), and one study reports that these benefits can be seen and tested in the form of improved cognitive development (Chang *et al.* 2006). It could be argued, however, that methodological issues with some studies of this type, such as quantitative testing and emotional loading of survey questions, undermine these findings as the mechanisms behind these proposed benefits are largely ignored.

I now consider the advantages and disadvantages of interacting with diverse peers when considering students' social networks. Despite a large body of work on peer teaching and assessment, in order to consider the effect of peer relationships on medical students' achievement it is useful to look outside of the medical education literature. In a US study of first to third generation immigrant children using a nationally representative survey, Ryabov (2009) found that achievement of the 11-21 year olds surveyed was influenced by a number of factors including the socio-economic status of the school area. Peer group effects were important, with peer achievement being an important indicator of an individual's achievement (more so for immigrant youths). Immigrant youths with dense and homogenous networks were actually found to have higher achievement than their native peers, highlighting

the importance of strong ties for ethnic minority academic success. Although this study reflects the United States, which has a significantly different cultural climate around race and integration, these findings are interesting and call for any assumptions around 'integration' to be carefully considered.

The importance of peers in helping students fit into medical school also requires consideration. Medical students are a more socially exclusive group than other higher education students (Blakey *et al.* 2008), and this may lead to more in-group attitudes and behaviours in all areas of student life. Integrating academically and socially requires both a willingness and an ability to belong to a group, and it is this integration that may be important for academic success (Dyrbye *et al.* 2007; Dunn *et al.* 2008; Klink *et al.* 2008; Severiens and Wolff 2008). In a review of several decades of research into cooperative learning, Johnson and Johnson (2009) indicated that for achievement, cooperation leads to better results than competition. This is an important consideration for curricula that encourage cooperative learning through PBL whilst students compete and are measured against each other in examinations.

2.8.2 Relationships with seniors

I now consider how interaction with senior colleagues may help explain differences in learning and achievement. Role models and mentors play an important part in shaping future doctors, helping students to master both explicit academic knowledge and the implicit knowledge relating to the medical world (Rose *et al.* 2005). Despite this, there is little work focusing on those to whom medical students relate during training, or how students themselves experience the medical school culture (Lempp 2005; Pololi *et al.* 2009). When choosing a role model, medical students appear to take gender into account (Rose *et al.* 2005; Lempp and Seale 2006) and there have been several discussion pieces on the impact that this is having for certain specialities, such as surgery, where the role models available are mostly male. It has also been noted that some females within these settings are not seen as mentor material as they have taken on a more stereotypically male persona in order to progress in their chosen field (Bickel 2001); a way to achieve success in an area that promotes men disproportionately (McManus and Sproston 2000). Another study has shown that students consider culture when selecting a role model (McLean 2004). Although it must be noted this study originates from South Africa which has a unique cultural climate due to the historical significance of race, importance of this possibility should not be missed in an educational environment that has an apparent lack of diverse faculty members. The lack of recognition or financial incentives to mentoring

may also be excluding potential mentors (Sambunjak and Straus 2010), particularly those more junior, in lower paid and overworked positions, or those with extra responsibilities such as caring or parenting (in other words, those minoritised or disempowered in the sphere of medical education).

Forming relationships with faculty is crucial in understanding how university 'works' (Christie *et al.* 2008). We know that relationships are a critical mediating factor within medical school (Haidet and Stein 2006), and also that they can help students to cope with the stresses and strains they face. Relational aspects of the medical school culture also emerged as a central theme in a US study of faculty members and factors supporting their achievement. This data suggested that, as has been shown with medical students, serious problems exist in the relational culture, which may affect medical faculty vitality, professionalism, and general productivity and is linked to retention (Pololi *et al.* 2009). These relational aspects of medicine, along with the implicit knowledge we have already considered, are encapsulated by the concept of the hidden curriculum, which I now consider.

2.8.3 The hidden curriculum

Medical education occurs in a restricted domain (Lempp 2005) in which access is controlled; therefore, learning how to practice medicine can only really be done from the inside. Recently the hidden curriculum (more subtle and less officially recognised in comparison to the formal curriculum) has received a great deal of attention within medical education research (Hafferty and Franks 1994; Hafferty 1998; Cribb and Bignold 1999; Turbes *et al.* 2002; Wachtler and Troein 2003; Lempp and Seale 2004; Suchman 2004; Lempp 2005; Gofton and Regehr 2006; Haidet and Stein 2006; Lempp and Seale 2006; Glicken and Merenstein 2007; Ozolins *et al.* 2008). However, a significant proportion of this work focuses on specific aspects of the hidden curriculum and how this is experienced, particularly professionalism and cultural competence. This approach tends to provide a disconnected description of a single tile within the complex mosaic of medical culture. The multiple facets of the hidden curriculum may explain why there are so few successful interventions in this area.

The process by which this covert curriculum is transmitted from medical educators to students is important, as Glicken and Merenstein (2007: 57) highlight:

Students are close observers of what faculty do and how they behave in academic health centres but they are also direct recipients of what faculty think, say and do in their interactions with students on a daily basis.

There are ongoing power struggles for the ownership of medical education by different stakeholders including the university, the hospital, patients and doctors, and students must find different ways to exist and achieve. Howe *et al.* (2002) undertook a qualitative analysis of medical education and found that students commonly held contradictory values simultaneously but utilised those they felt would be of most use in achieving the goals of the institution. These studies underline the importance of considering medical educators and their wider institutions when examining medical students' experiences.

The current drive to produce culturally competent doctors, well equipped to serve increasingly diverse patient populations (General Medical Council 2003), faces a number of challenges (Boutin-Foster *et al.* 2008; Murray-Garcia and Garcia 2008) in addition to being undermined by the lack of a shared understanding of the term 'culture' and the possible contradiction by aspects of the hidden curriculum. In order to address these challenges, Boutin-Foster *et al.* (2008) suggest students conceptualise and examine their own culture and the culture of medicine, and subsequently learn to understand concepts of race and ethnicity. Strategies for how this can be done receive only brief discussion however, reflecting the difficulty of the challenge. The culture of the medical profession can be made explicit by examining aspects such as traditions, forms of dress, language and discourse. Whilst anthropologists and medical sociologists have studied these, detailed descriptions of the culture of medical school remain few (Rogers 2005). Medical education can be viewed as 'cultural compression', a process in which values are transmitted by educators, role models and peers, as highlighted by Rogers (2005). Rogers' work also illustrates the important role that assessment plays in reinforcing cultural standards, a crucial consideration for medical curriculum reform as any overt curriculum changes may be undermined by the hidden curriculum and culture of the institution (or the wider medical profession) (Gofton and Regehr 2006).

2.8.4 Socialisation

Evidently different students experience the educational environment in different ways; however, institutions also have their own unique culture. When investigating increasing drop-out rates, Arulampalam *et al.* (2007) found that the most significant factor was an overall 'university effect', suggesting the social environment (and how well a student integrated into it) was likely to impact on disengagement. Unfortunately, due to the nature of their study design, such factors remained unobservable and were captured only within the general university effect. Social

factors are extremely important in students' self-efficacy, achievement and retention; students who lack a sense of belonging are more at risk of underachievement and suspending their studies (Christenson *et al.* 2012). It has been suggested that how well a student achieves at an institution correlates to their socialisation into the norms and values of that environment, with some research in higher education suggesting students must break with their (class) practices and ties with their home communities (Reay *et al.* 2009). Beagan (2000: 1257), drawing upon Berger and Luckmann's definition of resocialisation, describes the process as requiring

isolation [and] segregation with like-minded others... The adoption of a new social reality requires adopting a new set of significant others, people who share that new worldview; the new people with their new way of understanding the world gradually displace the individual's prior social world.

The medical education process is necessarily a process of change, as students are socialised into the medical profession; however, for minority students, such as those from working class backgrounds, this was felt as a need to 'subdue significant parts of [their] personality to try to fit in' (Beagan 2005: 780). This sense of marginality and exclusion from the dominant culture of medicine made their experiences more difficult and made these students significantly less likely to report feeling they fit in at medical school compared to their upper- or upper-middle-class counterparts.

Students may also have very different pedagogical expectations, and experiencing a mismatch may lead to an element of 'culture shock' as they enter a domain that conflicts with their own cultural norms (Zhou *et al.* 2008). Work investigating the experiences of transnational workers has shown that when moving to a new country, individuals may seek out connections and activities that reinforce key markers of their cultural identity, for example by frequenting social spaces such as cafes, shops and clubs that are tailored to their home nationality (Butcher 2009). The need to feel comfortable was key for these workers who managed their need to fit in by being physically relocated whilst remaining emotionally fixed elsewhere. Most helpful to this thesis may be the idea that individuals recreated key markers of their cultural identity through their relationships with others and their activities. Conceptualising the movement into medical education as such may be beneficial, particularly for minority students who may feel the need to reinforce aspects of their identity that are unrecognised, or inexpressible in this new world (Wenger 2009). An investigation

of medical students' peer groups and activities is therefore highly necessary to consider how students may try to cope with the medical culture.

The transition from school to medical school culture is extremely stressful as not only do students have to cope with a move to higher education but also begin to find their way in the broader culture of medicine. Although this transition may not be as palpable as physically moving to another country, some interesting and relevant observations may be drawn. Being supported in this transition is important, and there is some evidence to suggest that international students benefit from being linked to a host national student, with improved academic achievement and reduced drop out rates compared to international students not part of a matching programme (Westwood and Barker 1990). Clearly, relationships with those more familiar with the culture enable socialisation, but can more be said about the patterns of relationships that facilitate or impede the process? Looking at students from within a network of relations may help to answer this question, making a review of the social network analysis literature an important element to this review.

2.8.5 Social networks

Looking at students' relationships and achievement from a networks perspective is a novel approach to explain how the positioning within a wider social context, and the properties of that network can impact on the experiences and success of individuals. Networks are essentially a collection of individuals linked together by a form of relationship. The affordances or constraints of a social world impact upon the possible actions within it. An analysis of the structure of a network, and the position of an individual within it can be used to further understand this interaction. As a theory and a method, social network analysis (SNA) has been developing since the 1930s, influenced and utilised by a broad range of disciplines (Scott and Carrington 2011). Granovetter (1985) first suggested the notion of 'embeddedness', that people's actions cannot be explained without also looking at others around them. Social networks provide access to a number of resources, and create channels through which resources can potentially flow. I will go on to consider these resources, or different forms of 'capital', from a theoretical perspective in my next chapter; however, here I would like to consider how positions within social networks may provide resources that have a role (both positive and negative) in learning and achievement.

Networks provide normative microclimates in which certain values, norms and behaviours become acceptable or desirable. This can be overtly problematic or negative, as in the case for bullying, where students who engage in violent behaviours are more likely to indicate friendships with other violent members of the class (Moultapa *et al.* 2004). This is important in medical education, where the student body is more socially exclusive than other university degree programmes.

Having relationships that facilitate interaction beyond a single network can also be important. Gaining access to information or resources that are unavailable to others can increase an individual's power within that network. This is known as 'the strength of weak ties' (Granovetter 1973), as access to extra-group connections facilitates success within the group by providing a channel for new knowledge, such as information about job opportunities. In the context of medical school, having access to added knowledge could translate into better exam performance. This is particularly important in a competitive environment, where individuals within a network where several members are unconnected have been shown to be more successful in gaining promotions and higher pay (Burt 1992; Podolny 1997). Burt (1992) referred to these network features as 'structural holes', describing the lack of connection between two individuals in the network that is bridged by another individual, a 'broker' (Scott and Carrington 2011).

Networks have also been shown to operate in ostensibly the opposite way, with benefits linked to being embedded within a highly interconnected network. Within academia, for example, career advancement has been linked to fewer structural holes (Rosen 2009). Coleman (1988) showed how children within close-knit networks in which teachers and parents were connected were less likely to drop out of school and more likely to succeed academically and in the future. In studies in higher education, students' personal networks have been shown to have an impact on their achievement, with individuals within highly interconnected, or 'dense', social networks having more favourable study outcomes (Eggens *et al.* 2007). The authors suggest a dense network may promote the flow of resources, but also potentially increase peer pressure towards more socially desirable behaviours.

The network concept that links these two seemingly contradictory effects together is that of 'constraint' (Borgatti *et al.* 2009). The more structural holes there are in an individual's network, the more reliant they are on brokers for information and

resources; therefore, unless a student is an individual who bridges a gap, they may be disadvantaged.

Social networks can also help explain individuals' perceptions of, and participation in, their work environment. Job satisfaction and intention to leave a workplace have been linked to strong networks within an organisation (Moynihan and Pandey 2008). Ibarra (2007) describe the reciprocal influences of networks and identity on career progression. As individuals aspire to a new role they seek new models and alter their networks accordingly. With regard to social networks, ethnicity and acculturation amongst secondary school pupils, Bhui *et al.* (2012) describe four categories: an integrated cultural identity (friendships with own and with other ethnic groups), a traditional cultural identity (friendships only with own ethnic group), an assimilated cultural identity (friendships only with other ethnic groups) and marginalised cultural identity (friendships with neither own nor the dominant other ethnic group). In their longitudinal study, they showed that cultural integration was associated with better mental health, particularly for male students, and that marginalised students had lower psychological wellbeing.

Although social networks theory and data can be used to support the 'integration' of minority students into a minority culture, there is also evidence to suggest that remaining within a tight-knit community of people from the same cultural background is beneficial for achievement. When examining the predictive value of previous exam attainment for US college students, Zwick and Sklar (2005) found that Hispanic students who spoke Spanish as a first language performed better than their peers who had English as a first language, despite similar academic histories. In a later study to look at peer effects on learning, Ryabov (2009) established that peer achievement was strongly correlated with an individual's achievement, and that these effects were stronger for immigrant youths than native youths. This is an interesting finding that suggests an interplay between culture, integration and achievement.

2.9 Summary

This chapter presented a narrative review of the literature concerning ethnic minority (EM) student experiences and achievement within medical education and in Higher Education more broadly. For students, being white appears to be advantageous in medical education, both in terms of experience and achievement. However, very little is known about the mechanisms by which this disparity is established and maintained. Through the exploration of three key themes that emerged from the

literature, *being in the minority*; *barriers to participation*; and *social interaction*, there is a clear rationale for exploring learning and achievement from a social perspective. Ethnic minority and other minority students can experience more difficulty in medical school as their cultural practices differ from those of the medical school, are at risk of being negatively stereotyped, and encounter racism or harassment. Relationships facilitate learning of the hidden curriculum and can support students to deal with the negative aspects of their course. What remains unknown is if ethnic minority students have different patterns of relationships that may be mediating their experiences and achievement. The next chapter sets out a theoretical framework for the investigation of this current gap in our knowledge.

Chapter 3

Theoretical Frameworks

3.1 Introduction

The importance of theoretically informed research has been discussed widely across the medical education literature. Rees and Monrouxe (2010) call for researchers to consider and make explicit the theory underpinning their work. The previous chapter made a strong case for the investigation of learning and achievement from a social perspective, as the social setting within which a medical student learns has wide ranging effects, from the added difficulties associated with being in the minority, to the direct impact on learning that peers and senior staff can have. In order to investigate the processes underlying these reported phenomena, a theory (or theories) that can assist in the unpacking of them is crucial. For this reason, social theories of learning were a rational choice. This chapter sets out a theoretical framework for this study, considering first my broader theoretical learning, then describing *communities of practice* theory, selected concepts from *Pierre Bourdieu* and *social network analysis*, before finally considering *social capital* in more detail.

3.2 Theoretical positioning

Throughout my PhD, theory has been influential on my development as a researcher; I have enjoyed journeying into and across different theoretical landscapes, from the more positivist approach of health sciences research to the highly constructivist approach of phenomenology. I have been privileged to be part of the Social Theories of Learning group at The University of Manchester throughout my PhD training. This group has supported my immersion in a number of different theories of learning. For the last four years, I have engaged with the developmental psychology of Vygotsky and Leont'ev, learning about cultural historical activity theory; been influenced by the importance of dialogism, language and voices with Wertsch, Bakhtin and discourse analysis; and considered position and power in society through Bourdieu, Foucault and figured worlds. All of these have influenced me in some way, and continued to do so in the design and analysis of this research. Although in this chapter I will focus on communities of practice (CoP) as my main theoretical framework, bringing in concepts from Bourdieu and Social Network Analysis, in later chapters, the influences of other theories may well be apparent to the reader.

3.3 Communities of practice theory

CoP is a theory that describes learning in terms of social engagement in practice. Learning is therefore inextricable from our network of relations, our culture and our

identity. For a project considering the impact of relationships and ethnicity on learning, this theory was therefore of immediate interest. Rooted in a broader sociocultural tradition, CoP draws upon the work of theorists such as Vygotsky (1986), who challenged the individualistic, acquisition model of learning that was prevalent at the time; instead suggesting that human development was embedded within social interaction. What happened in the mind happened first in the social world, and development required interaction with others. In the broad and multiple definitions of ‘theory’, CoP is situated between theories of structure, such as functionalism or Marxism that propose structure and hierarchy as the determinants of the social world and individuals’ actions within it; and theories of agency, where social action is posited with the individual (Hitlin and Elder 2007). In this sense, CoP is a mid-level theory that accounts for the interaction between these macro and micro levels of our social world.

The theory had its origins in ethnographic work undertaken by Lave and Wenger (1991), who studied how newcomers to a range of crafts, professions and in one case a community of recovering alcoholics, learned to engage in the associated practices (Lave and Wenger 1991). Exploring the relationship between the people, practices and artefacts of each community, the authors presented rich descriptions of learning that could be applied beyond the communities they focused on. ‘legitimate peripheral participation’ (LPP) emerged as a central concept from this work; a term describing how newcomers were positioned in fields of practice. In this social, situated model of learning, newcomers journeyed centripetally towards competence. The importance of more competent members of the community in the learning of newcomers was recognised in this apprenticeship model, all of which was located within ‘communities of practice’. Wenger built upon this concept in a later book (Wenger 1998), in which he developed descriptions of learners’ trajectories within communities beyond terms of simply increasing participation (as with LPP). communities of practice were distinguished from other collective ways of working by three key features: *mutual engagement*, social interactions between members that were both prerequisite for and outcomes of participation; *joint enterprise*, the collectively negotiated activities of community members; and *shared repertoire*, the ongoing development of shared histories, ‘languages’, and sets of resources.

3.3.1 Key concepts

There is a distinct difference between researching communities of practice, and using CoP in research. My approach is the latter; I use key concepts to develop and

investigate my research questions, as well as directly applying them throughout my analysis. In the following section I will outline these concepts in relation to my research questions. Although I will consider some earlier and later works, I mainly refer to the theory as outlined in Wenger's 1998 book 'Communities of Practice: Learning, Meaning and Identity' (Wenger 1998).

3.3.2 Practice

According to CoP, individuals do not learn in order to undertake the particular activities of communities. Instead the practice comes first; learning is an outcome of the lived social experience of community members. It has been suggested that, in order to represent the centrality of practice in establishing and maintaining a community, the terms 'community' and 'practice' should be reversed (Gherardi 2009). For Wenger, doing, being, and knowing all have to be negotiated in practice. What exactly is practice? Despite CoP's emphasis on practice, there is no definition of the term, just references to the antecedents of CoP in the work of authors such as Bourdieu (1977) and Foucault (1979), according to whom practice is the embodied expression of agency, produced at the point where wider societal structures meet individual practitioners. The importance of this concept influenced my work in several ways: firstly, in order to use a CoP lens I would have to use a research design that enabled me to understand the common activities of individuals; secondly, I could investigate learning as engagement in practices, looking at what medical students were (and were not) doing, and with whom. Using the definition of practice employed by Bourdieu and Foucault also necessitated that I attempted to understand how these practices emerged from within a wider structure, but had meaning at an individual level.

3.3.3 Meaning

Much of the literature I reviewed in the last chapter suggested that the meanings students made of their own experiences, for example, whether they felt they 'fit in' or were at risk of being stereotyped, impacted upon their educational experiences. According to CoP theory, the ways we experience the world and interpret our experiences are meaningful. Meaning, then, is socially produced and constantly negotiated. This process of negotiation is done within a constant tension between *participation*, engagement in the practices of a community (for example, revising with friends), and *reification*, capturing moments of interaction into an object that can take on its own role in a practice (for example, the notes created during a revision session) (Wenger 1998: 57-71). Individuals are also making meaning of themselves; senses of

self or identity are created both in these moments of participation and through reification as stories, memories and objects, which are used to define who we are. In relation to my research questions, I needed to consider students' experiences and achievement as products of this tension between participation in the practices associated with being a medical student, and the reified artefacts they used to make meaning, such as their exam grades or feedback. In applying this to medical education, we see learning as a situated, social process in which experiences and achievement must be examined together. In other words, to understand learning and achievement, we must also understand the range of practices students are engaged in. Participating is not necessarily a benign process, however, as individuals in communities of practice define their identities both by what they are and what they are not, and certain students may be excluded from the discourses of power that enable optimum participation. Belonging to a community can afford an individual a voice and various forms of support, yet belonging to a community may also inhibit their ability to negotiate meanings and identity as these may be tightly prescribed and controlled by more powerful members of the community (or other more powerful communities of practice within what is termed the *constellation of practice*).

3.3.4 Community

How do we define a community? As already mentioned, the community is created in practice; however, engagement with a community of practice can take many forms. Whilst there may be broad overarching practices that all medical students engage in as a community, for example sitting examinations, returning to the requirements of mutual engagement, joint enterprise and shared repertoire, it is much more likely that these are features that emerge from smaller groups. There are clear advantages to students engaging in communities of practice. Brown and Duguid (1991) described two forms of knowledge and action: canonical, or formal practice that is openly espoused by the community (such as the learning outcomes that form the curriculum), and non-canonical, or informal practice (such as the unwritten rules for getting ahead). They state that it is this informal practice that is actually more important for success; however this is often unrecognised or seen to be counterproductive. Participating in a community of practice can therefore allow individuals to bridge this gap, making use of both forms of knowledge in any context. There are clear links here between the formal and hidden curriculum (Lempp and Seale 2004; Gofton and Regehr 2006).

Wenger (1998) argued that we understand our membership of a community and our evolving identity through the interplay of participation, such as helping out in a surgical theatre by holding a patient's body part in the correct position during an operation, and non-participation, such as being excluded from theatre by a consultant. For a medical student, these experiences create a very real sense of a surgical community as something from which to be included or excluded. A community shares a common language and set of practices but we may encounter any number of such communities in our daily lives without feeling a need to be accountable to their practices. How we locate ourselves in such communities, as insiders or outsiders, determines how we experience them, which in turn determines our social connections and learning. In the examples just given, these experiences of inclusion and exclusion would carry different meanings for a student who wished to engage in a surgical career compared with one who did not. The relationship between the individual and the community is described in three modes: *engagement*, through direct experience; *imagination*, using our ideas about a community; and *alignment*, the deliberate adoption of a community's dispositions. CoP as a theory is always evolving, and there have been several important developments in recent years. Ways of considering the relationship between individuals and communities have evolved from modes of belonging (Wenger 1998 chapter 8) to modes of identification (Wenger 2010b), representing a shift in focus from a community to an individual. This shift is mirrored in the addition of *knowledgeability* as a new term (Wenger 2010b), describing a person's own processes of negotiating competence between communities of practice. This effectively moves the definition of competence from the sole realm of the community into the power of individuals as they learn and develop across landscapes of practice. Returning to my research questions, it is therefore important that I attempt to address the different ways students may encounter communities of practice in medical education and the impact this has on their experience and achievement, in other words on their learning.

3.3.5 Learning

CoP describes learning as a trajectory, through time and across multiple communities. This view is in keeping with much of the literature I reviewed that suggested socialisation explained differences in experience and achievement. For Wenger (1998), learning is a series of tensions, of *convergence* (learning occurring through progression towards competence) and *divergence* (learning occurring as an individual's

actions are not recognised as legitimate by the community), and *continuity* (newcomers taking on oldtimers' activities) and *discontinuity* (generational change in practices). Whilst CoP provides useful explanations of inter-generational interaction and influence, it differs from other theories of cultural reproduction (Bourdieu and Passeron 1977) by never suggesting that communities have a tendency towards either reproduction or change. Instead, CoP provides ways of explaining the processes and tools that sustain and change practices, with a focus on learning. Just as distance is an important factor for the flow of information or resources in social networks, in CoP, the distance between practices is critical, as learning is driven by a productive tension between an individual's experience of participation and the community's definition of competence. For this reason, the physical or metaphorical location of an individual in a community is important, particularly when considering the boundary of a community of practice.

3.3.6 Boundary

In research, the unit of analysis must be defined in order to study it. This process of defining also requires a boundary; a point at which a researcher must decide is beyond the unit being investigated. A community is bounded in the sense that mutual engagement in a joint enterprise with a shared repertoire become impossible at a certain point, as practices diverge. For example, a school pupil who engages in practices to subvert the practices of the teacher and other pupils could not be said to be in a community of practice with a class member who engages in the legitimate activities of the classroom. There is a boundary between these practices, as one is not recognised as legitimate by the other. The point where mutual engagement in a joint enterprise with a shared repertoire becomes impossible is the boundary of a practice. Of course, communities exist side by side and often overlap in what Wenger refers to as *constellations of practice*, evident in healthcare where professionals from different specialties or disciplines may converge in the treatment of one patient. For this reason, boundaries are fertile places for learning, as more negotiation of meaning is necessary in order to work together. CoP provides a lens through which to view practices at and across these boundaries. From the literature, it is clear that there are already a number of boundaries to be considered when researching medical students' ethnicity and achievement; from formal boundaries such as end of year exams that enable students to progress, to cultural boundaries that may dictate the spaces students feel comfortable inhabiting.

CoP compels users to maintain an awareness of individuals as members of multiple communities that must be negotiated. Wenger refers to this complexity as *multi-membership*, describing how the different and sometimes conflicting forms of competence required in each domain must be reconciled by individuals as they learn in and across different communities of practice. This is particularly important for minority students who may experience more demands for this reconciliation across boundaries. In addition, not all types of knowledge may be expressible in each situation and so a student may experience conflicting ways of being and knowing between their communities. Boundaries can be clear, in instances where membership of a community is very real, such as in a Problem Based Learning (PBL) group. They can also be less defined, where identification and belonging require more imagination, such as in a religion or social movement. It is important to investigate how students enact their accountability to the different communities they may belong to and to discover if there are some ways of knowing that are less easily reconciled than others.

3.3.7 Identity

Identity plays an important role in CoP, acting as a counterbalance to the focus on practice by viewing key concepts and processes from the perspective of the person, albeit within a social sphere. Focusing on identity allows an investigation of the nexus between activity and mind and the process of identification across different communities over time. Of all the terms introduced in this chapter, it is perhaps most important to define *identity* as I intend to use it in a technical way, yet it is a concept that crosses many boundaries and takes on different meanings even within the medical education literature (Monrouxe 2010). In CoP, identity should be considered a verb: as a process of becoming, involving practices and negotiation of ways of being a person in any given context. Key processes modulating identity are *identification* and *accountability*. Wenger states that we are constantly offered ‘windows into worlds’(Wenger 2008) that give us a glimpse of the practices of another community, requiring us to define our position in a *landscape of practices* (Wenger 2005). It is the degree to which we feel accountable to these practices that determine whether there will be a change in our own practices and identity. We therefore negotiate a trajectory through the world, developing ‘the self’ in directing and understanding who we are becoming. Using the example of wine aficionados, he suggests that there is a common language (for example, ‘nose’ to indicate the smell of the wine) and set of practices from the selection to the consumption; however,

unless we choose to be accountable to the practices of this community, our relationship to them remains as an outsider and we are free to continue our existing practices (Wenger 2009). Medical students are already accountable to the practices of the medical community. These practices become very important in establishing and maintaining identity as an insider. Getting an element of wine-drinking etiquette wrong in the company of a connoisseur would not have the same effect as answering a question incorrectly from a consultant during a ward-round, yet it is only because of the personal investment an individual has in creating and maintaining their identity. With identification comes the risk of not belonging.

3.4 Critiques of Communities of Practice

There have been a number of critiques of CoP (for an overview see Roberts, 2006). Notably, many authors have found any consideration of power conspicuously absent. Wenger described identification and negotiability as mechanisms by which power operates in CoPs; for example, by identifying with the medical education community, students become accountable to their practices such as placing value on individuals according to examination scores, and sacrifice some of their individual ability to negotiate meaning. That said, authors have suggested that the ongoing fight to define legitimate practices is not considered in enough detail (Barton and Tusting 2005:19). It can be argued that the strength and popularity of CoP lies in its ability to be ‘many different things to many different people’; however this can also be seen as a weakness, with some authors arguing that theoretical and analytical potency is undermined (Storberg-Walker 2008). For example, the concept of participation has been critiqued by authors who have been unable to satisfactorily define it as different from engagement in practice, suggesting it is sufficiently ambiguous to refer to people simply ‘going through the motions’ (Handley *et al.* 2006). This is an important critique, as Wenger suggests participation and non-participation are so crucial in identity formation and learning. This inability to rigorously operationalise the concepts introduced in the 1998 book has led some researchers to avoid using the theory; however, Wenger challenges readers to *plug-and-play*, using useful elements of other theories and work with them alongside CoP so ‘they can each contribute what they do best to the telling of the story’ (Wenger 2010b). Whilst CoP makes no claim to be a ‘theory of everything’, important elements are missing from it. As a theory of learning, it fails to explain how dispositions appear to be learned across broader structural groups, such as social classes, despite the fact a social class can in no way be conceived of as a CoP. Particularly important with regard to my research

questions is the absence of how and why some people do better in a community than others. There is a well-established pattern of underachievement amongst ethnic minority students, yet CoP cannot explain these enduring inequalities. An explanation of ways in which individuals are predisposed to think and act in certain ways is also left for us to find elsewhere (Mutch 2003). For Wenger, agency is located at moments of identification and dis-identification with practices, yet CoP does not consider whether or not those processes are within people's conscious control. For these reasons, I was obliged to look to other theory to support; namely Bourdieu's concepts of habitus, capital and field (Bourdieu 1977).

3.5 Bourdieu

As the literature describes, adapting to a new and unfamiliar environment is a difficult prospect for any student; however for those who struggle to fit in with the new expectations and cultural values of the field this can be even more difficult. Bourdieu's concepts of *habitus*, *capital* and *field* may be useful here; they help to explain participation in the world of higher education, and students' differing experiences once they get there (Watson *et al.* 2009).

Sharing similar socio-cultural roots to CoP, Bourdieu also theorises individual action as a negotiation between the micro, the individual agent, and the macro, the social and political structure of the world; however, his work focuses on the implications of capital in the broader patterns of inequality, in keeping with the Marxist tradition. Bourdieu states that the task of sociology is to uncover society's deeply buried structures and the mechanisms that ensure their reproduction or transformation; a form of sociology he refers to as constructivist structuralism or structuralist constructivism (Bourdieu 1989: 14). His objectives are clearly stated: in order to uncover these structures, it is necessary to focus on the mechanisms by which they are reproduced and importantly may be transformed, as Bourdieu is often criticised for being overly deterministic by others, including Wenger (2010, pers. comm. 22nd October).

For Bourdieu, learning is better expressed as socialisation in symbolic systems using instruments of knowledge and domination (Bourdieu 1992). Agency is still rooted in the individual; however, he stresses that actions are the result of embodied patterns of thought, produced through socialisation processes, determining future ways of thinking, feeling and acting. These concepts allow us to theorise the reasons why individuals' trajectories in a community of practice are different, leading to

differential participation, learning and identity. If success at medical school depends upon having a mastery of the enterprise, repertoire and reified artefacts that indicate competency and promote a successful trajectory into the community of practice, it is vital that we understand these processes. Bourdieu would suggest that mastery comes at a price, with participation being catalysed by capital: economic, cultural and social. These are relational terms that have been developed over time by Bourdieu to explain people's practices and can be expressed using the following formula:

$$[(\textit{habitus}) (\textit{capital})] + \textit{field} = \textit{practice} \text{ (Bourdieu 1984:101)}$$

Although presented here separately, it is important to note that these concepts cannot function in isolation (Bourdieu 1998); authors who have attempted to use them individually have met with criticism (Alawattage 2011) and charges of utilising them as 'intellectual hairspray' (Reay 2004: 432). In the following section, I present these concepts in the context of my research questions and with reference to the CoP framework I have already introduced.

3.5.1 Habitus

Habitus refers to an individual's internal dispositions; ways of thinking, acting and feeling formed by social interaction that are durable but not eternal. Habitus can be thought of as the force steering the process of identification, explaining why people feel accountable to certain practices. As with identity in CoP, habitus is a dynamic concept providing the hinge to make possible the interlacing of past and present, individual and social (Reay 2010b). An individual's habitus is forged by their socialisation processes, as social structures (such as class relations) are embodied and go on to reinforce and reproduce those which created it. Similar to Wenger's requisite for learning, Bourdieu describes how habitus is created in the tension between the habitus acquired by earlier socialisation (in the family and community) and that required for smooth integration into the academic field. It is in this tension that a new habitus is formed. It can be thought of as 'common sense' that allows individuals to pre-recognise a domain and the practices within it as 'natural', facilitating confident future interactions.

And when habitus encounters a social world of which it is the product, it is like a 'fish in water': it does not feel the weight of the water and it takes the world about itself for granted (Bourdieu 1992 in Reay 2004: 436).

The opposite of this statement is equally true however, as when there is a mismatch between an individual's social world and habitus, 'the resulting disjunctures can generate not only change and transformation, but also disquiet, ambivalence, insecurity and uncertainty' (Reay *et al.* 2009). Could it be that ethnic minority students are experiencing 'mismatched' habituses? Methodologically, how might I 'get at' habitus in my research? If, as Bourdieu suggests, habitus operates mainly at an unconscious, pre-reflexive level, it is not something that lends itself to elucidation through description. However, if a student is likely to seek out experiences that closely fit those in which it was produced, it is clear that in order to describe habitus we must describe student practices.

3.5.2 Field

Bourdieu's, 'field' is a 'field of struggle' (an element missing from much of the benign description of communities of practice), also referred to as a playing field, the structural location of conflict and competition within which all other concepts must be located in order to be meaningful. Just as with constellations of practice in CoP theory, there are multiple fields that make up the social world. Each can be defined by its own 'structural logic' that determines which specific types of capital can be used by individuals competing against each other for a stake in the game. These stakes and interests are not necessarily transferable between fields; in other words, as they cross boundaries they may lose their value and meaning (Bourdieu 1993). A field, therefore, is not insulated from wider social patterns of power distribution, but simply refracts them; for example, an ethnic minority student may gain status and access to capital by being a player in the field of medicine, yet within that field they may still occupy a less privileged position than a white student in possession of more cultural tokens relevant to that field. A field is also conceptualised as a network of relations between people and institutions; which in many ways could be considered alongside the concept of 'community' in CoP, with similar difficulties in defining its boundaries. Perhaps in addition to the focus on practice, the boundary of a field may be where forms of capital cease to be recognised as valuable. Each field has its own 'game' played by individuals, for whom ownership of legitimate forms of capital determine success. Bourdieu talks of 'illusio' (Siisainen 2003; Garrigou 2006), of being taken in by the game, and links are visible here with the moment of identification and accountability for a participant in a community of practice.

In keeping with his critical theory background, Bourdieu uses much less egalitarian language, but could we view 'the game' as the 'joint enterprise'? CoP seems to bestow more agency upon the individual who shares the common goal and enters into a joint enterprise. An actor in the Bourdieusian game seems to be far less conscious of the conditions their actions eventually reproduce, yet they are bonded by their shared understanding about the usefulness of the field and need for the game. For Bourdieu, relationships between players are 'inherently competitive, since it is through participation in fields that social agents may reproduce or change their positions in a social order that is characterised by social inequality' (Glastra and Vedder 2010: 82).

At the level of analysis operationalised by Bourdieu, agency appears to be afforded to social structures, suggesting that these symbolic systems are social products that make and mirror the world. On this point, it is possible to reconcile Bourdieu and Wenger, as these social systems sound very much like the 'institutions' described in CoP, in which practices are reified and become a tool in the process of the negotiation of meaning (Wenger 2008: 133). Wenger suggests that no reified artefact is guaranteed to hold the same meaning across boundaries and so it is the very continuity of pattern highlighted by Bourdieu that warrants investigation. How these systems are perpetuated despite no guarantee in CoP demands that we examine the practices of the fields, in which a student participates; however, investigating practices alone does not explain the forces behind why this happens. The concept of investment in a field requires situating practices in time, always with a history and a view to the future possibilities; and we must examine the reasons behind the continuities and discontinuities.

3.6 Capital

From a sociocultural perspective, capital can be thought of as cultural tools that affect an individual's ability to negotiate meaning and identity. Bourdieu describes different forms of capital:

economic capital, which is immediately and directly convertible into money and may be institutionalised in the forms of property rights; as cultural capital, which is convertible, on certain conditions, into economic capital and may be institutionalised in the forms of educational qualifications; and as social capital, made up of social obligations ('connections'), which is

convertible, in certain conditions, into economic capital and may be institutionalised in the forms of a title of nobility (Bourdieu 1986:82)

Social capital is seen as a cultural tool that can be applied to unequal educational achievement by examining its role in cultural reproduction (O'Brien and Fathaigh 2004). The three main forms can be thought of as obligations and expectations, information channels and social norms, emphasising the functional value of social relationships in the resources made available to individuals within their networks. Members of a network are afforded certain credentials, held collectively by the group, however this is not always with a positive effect as the social capital of one field may not be transferrable to another. Obligations to a group may also have negative consequences, as in CoP; to benefit from membership we must sacrifice some level of negotiability when it comes to our identity.

A recent study has shown that cultural capital may affect the likelihood of participation in higher education, after controlling for socio-economic status (SES) and achievement (Noble and Davies 2009), with the same authors suggesting that once at university, students with less of the recognised forms of cultural capital are less likely to have the confidence to interact with teaching staff and to live on campus, thereby affecting the habitus of the institution. In an apprenticeship model such as medicine, interaction with teaching staff is crucial; if some students are not doing this as well as others, then support is required, as having access to certain types of cultural capital is important for success. Devine (2009) discusses how immigrant children in an Irish school mobilise cultural and social capital for themselves, and for their family and communities by positioning themselves in such a manner to obtain the best exchange value for their education. Devine describes a careful and ongoing negotiation of identity and the ways in which social capital is created as the children build valuable cultural tokens, signifiers of participation in Irish culture. The children in this study were aware in some way of their important role in doing this and tried to safeguard acquired social capital by regulating their behaviour. Also interesting is the acknowledgement of competing norms to be negotiated, in this case between academic achievement expected by parents and teachers and the oppositional identity markers of hegemonic masculinity. Looking for social and cultural capital returns therefore can be done on the behalf of individuals, their families or the community they belong to, but also for a 'redefinition of their identities' (Glastra and Vedder 2010). Group membership is an important consideration as, for example:

a member of an ethnic group may endow a scholarship for young co-ethnic students, thereby expecting not repayment from recipients but rather approval and status in the collectivity. The students' social capital is not contingent on direct knowledge of their benefactor, but on membership in the same group. (Portes 1998: 9)

Whether management of capital on behalf of other members of an individual's social group may be a feature of medical students' learning is something to consider. Alongside this, a consideration of the types of capital or identities more easily available to ethnic minority students may provide more insight into how and why certain capital is claimed and how this links to success.

Authors such as Beagan (2001; 2005) and Greenhalgh (2004) make clear that social class is an issue in medical education. Due to the intersection between class and ethnicity, it is also more likely that ethnic minority students will come from a lower SES background than their white peers (Sandhu 2009) and this has been shown to be the case at MMS (Bagley 2010). Social class is not directly observable or measurable. Traditional measures of social class have focused on the household unit, categorising members according to the employment of the person responsible for the accommodation, in receipt of the highest pay (ONS 2010). More recently there has been a move away from categorisation of individuals according to their occupation (or in the case of young people, guardian occupation), towards the interplay of cultural, social and economic capital. A recent study by Savage *et al.* (2013) indicated seven distinct social classes based on the interrelated levels of these forms of capital. In this thesis I operationalise class in this way, looking at advantage or disadvantage in terms of different forms of capital. This method is also more useful when the majority of students come from the higher social classes; in medical education in the UK over 70% of students come from the top three traditional categories (Sandhu 2009) defined by the National Statistics Socio-economic Categories (ONS 2010).

3.7 Social network and social capital

Social Network Analysis (SNA) is both a theory and a method. As a theory it provides important concepts and approaches to address the issues identified throughout this chapter. Taking the unit of analysis to be the network directs the focus of investigation at this point, overcoming some of the difficulties in operationalising communities of practice theory, such as defining the community and identifying the boundary. social network analysis provides a clear methodology to

define and investigate a network (Marin and Wellman 2009), focusing in a relatively neutral and empirical way on who knows whom. This also addresses the criticism that the notion of 'community' lacks definition and implies benign connotations. Theoretically distinct from CoP theory, but with the capacity to investigate the same subjects, SNA enables another level of theoretical triangulation.

Social capital in particular has been an important concept beyond Bourdieu, particularly in SNA. Whilst Bourdieu tends to reduce other forms of capital to economic capital, or describe how they may be exchanged, the creation and utilisation of social capital is not this straightforward. As Portes (1998) points out, 'transactions involving social capital tend to be characterised by unspecified obligations, uncertain time horizons, and the possible violation of reciprocity expectations'. However, the author reminds us that social capital 'transactions' may ultimately be exchanges, conceding that 'by their very lack of clarity, these transactions can help disguise what otherwise would be plain market exchanges'. Portes distinguishes three forms of social capital: social control, familial support and extra-familial resources. Putnam (2000) describes social capital as both a cause and effect of engaging in social groups (or communities), highlighting the importance of trust in interaction. Putnam (1993) suggests that cooperation and support, outcomes of social capital, are vital in combating the loss of trust, civic engagement and public order in modern society. There are negative aspects to social capital however, with restriction or constraint being clear in a social group which has the power to define norms and restrict the flow of resources. Whereas group closure benefits those inside the group, those left outside are cut off from the support afforded to members. This is an important consideration for medical student groups, especially where groups may be forming along cultural lines. Social capital also has a cost, relationships must be maintained and actions reciprocated. Being a member of a network necessitates some sacrifice of one's autonomy, conscious or unconscious, as the group defines acceptable social norms, attitudes and behaviours. This understanding of social capital complements the CoP concepts of identification and accountability, where identifying as a member of a community leads an individual to become accountable to the practices of that community. High levels of social capital can also have negative consequences, as individual expression is restricted (Woolcock 1998).

Social capital has been defined in a number of different ways by different authors throughout history. Two useful classifications have been developed by authors such

as Putnam (2000: 22-4), who makes the distinction between *bonding* and *bridging* social capital. The former refers to the connections within a close social circle, such as with family and close friends. These are the ties that help individuals to 'get by', through support and reinforcement of identity; essentially they are links between like-minded people and therefore serve to reinforce homogeneity (Schuller *et al.* 2000). These ties also tend to be *strong* ties, as defined by authors such as Granovetter (1973) and Lin (2001), that are related to *homophily* (literally, love of the same). Bridging social capital refers to links beyond an individual's immediate network and describes the connections and resources developed with others who are members in other social groups. These ties are also referred to as *weak* ties and are associated with *heterophily* (Granovetter 1973; Field 2008). Bridging social capital helps individuals to 'get on' (Schuller *et al.* 2000), allowing them access to resources unavailable within their close network, useful in terms of gaining employment (Granovetter 1973) or increasing pay and promotion (Burt 1992). Importantly for this study, bridging social capital brings people from different social and cultural backgrounds together. How might these understandings of social capital help us explain the achievement gap? It may be that students from minority groups have higher levels of bonding social capital through efforts to reinforce or maintain their identities in the white middle-class culture of medicine. This may be at the expense of bridging capital however, meaning ethnic minority students could miss out on the additional knowledge or resources that promote achievement. This study will therefore investigate medical students with the concept of social capital in mind, focusing specifically on the indicators of bonding and bridging capital such as density (the interconnectedness of a network), reciprocation and homophily.

3.8 Plug and play / triangulation

'Theory triangulation' means 'approaching data with multiple perspectives and hypotheses in mind (...). Various theoretical points of view could be placed side by side to assess their utility and power' (Denzin 1978: 297)

The decision to use these theorists and concepts to inform my work was borne of the need for a relational theory of learning to go beyond the individualistic, student-deficit models appropriated in the majority of previous research into medical student achievement (that failed to fully explain differences). We can see from the use of language that the direction of focus for each theorist is slightly different. Wenger takes a bottom-up approach, looking at the micro-practices of individuals and

demanding that any patterns apparent at a higher level must be explained here first. Bourdieu, on the other hand, begins with the patterns and identity (or habitus) that is forged by the social, rather than individuals choosing to become accountable to practices. social network analysis bridges these approaches, investigating the relational nature of the social world and how individuals create and respond to structures. These differing approaches result in theories and concepts that are sometimes synonymous, whilst at other times saying very different things about the nature of living and learning. Wenger discusses participation as embodied and encompassing what we do, say, think and feel. Habitus can be seen as the location of this, both creating and being created by new acts of participation. Experiences characterised by non-participation can also be thought of as those ‘fish out of water’ out-of-habitus experiences described by Bourdieu and scholars using his theory. As with bilingual individuals, the language we choose to use to describe something has an impact on the way it is seen and described, with each theoretical syntax requiring different presuppositions. Linking ideas of participation and identity, habitus and field seems at some points intuitive and at others frustrating, yet it is the explanatory power of using the different lenses to examine method, data and the theories themselves that is most attractive.

These theories are not without criticism, however. Reay (2010a; 2010b) suggests that Bourdieu gave us a theory of the middle classes and how they obtain and maintain power. The automatic, taken for granted nature of the habitus that is always assumed in Bourdieu’s work is critiqued by many authors, particularly for non-majority groups, and it is suggested that, for these groups, practice is characterised by reflexive adaptation rather than pre-reflexive dispositions (Reay 2010a). CoP undoubtedly provides us with a theory of learning; however, it functions best as a framework for analysis and lacks the explanatory power of Bourdieu’s concepts in explaining why certain outcomes and patterns exist. In the context of inequalities (and therefore the context of social life), CoP alone is insufficient to describe the workings of power. Both Wenger and Bourdieu share common epistemological roots, hence perhaps the triangulation of theories is less robust than it could be if it incorporated alternative perspectives; however, returning to an assertion at the beginning of this chapter, theory helps us to tell a meaningful story about the world, and these concepts will certainly help to do that.

3.9 Applying theory

The concepts discussed in this chapter had important implications for the direction of my research, both for how I approach the question and for the apparatus I choose to use. Bourdieu affirms the primacy of relations between people, institutions and concepts. Habitus and field designate bundles of relations. Indeed, ‘the stuff of social reality – of action no less than structure, and their intersection as history – lies in relations’ (Bourdieu 1992:15-16). Therefore, it is important that I examine students from within their network of relations. The interdependency of all concepts discussed in this chapter remind us that they will lose analytic power if considered as independent. Our experiences are the result of the dynamic blending of past and future, participation and reification, identification and negotiation. Habitus does not function without field and therefore a medical student’s practices should not be considered as separate from the institution and the reified objects and practices of those within that institution (from medical teachers to administrative staff) in which they operate.

Theory also directs the way I will attempt to get at ‘the truth’ and the ways I present it. If identity is a process embodied by the individual, it is unlikely I can ‘get at it’ using direct questioning of subjects; however, if experiences reflect and reinforce our habitus (and therefore the social context of its creation), by looking at students experiences I hope to paint a picture of some of the characteristics of that student’s habitus. According to Bourdieu, for any kind of meaningful research, this must be done reflexively, a process of ‘continually turn[ing] one’s sociological tools upon one’s scientific practice so as to reflect critically on the social conditions and concrete operations of construction of the object’ (Wacquant 2002). As researchers, we have some control over the way in which our research is interpreted. Critics of Bourdieu highlight the dangers of reproducing the structures we illustrate by continuing to talk about them in the same terms. Thinking reflexively, exploring the ‘unthought categories of thought’, the assumptions we have about our field of research and the impact this will have on our methods and data is vital in avoiding this as much as possible. Sociology itself is a field that must compete with those of the media and politics who have ‘vested interests in common sense thinking’ (Bourdieu and Wacquant 1992:15), and it is also important to consider my position within the intersecting fields of medical education and sociology. Research, as with theory building, always has a logic and purpose driving it; making these as transparent as possible ensures that we do not simply reproduce the technologies and discourse

already used to describe students' practices, as 'when the discourse can deal with some effects of the organising apparatuses that means they no longer play this role of determining discursive institutions' (de Certeau 1984:49). With this in mind, my academic objective is to reflexively address the pattern of ethnic minority underachievement from a sociocultural, relational perspective. Through this process my work will add new discourse to the field will serve to address some of the inequalities visible at present.

3.10 Summary

This chapter has set out a theoretical foundation for the investigation of medical students' learning and achievement from a social perspective. A communities of practice approach was chosen for its ability to deal with learning, meaning and identity with a particular focus on the practical, apprenticeship learning that occurs in clinical medicine. Concepts from Pierre Bourdieu were introduced to better investigate who does well in a given field, and why. A particular focus on social capital as bridging or bonding may help us to explain differential achievement from a social networks perspective. The next chapter sets out the key research questions this study aimed to address, followed by a critical account of the methods utilised to address these questions.

Chapter 4

Methods

4.1 Introduction

This chapter provides details about the procedures I used to collect and analyse the data that is presented in later chapters. The process of undertaking research involves a vast number of decisions to be made at every stage, from deciding which tools to use to address the research question, to forming ideas around which data may help to answer this question. Here I provide details of the decisions I made at each stage in order to provide a context for the results sections. The chapter begins by outlining the key research objectives and research questions. I then provide an overview of the methods used, along with a workflow diagram, before critically describing the three phases of the study; 1, pilot phase; 2, social network survey; and 3, interview phase. The chapter closes by detailing the ethical considerations I had to take into account in the process of undertaking this research, and finishes with a description of how my status as an outsider changed through the process.

4.2 Key research aims and objectives

This research aimed to better understand the achievement gap between white and ethnic minority medical students. In order to achieve this, the following objectives were set:

- Investigate the nature of medical students' relationships and how these related to their experiences and achievement.
- Explore medical students' social networks using SNA and how these impact on achievement.
- Understand how ethnicity impacts on relationships and social networks.

This resulted in several key research questions:

1. How do students' relationships impact on learning and achievement?
2. Which, if any, social network features (such as density and homophily) impact on achievement?
3. How does ethnicity impact on relationship formation and social network features?

4.3 Overview

This research comprised of three stages, a qualitative interview pilot study, a social network survey, and a follow-up interview phase. The processes are outlined below in diagrammatic form, followed by a description of the setting of the study. I then explain each phase in more detail, including a critical account of each stage. The chapter concludes with a section on the ethical considerations that had to be taken into account in the process of the research and a critical reflection on my changing status as an outsider.

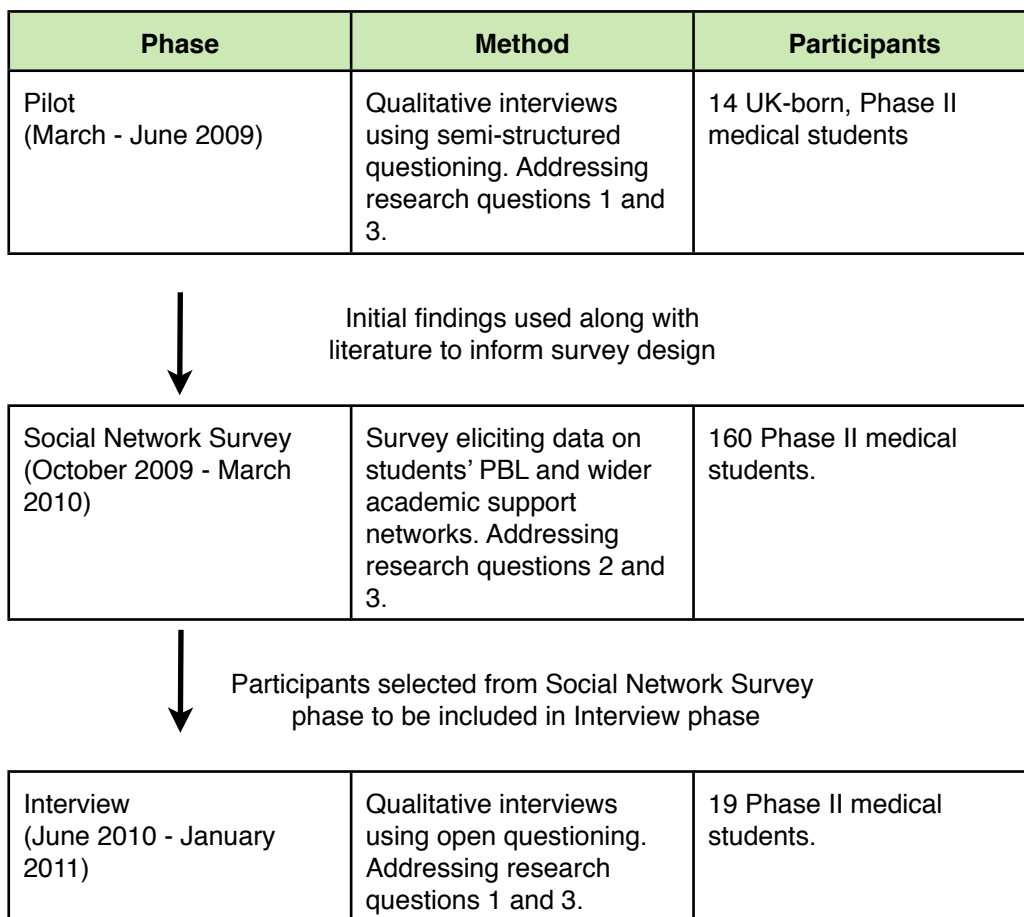


Figure 4.1: Method workflow diagram.

4.4 Setting

This thesis is set in Manchester Medical School (MMS) at The University of Manchester. This medical school has a five year, undergraduate, Problem-Based Learning (PBL) curriculum. This means that the school enrolls the majority of its students direct from further education (schools, sixth form centres and colleges) at the age of 17 or 18. This medical school also has a pre-medical course, a group of

approximately 40 students who undertake a foundation course prior to beginning the medical degree. These students usually do not have the correct entrance criteria, usually having done an unrecognised A-level (such as Geography, as opposed to a recognised A-level such as Chemistry). The curriculum is split into three phases. Phase I (years one and two) is mainly non-clinical with some 'Early Experience' comprising approximately four days each semester involving a clinical placement at a GP surgery or hospital ward. The transition into Phase II (years three and four) is a huge change for students as they move from participating in PBL sessions in university buildings to being attached to firms on clinical placements. Here, they engage more regularly with clinicians, healthcare professionals and patients on a regular basis. This medical school is large compared to many others in the UK; in phase one, year groups are comprised of around 300 students, rising to approximately 400 in phase two. Phase III is the fifth and final year, where students concentrate on passing final examinations and preparing for practising as a doctor. MMS is situated in the city centre of Manchester, a large city in Northern England with a high proportion of deprived communities. In phase two, students are divided between four teaching hospitals in Central Manchester, South Manchester, Salford and Preston. Approximately 60% of the medical student body are female and 40% come from an ethnic minority background. Whilst the medical school does draw some of its student body from the deprived areas in and around Manchester, the majority of students come from more privileged backgrounds and often less multicultural areas, with 63% of the 2001 cohort coming from social classes I and II, and only 14% of these students coming from a Low Participation Area (an area classified as having low participation in Higher Education by the Higher Education Funding Council for England) (Bagley *et al.* 2007).

4.5 Assessment and achievement

Medical education requires students' competence to be assessed regularly (Epstein 2007). At MMS students are assessed from first year in three ways. Firstly a 'Progress Test' uses a bank of multiple choice questions to test students in all years, with every student sitting the same test regardless of year group. A second form of assessment is the Objective Clinical Structured Examination (OSCE), in which students participate in a number of stations, each with a simulated clinical scenario, often involving a simulated patient. These scenarios are scripted and examiners provided with a structured marking criteria in an attempt to maintain objectivity. The objective nature of these examinations has been widely contested however and research has

shown that a number of factors impact on how examiners mark students (Wilkinson *et al.* 2003; Yeates *et al.* 2012). This has led to some assessment experts suggesting 'objective' should be replaced with 'observed' to acknowledge the subjective (Yeates 2012). Further to these examinations, in students' first year there are additional 'Semester Tests', assessing knowledge of the basic sciences. Throughout this thesis, I refer to achievement to be a measure of assessment performance. However, I will also show that students conceptualised success in many different ways.

4.6 Pilot phase

The pilot phase was designed to address the following research questions: 1) How do students' relationships impact on learning and achievement? and 3) How does ethnicity impact on relationship formation and social network features? The exploratory nature of this work required a qualitative approach, enabling a diversity and depth of perceptions and experiences to be gathered. As previous literature suggested a potential difficulty around the open discussion of ethnicity and difficulty (Roberts *et al.* 2008), I decided to interview students individually. It was also important for me to undertake these interviews face to face, as this method enables a rapport to be developed between interviewer and participant, and a level of trust that can facilitate the open exchange necessary to talk about potentially sensitive topics (Lee 1993) such as failure and isolation. Qualitative interviews can take a number of forms, from open discussions that may only have a single prompt or question, to highly structured formats that closely resemble a survey. At this initial stage it was important that I covered a range of topics to help me better understand students' experiences; I was both collecting data and learning about an unfamiliar world. For this reason, I decided to take a semi-structured approach to the interviews, allowing enough flexibility for new topics to arise whilst addressing a range of issues, including those previously identified as important in the literature.

During this pilot phase I worked alongside Thomas Main (TM), a medical student co-researcher. Thomas was a fourth year student, seeking to engage in a research project as part of his MB ChB at Manchester Medical School (MMS). As a non-medic, working in this collaborative fashion was extremely valuable, as Thomas provided a valuable window into the medical student world. He was able to assist with recruitment using his existing networks and had a significant input into the development of the interview schedule.

4.6.1 Development of interview schedule

The interview schedule was developed using the literature reviewed at the time (see literature table in Appendix 1). Further expertise was gained from medical students, medical educationalists and sociologists. In keeping with established practice (Dilley 2004), questions were developed to elicit responses around each topic, with a series of prompts to facilitate discussion where necessary. Providing this type of structure to an interview schedule is also important where there may be multiple interviewers, enabling a level of continuity across interviews (Friesen 2010). Topics were developed using existing literature and refined using the experience of the research team. Utilising a semi-structured approach also has limitations, and directing participants to discuss pre-defined topics may have led me to miss other important factors. In order to limit this possibility, all participants were asked if there was anything else they would like to discuss at the end of the interview. To ensure the schedule was suitable, and elicited a discussion of the intended topic areas, it was informally piloted with two fourth year medical students. These participants were encouraged to reflect on the questions after they were answered. The development of the schedule was designed to be ongoing, allowing for new topics to be added, or more detailed prompts when themes arose that required further exploration. The schedule focused on peer groups and participation, social and friendship networks, learning styles and approaches, the role of ethnicity at medical school and perceptions of achievement. The final interview schedule can be found in Appendix 2.

4.6.2 Sampling

The population for this sample was all clinical Phase II students, (third and fourth years) at MMS (approximately 400). Phase II students, due to the time they had spent at medical school, were most likely to have a range of experiences of non-clinical and clinical learning at medical school, and be able to imagine their experiences as final year students. Having had three or four years of medical school assessments, they were also well placed to discuss their experiences in relation to their achievement. They were also likely to have significant experience of forming (and sacrificing) relationships due to the nature of their movement across different PBL groups and clinical placements. All Phase II students were contacted via the MMS intranet to provide them with the opportunity to participate. The sampling criteria were made clear in this call for participation. TM also recruited via his existing networks, although sampling was ongoing and a snowball technique used to contact

participants beyond TM's immediate network. This was, however, also a limitation to my method, as Thomas recruited participants from his own network and then used a snowball technique. This may well have drawn upon a population with shared characteristics not representative of the student body as a whole. Despite this, I felt it was important to make use of his existing networks in order to increase the response rate and develop trust between the research team and the participants. This was later confirmed by my experience of recruiting participants to the Interview phase, which was much more time consuming.

The decision was made to include only UK-born students at this stage in order to attempt to limit variables such as English as a first language (though acknowledging that being UK-born does not necessarily indicate this), and the compounding effects of experiencing both the UK culture and the medical school culture as newcomers. I sampled theoretically and purposively, as the main aim of this research was to examine how ethnic minority students' ethnicity and relationships impact on their learning. Due to the fact that the voices of ethnic minority students were largely missing from the literature in this area, ethnic minority students were overrepresented. The findings from this phase may have been different had I included more white students, yet this was an important methodological decision to enable individuals from a wider range of cultural backgrounds to be sampled, and to avoid grouping students into a single ethnic minority group. The sample was stratified by gender, and an attempt was made to include students from all four teaching hospitals.

4.6.3 Data collection

Data collection and analysis occurred simultaneously, in an iterative manner, to refine and add to existing probes in order to address emerging themes and codes. Sampling was ongoing and also iterative, with a conscious effort made to include students from ethnic backgrounds that were not yet included, and an attempt to involve an equal number of males and females. Sampling ceased at $n=14$, when a level of saturation around the topics was reached. Strauss and Corbin define saturation as 'the point in the research when all the concepts are well defined and explained' (Strauss 1998:145). However, there is debate around the concept of saturation in the literature concerning qualitative research, with some authors challenging the utility (or reality) of reaching such a point (Shi 2008:149). For the purposes of this study, I used a rational approach; as the aim of the pilot study was to develop theoretical and methodological frameworks for the next stages of my research, I ceased sampling

and data collection once these frameworks were suitably reified and unchanging, judged pragmatically by the research team when no new themes arose that were pertinent to the research questions. In order to confirm this, ‘validation probes’ (Streubert and Carpenter 1995:404) were incorporated into the schedule, enabling me to test emerging ideas and hypotheses. This was done both positively, such as by asking students if they agreed with an emergent theory, for example, ‘Some students have described informal revision groups as important in their learning, is that something you would agree with?’, and negatively, by proposing a contradictory hypothesis, such as ‘Many students describe learning better on their own, rather than as part of a group, is that something you would agree with?’. One interview was conducted by phone at the request of the participant due to time restrictions. All interviews were digitally recorded and transcribed verbatim. Data were formatted for storage and analysis in Atlas.ti (Scientific Software Development 2009).

4.6.4 Participant information

The demographic information of the 14 participants who took part in Phase one interviews is summarised in Table 4.1. Ethnicity was defined by the participants to allow participants to freely identify, and no categories of ethnicity were provided. However, in order to maintain anonymity, some students self-identified ethnicity has been more broadly categorised, indicated with an asterix.

Name	Gender	Ethnicity	Religion
Sally	Female	White' British	Christian
Nazia	Female	Pakistani UK born	Muslim
Suleman	Male	Pakistani UK born	Muslim
Aminah	Female	Pakistani UK born	Muslim
Nasreen	Female	Pakistani UK born	Muslim
Danielle	Female	White' British	Not stated
Niyi	Male	Black' African * UK born	Christian
Kassim	Male	Middle Eastern * UK born	Muslim
Prabal	Male	Indian	Hindu
Sameya	Female	Middle Eastern * UK born	Muslim
Julie	Female	Black' African* UK born	Christian
Farid	Male	Mixed' Arab/white UK born	Muslim
Lamia	Female	Middle Eastern * UK born	Muslim
Arjun	Male	Indian UK born	Not stated

Table 4.1: Table of participants in phase one interview study

Participants are presented pseudonymised alongside gender, ethnic and religious information.

*self-identified ethnicity altered to maintain anonymity

4.6.5 Analysis

Thematic analysis is both a fundamental and common methodological strategy employed in qualitative research. Although some authors have argued that, due to its use across a number of different methods (such as Grounded Theory), it should be identified as a tool rather than a method, Braun and Clarke (2006) contest this, arguing for its definition as a method in its own right. These authors provide a clear theoretical and methodological framework for employing thematic analysis,

maintaining its flexibility as a strength, whilst addressing the historical critiques levelled at qualitative analysis. In their words,

Thematic analysis is a method for identifying, analysing and reporting patterns (themes) within data. It minimally organises and describes your data set in (rich) detail. (p. 79)

These patterns can take multiple forms, characterised by similarity, difference, frequency, co-occurrence, sequence or causation (Saldaña 2009:6); I looked for both positive (visible) and negative (missing) patterns. It is important to state that my analysis was driven both by my research questions and by a sociocultural perspective; therefore the patterns I identified and the ways in which these were explored were shaped in ways that may not have been the same for another researcher with a different worldview. This will become clearer as I describe my method of analysis, and will be discussed in more detail later in this chapter.

The first step in my analysis was to fully immerse myself in the data. This meant listening again to the interview recordings, reading and rereading transcripts and discussing the data with my co-researcher and supervisory team. As I was analysing data throughout subsequent data collection, I also used this stage to compare and contrast data gathered across interviews and adjust my interview schedule accordingly. The next step was to begin coding, using a codes-to-theory model for qualitative enquiry (Saldaña 2009:12).

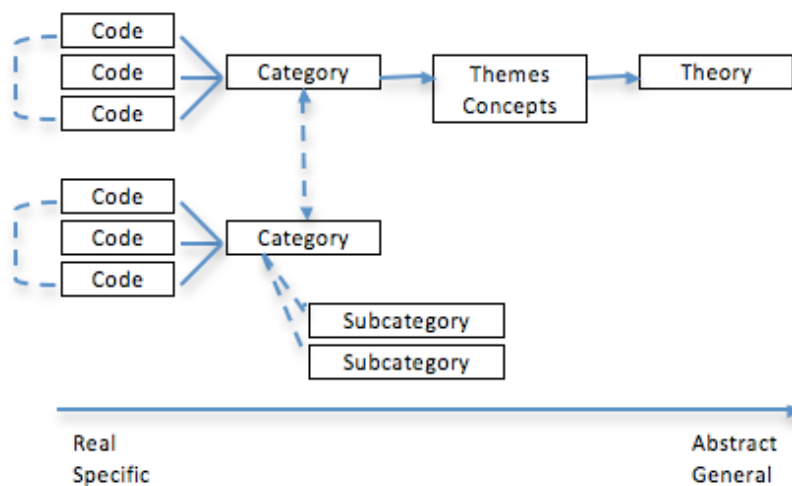


Figure 4.2: A codes-to-theory model adapted from Saldaña (2009) page 12

Coding requires a researcher to identify the basic elements of the raw data, highlighting the salient aspects. Initially I did this inductively, allowing the codes to emerge from the data with no restrictions on the number of codes I created. These codes were then categorised, grouping them according to shared meaning, with subcategories where required. This process continued as data were collected, with data being constantly recoded and recategorised. As patterns began to emerge in these categories, themes were developed. It was also at this stage that key theoretical concepts were introduced from the literature on communities of practice and social network analysis (chapter 3), allowing data to be reexamined and new, theoretical codes and categories added.

Using Atlas.ti, the links between codes and themes were explored and made explicit, resulting in a model that could be used to re-examine the whole dataset to test its value as a theoretical and methodological framework for the next phase of my research. Taking a sociocultural perspective means acknowledging the situated nature of an interview and the co-construction of data between researcher and participant; meanings are made by both parties. From this perspective, it was important that I maintained a reflexive awareness of the decisions I made throughout the analysis (chapter 1). Using pre-determined theoretical concepts certainly had an impact on my analysis and findings, highlighting certain processes and patterns over others. However, I attempted to maintain a level of reflexivity through discussion of other interpretations of my data with researchers from different theoretical traditions.

4.7 Social Network Survey

This section describes a social network analysis (SNA) survey I undertook following my pilot phase. This phase was designed in order to address research questions 2) Which, if any, social network features (such as density and homophily) impact on achievement? and 3) How does ethnicity impact on relationship formation and social network features? What follows is a critical account of the design and implementation of this tool, along with the method for analysing resultant data.

4.7.1 Choice of tool

I first considered the use of an SNA methodology during my initial literature review, where it emerged as both a theory and method ideally suited to the investigation of relationships. This was further supported by emergent Pilot phase findings that identified students were selective over the individuals they interacted with, and would interact with different people for different purposes. I chose to use a survey in order

to capture a larger dataset and to enable quantitative analysis to support my qualitative analysis. From the literature and in the discourse of this medical school, success was mostly conceptualised in individualistic terms, with students' exam achievement being something they personally achieved. This was reflected in students' narratives in my pilot study, where no participants described a direct link between their relationships with others and exam success. Participants were much more likely to describe help and support in more indirect terms, such as parents being emotionally supportive, or friends who could take their mind off work. For this reason, I chose to focus on two types of network each student was guaranteed to have: a PBL group and a personal support network.

I decided to look at PBL networks for several reasons. They are networks that are bounded, as a set number of students are allocated to each (though groups change each semester); and accessible, as they physically met at least once a week. They also provided a useful unit of analysis through which to examine inter- and intra-group relationships (for example, by ethnicity and gender), as the University's administrators purposively allocated groups in an attempt to achieve a balance across these demographic groups³. Investigating relationships within these groups would also provide an interesting comparison for the second, personal support, network.

Alongside asking students about their interactions with their PBL group, I also wanted to investigate the networks they formed by choice. In order to maintain a focus on the research question, however, I decided to limit this to asking about people students interacted with in activities important for their academic success. In hindsight, this may have been a limiting factor to the design of the study. As I previously mentioned, students' did not easily conceptualise their success in terms of social interaction; hence, asking them to indicate individuals they interacted with in activities important for their academic success is unlikely to have captured the full range of supportive relationships important in achievement.

4.7.2 Development of survey

One of the most important elements of survey design is the development of the constructs which the questionnaire will address (Groves *et al.* 2011). Early in the design process, I decided to focus on relationships as *interaction*. As communities of practice theory has its foundations in theories of practice, taking this approach made

³ I informally discussed allocation to PBL groups with an administrator on each hospital site. Each had their own system, however they all attempted to ensure PBL groups were mixed by ethnicity (often using surname as proxy) and gender.

theoretical sense; I proposed that focusing on interaction in activities would be more likely to illustrate any communities of practice a student was part of. I also felt this would help participants form a more coherent idea of what was being asked of them, as it was likely that relationship could have very different meanings across the sample population (for example, from a uni-directional role-modelling relationship, to a sexual or romantic relationship). Asking participants to focus on activities done with someone else reduced this ambiguity, but did not remove it completely, as I will discuss later.

A primary concern with the questionnaire was to ensure it could be filled in quickly, as I planned to ask participants to fill it in during their PBL session. For this reason, a 15 minute maximum completion time was set and questions were limited to those most likely to elicit the information required to address the research questions. The survey (Appendix 3) was developed using existing literature, findings from the pilot phase and by drawing upon significant support from my supervisory team and external collaborators in development and review phases, including two medical students (TM and Jacqueline Kerr).

Question 1 asked students to indicate whether they interacted with other members of their PBL group outside formal PBL sessions. It was important to make this distinction, as all students would interact in some way during formal sessions. The names of all students in each PBL group, along with their tutor was obtained from the relevant administrator. A questionnaire was then developed for each PBL group, enabling the names of each student in that group to be entered in advance, to save participants' time and to facilitate analysis (data entry would have been more difficult if students names were in different orders on each questionnaire). I decided to include the tutor, as they play an important part in PBL dynamics, and act as a potential role model or provider of support. At this stage I made the pragmatic (and reluctant) decision not to ask the tutors to complete a social networks survey due to limited time, as my focus was on students' perceptions of their networks and achievement. My reluctance arose because I was aware the tutor was an important part of the group dynamic.

Based on the types of interaction participants in the pilot study reported, four categories were developed: 1) No interaction, 2) Study interactions 3) Social interactions 4) Emotional support. As I was interested in participants' perceptions of their experiences and interactions, I made the decision not to further define the

meaning of the different interactions I asked about here. This is a limitation of my survey, enabling participants to define these in potentially different ways created more difficulty during the analysis phase. This was evidently the case for the relationship ‘in my clinical firm’, for which preliminary analysis indicated participants’ understanding of this category was problematic. Despite the fact that members were formally assigned to these groups and should have a well developed idea about their peers in that group, over half of the ties for this relationship were not reciprocated. For this reason it was excluded from further analysis. This demonstrated another limitation to the use of survey for data elicitation, as I was unable to adapt the tool once it had been implemented, and was unable to ask participants about their understandings of the categories.

We are interested in the social networks you have established at medical school, particularly those that are beneficial for your achievement and learning. The following survey will ask you to indicate the types of relationships you may have with other students in your PBL group and with others outside of this setting.

1: Please tell us about your relationships *outside PBL sessions* with those in your current PBL group (tick all that apply)

I interact with this person...	Not at all outside of PBL sessions	In activities important for my academic success (ie. Study)	In activities unrelated to academic work (ie. Social)	For emotional or moral support
1. Student				
2. Student				
3. Student				
4. Student				
5. Student				
6. Student				
7. Student				
8. Student				
9. Student				
10. Student				
11. Student				
12. Student				
13. Tutor				

Figure 4.3: Survey Question 1 - PBL network interactions

Question 2 asked students to think about people they interacted with in ways that supported their academic success. Again, this was specifically outside formal PBL sessions, however this question asked students to think beyond their own PBL group and potentially beyond their student peers. As I would not have the demographic information for these individuals, students were asked to provide those relevant to the research questions, namely around ethnicity, religion and gender, along with some questions about the frequency of their interaction with others.

This section relates to people you interact with outside PBL sessions. These do not necessarily have to be other students, but they must be people you interact with in ways that support your achievement at medical school.

2: Please tell us about up to 10 of the main people that you interact with during term time in activities important for your academic success at medical school (ie. Study, revision, information or advice seeking).

Put their initials here to help you answer the following questions about them

↓	Age	Sex	Role	Time known (years)	We interact...	Ethnic group	Religion
	1= <25 2= 25-35 3= 36-55 4= >55		1=student 2=tutor/ clinician 3=family 4=other		1= daily 2= weekly 3= monthly 4= less often		
<i>Eg. HA</i>	1	F	1	3	2	Black African	Christian
A.							
B.							
C.							
D.							
E.							
F.							
G.							
H.							
I.							
J.							

Figure 4.4: Survey Question 2 - personal academic support networks

As the literature suggested that network factors such as density (the level of interconnectedness) and structural holes (the potential for brokering) were important, I needed to collect data about the ways in which the individuals named by students interacted with each other. To do this, I developed a simple blank network diagram with instructions on how to complete this.

3: Please indicate if the people you have told us about above also interact with each other in activities important for either individual's academic or work-related success. (e.g. Does person A interact with person B in a study related activity?) Where there is such a relationship, draw a line between the letters representing the individuals above.

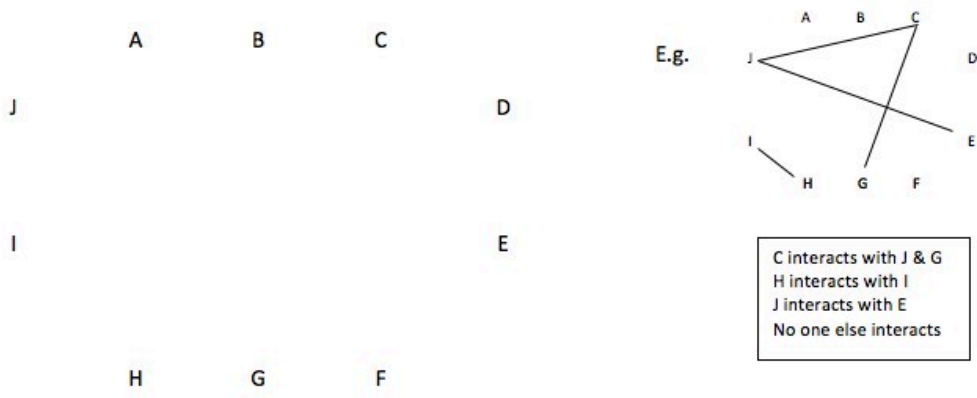


Figure 4.5: Survey Question 3 - network interconnectedness

Having addressed students' social networks, I then developed questions to gather data on their previous academic history and the potential to follow their future exam performance. This was an important element to my research, as I was attempting to use SNA to better understand achievement. Students were asked to use their previous academic performance to put themselves into one of four categories and to indicate if they had ever failed an exam at medical school. Although there are well documented issues with using self-rated achievement measures (Ward *et al.* 2002), asking students to use their previous exam scores aimed to bring an element of objectivity into students' self-assessments. This did prove to be problematic for some students however, such as those who had joined this medical school from another institution that graded assessments differently, and for students who achieved very different scores in written and practical exams. Where they were happy to do so, students were asked to provide their library card number to enable their academic performance to be tracked.

4: We are interested in how your social networks may relate to your achievement at medical school. Please tell us which category you would place yourself in according to your academic (exam) performance.

	(tick)
Mostly Honours or Distinctions	
Mostly Satisfactory with some Honours or Distinctions	
Mostly Satisfactory	
Mostly Low Passes	

If you have ever failed any exam whilst at medical school, please tick this box

It would be very helpful if we could use your actual exam data as a measure of your achievement. This data will remain completely anonymous and will be used only by the researcher on this project. Please provide your student ID number if you agree to this.

Student ID number

Figure 4.6: Survey Question 4 - students' achievement

Finally, students were asked some personal demographic questions to enable an analysis of their networks and achievement by these categories. Age, gender, ethnicity and religion had all been indicated to be important, both in the literature and in the pilot phase, so these details were sought, along with details that might affect network formation, such as term-time responsibilities, extra-curricular activities and place of residence. Students home postcode was requested for two

reasons, firstly to enable later analysis of home versus international students, and secondly to provide an indication of participants' socio-economic background using available online data regarding indices of deprivation. The type of school a student attended was also of interest, as medicine is an elite profession in which state schooled students are less common than in other areas of HE. In the UK there are two main types of secondary school educating 11-16 year olds. Private schools are independently funded and require most students families to pay large fees (an average of £11,500 per annum per child (Paton 2012)), whilst state schools are funded by the taxpayer. Because of the financial cost of sending a child to private school, it can be used as a proxy for having access to a wide range of tangible resources, although it is important to note that several students may have earned a scholarship or bursary to such schools. I also wanted to use this as a proxy for potential privileges in the form of social or cultural capital that can be afforded by attending private schools. A final, and very current reason for including this measure was that another researcher focusing on achievement at the same medical school had preliminary results that suggested students who had attended private schools may be achieving less well than their state schooled counterparts (Bagley *et al.* 2009).

5: Finally, we would be grateful if you could answer a few questions about yourself

Name			
Age			
Sex			
Ethnicity			
Religious beliefs			
Hospital site			
Parental/home postcode (non-UK students please indicate country of origin)			
(Please tick appropriate response)			
Where do you live in term time?	At home with parents or family	On campus/ in rented accommodation	
What type of school did you attend?	State	Private	
Are you involved in any extra-curricular societies or regular activities?	Yes	No	
Do you have other responsibilities (ie. Parenting, caring, working during term-time)	Yes	No	

Figure 4.7: Survey Question 5 - demographic information

The survey was initially piloted with two current fourth year medical students, using a think aloud technique (Willis 2005:42-64); I sat with each student as they completed the questionnaire and encouraged them to provide feedback on their understanding

of each question and the available answers, as well as how they arrived at their answers. The wording of some of the questions was altered, and examples were added where probes seemed to be needed.

The decision to ask students to complete the survey in their PBL groups was a pragmatic one. Medical education research can be difficult due to low response rates as students may feel they are too often asked to complete assessments, feedback and engage in research. Asking students to complete the survey during teaching time meant participating did not compete with precious clinical, revision or social time. Completing surveys in the presence of others, however, may well have altered how students filled out the survey due to social pressure, and different results may have been gathered had they been completed in private. This said, gathering data in this way enabled a higher response rate than may have been possible contacting students individually, and also enabled me to observe and interact with a large number of PBL groups as they filled in the survey, answering any questions individuals had as they participated.

4.7.3 Sampling

The population chosen for this phase of my research was all third year medical students. Third years had recently made the transition into clinical Phase II, and were likely to be developing new networks as a result of their allocation to different base hospital sites. At this University, students also join the medical programme in third year from an Asian-Pacific institution as well as a Scottish university, so this year was an important focus for friendship formation. As I aimed for a large sample and I would be following the same students up using interviews, I also needed to choose a population that would be available over a 12-month period.

In order to maximise the response rate, to negotiate access to PBL sessions and to enable participants' questions to be answered, I decided that data collection would be done in person. From previous research experience, and through discussions with others in the field, I knew that more time and resources might be required for printing, postage, reminders and a second mailshot, which could still have resulted in a low response rate. I therefore felt I would be able to keep a better track of my progress and redirect energies to different hospital sites as required if I physically met with participants. PBL tutors were contacted and permission requested to come into their sessions. I then asked those that responded to schedule a date and time when this would be suitable. Appointments were made with tutors. I made an

attempt to sample purposively by hospital site, and across the year (as one half were doing a 'Heart, Lungs and Blood' module whilst the other were doing 'Nutrition, Metabolism and Excretion').

4.7.4 Data collection

I attended 28 sessions. Although I asked for consent individually, and assured all students that their decisions to participate were individual, an interesting observation was that these decisions were negotiated and made at the whole group level. Students and tutors asked questions, such as 'How long will it take?', 'What is it for?' and 'Do we have to do it?', before making their decisions. I verbally explained the project, and provided everyone present with information sheets and surveys. I answered any questions students had and prompted all groups on Question 2 to consider people who may indirectly help their achievement, using the example of parents providing financial or emotional support. Participants handed the questionnaires back to me after they had finished. Four groups decided not to participate, giving a group response rate of 24 (86%). Consistent with the conditions of ethical approval, I did not ask them to justify their decision. Of the groups who opted out, two students independently returned their surveys via post. This led to a total sample of 160 individuals. The two students who participated independently of their PBL group were included in the analysis of personal academic support networks, but excluded from the PBL network analysis. There were groups in which members were not present, due to illness or other absence. After seeking advice on the impact of these missing individuals on the network analysis, I decided to include their PBL groups. A code was entered indicating if an individual was missing and they were excluded from any analysis at the individual level.

4.7.5 Participant information

Overall 160 medical students participated. In line with ethical guidance, students were under no pressure to complete all questions. This means some fields were incomplete; in each of the following tables the absolute number (n) and percentage of entire cohort (n=160) is given.

4.7.6 Achievement

Table 4.2 summarises participant information relating to academic achievement, including self-rated achievement according to previous academic performance at medical school; academic quartile achievement, which is a cumulative exam score for the first four years of medical school and situates participants in relation to the year group as a whole; and whether students had previously failed an exam at medical school.

Achievement characteristic	n	%		n	%
Graduation year			Previously failed exam		
2011	83	52%	Yes	27	17%
2012	25	16%	No	131	82%
Missing	51	32%	Missing	1	1%
Self-rated achievement			Achievement quartile		
Mostly honours	16	10%	1	33	21%
Some honours	61	38%	2	26	16%
Mostly satisfactory	77	48%	3	26	16%
Mostly low passes	2	1%	4	16	10%
Missing	3	2%	Missing	58	37%

Table 4.2: Phase two participants demographics relating to achievement

4.7.7 Ethnicity & Religion

Self-identified ethnicity (4.3) and religion (4.4) was recorded and is presented below. Ethnicity and Religion was self-identified by participants, then coded using the UK Census Classification. For statistical purposes the religion data were further coded into the largest three religious groups, plus an ‘other’ category incorporating the individuals’ cultural and ethnic identities, they were a necessary analytical step, creating large enough groups to allow me to perform statistical analyses across the sample (4.4b).

a.

Ethnicity	n	%
No data	2	1.3%
White	101	63.1%
Mixed	1	0.6%
Asian/AB	28	17.5%
Black/BB	2	1.3%
Chinese	15	9.4%
Other	10	6.3%
Total	159	99.4%

b.

Ethnic Minority	n	%
White	102	63.8%
Ethnic Minority	55	34.4%
Total	157	98.1%

Table 4.3: Phase two participants ethnicity demographics

a. Self-identified ethnicity was coded into the main 6 UK census categories b. Ethnicity was recoded for statistical analysis in white and non-white as a proxy for ethnic minority.

a.

Religion	n	%
None	60	37.5%
Christian	51	31.9%
Buddhist	3	1.9%
Hindu	6	3.8%
Muslim	22	13.8%
Sikh	4	2.5%
Other	4	2.5%
Not stated	7	4.4%
Total	157	98.1%

b.

Beliefs	n	%
None	62	38.8%
Christian	50	31.3%
Muslim	22	13.8%
Other	17	10.6%
Total	151	94.4%

Table 4.4: Phase two participants religion and beliefs demographics

a. Religion was self-identified, then coded using the UK census classification of major religions. b. Data coded into the largest three religious groups, plus an ‘other’ category incorporating the remaining religions.

4.7.8 Personal circumstances

Data pertaining to personal circumstances, including indirect measures of privilege are presented in the table below (4.5), divided by gender (4.5a), whether students worked or had caring responsibilities (4.5b), were from a deprived area using their postcode (4.5c), were living at home (4.5d), had a private education (4.5e) and engaged in extra-curricular activities (4.5f).

a. Gender	n	%	b. Working/Caring	n	%
Male	62	38.8%	No	126	78.8%
Female	96	60.0%	Yes	33	20.6%
Total	158	98.8%	Total	159	99.4%

c. Deprived area	n	%	d. Residence	n	%
Yes	9	5.6%	Home	8	5.0%
No	66	41.3%	Campus/Rented	146	91.3%
Total	75	46.9%	Total	154	96.3%

e. School	n	%	f. Extra-curricular activities	n	%
State	93	58.1%	No	22	13.8%
Private	62	38.8%	Yes	137	85.6%
Both	3	1.9%	Total	159	99.4%
Total	158	98.8%			

Table 4.5: Phase two participants demographics relating to personal circumstances

Divided by a. gender b. whether students worked or had caring responsibilities c. were from a deprived area d. lived at home or university e. type of schooling f. engaged in extra-curricular activities.

4.7.9 Ethnicity, religion and achievement

Data pertaining to achievement by ethnicity and religion are presented below (Figure 4.8).

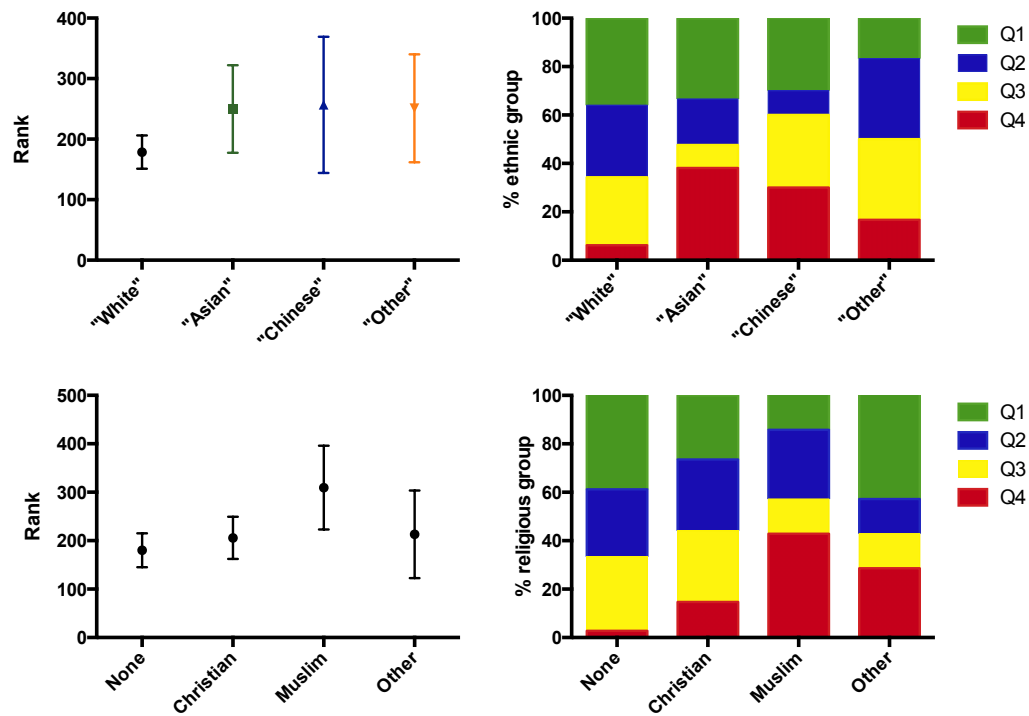


Figure 4.8: Achievement by ethnic and religious group. Ranked data are mean \pm 95% CI.

This shows white students to be achieving more highly as a group compared to non-white peers. Quartile data show the proportion of students achieving in each quartile by ethnicity and religion, indicating that a higher proportion of non-white and Muslim and Other students are placed in the lowest quartile. As a group, Muslim students achieved the lowest rank.

4.7.10 Analysis

Data were entered into Excel (Microsoft Corporation 2008), before being formatted for analysis in SPSS (IBM Corporation 2011) and UCINet (Borgatti *et al.* 2002). As ethnicity was self-reported, to aid analysis responses were recoded using L12 Ethnicity Description codes provided by The Data Service (2009). Where students provided a response, one of these six ethnic codes were used: 'white', 'mixed', 'black', 'Asian', 'Chinese' and 'other'. In the UK, 'Asian' refers to people of South Asian origin; such as Indian, Pakistani and Bangladeshi. (BSA 2005). This is in contrast with the US, where 'Asian' tends to refer to people of Central Asian origin, such as Chinese or Malaysian. Although these codes removed much of the subtlety around

Social Network Analysis uses specific terminology to describe the key components and concepts of the domain. The individual being surveyed is known as 'ego', with the other people they name referred to as 'alters'. The connections between these individuals are referred to as 'ties'. These are described in terms of being 'sent', in this study meaning that a student names another student in an interaction, and being 'received', meaning a student has been named in an interaction. Theoretical and empirical social networks research indicates a number of network factors that are important in creating affordances and constraints. The size of an individual's network can create a number of affordances, with a higher frequency providing access to more potential support and resources. However, having a large network may also constrain an individual as they must put energy into maintaining these relationships. Size of network was therefore an important measure with regard to Survey Question 2.

In this study I used 'Degree Centrality', a measure of the number of times a student named or was named by others (the number of ties a student sends or receives). In network theory, individuals who receive many ties have a high in-degree centrality and are often said to be prominent or have prestige. In-degree centrality describes the number of ties an individual receives from others, out-degree centrality indicates the number of ties a student sends to others. Those who have a high number of ties directed out to others have a high out-degree and may be influential in their ability to exchange with many others (Hanneman and Riddle 2005). Centrality measures were run on all PBL groups, giving each participant individual in- and out-degree centrality scores for each type of relationship they were questioned on. I present this as a percentage of all possible ties.

The interconnectedness of a network can also affect individuals within it. For example, a tightly interconnected network, such as a family, can offer significant bonding capital to an individual. On the other hand, an individual in a less densely connected network has access to more bridging capital and may be in positions enabling them to broker information or other transactions. This is measured as the 'density' of a network, ranging between 0 (no connections beyond ego) to 1 (all members connected).

The trend described by peers and colleagues anecdotally, and by participants in the pilot phase, for individuals to be clustered by certain characteristics led me to hypothesise that there would be measurable homophily (the tendency for individuals

to interact with others in the same group), particularly with regard to ethnicity, religion and age. In order to investigate this, I calculated participants E-I index, a network measure used to describe the number of ties an ego has to others outside their own group, compared to the ties they have to others in their group. Analysis specifically focused on the question of whether homophily (and therefore social divisions) existed in students' interactions important for academic success (as defined by the students) and how this related to achievement. An E-I index score ranges from -1 (interacting only within a group) to 1 (interacting only with others from another group). Groups were assigned according to variables under investigation.

4.7.11 UCINet and Netdraw

UCINet 6 is a computer package designed to analyse social networks data and developed by Borgatti *et al.* (2002). The program uses algorithms to carry out graph theoretical procedures and positional analysis and enables large datasets to be manipulated according to different network measures. Cohesion measures enabled me to investigate the patterns of relationships between students, looking at, for example, the number of people that named an individual in their interactions and the number of others an individual named. Within this package of measures, I also utilised functions enabling me to look at the ties within and between different groups, such as between white students and 'Asian' students. The outputs from these analyses are presented as numerical data, which were then transferred into SPSS where appropriate.

NetDraw (Borgatti 2002) is a complementary computer package that works with UCINet files to create visualisations of the networks. This package allowed both preliminary visual analysis to guide further quantitative analysis, and enabled me to better interpret and demonstrate findings. The programme allows the manipulation of colour, shape and size of the points representing individual students to indicate variables such as ethnicity and gender, and illustrate the different patterns of relationships across different interactions.

4.7.12 SPSS and statistical analyses

Correlation analysis was performed using SPSS to investigate the relationship between achievement, demographic factors and network factors. Results from the networks analyses were imputed as variables for further investigation. Trends and statistically significant relationships were sought and recorded. In order to examine the relationship between personal and social factors and achievement, all variables

were considered, with measures of achievement being the dependent variables. Crosstabular analysis was also performed in SPSS to investigate any relationship or dependency between variables, using measures of joint frequency to determine relationships. Chi-square analysis of these frequencies was undertaken to highlight statistical significance. Finally, where data were normally distributed, group means were compared using t-tests or one-way ANOVAs with post-hoc Scheffé's method. Skewed data were log transformed and where a normal distribution was achieved, t-tests or ANOVAs with post-hoc Scheffé's method were performed with results anti-logged before presentation. Data that remained skewed were not appropriate for these types of tests. There are well-documented dangers regarding the interpretation of such multicomparisons, with the chances of obtaining a low P value indicating significant relationships much higher. For this reason, I used $P=0.01$ as the cut off point for statistically significant results.

4.8 Interview phase

The following section describes the next phase of my research design in which I conducted interviews with students selected from the previous survey phase. Here, I describe my rationale and methods for data collection and analysis, and consider the implications of utilising mixed methods.

4.8.1 Choice of tool

The final phase of my data collection was to undertake further in-depth interviews. This was to add a depth to the breadth of data collected in the previous, survey phase. The benefits of using mixed methods have been explored in the medical education literature (Schifferdecker and Reed 2009) and beyond (Hesse-Biber 2010), shown to be particularly important in exploring students' multiple identities in the context of culture and ethnicity (Griffin and Museus 2011). The data I gathered via the questionnaire provided quantitative information about students' relationships and achievement. Conducting interviews with medical students selected using their survey responses enabled me to explore and understand these data qualitatively.

For reasons explained previously in this chapter, I again decided to use one-to-one interviews; however I decided to use a more open approach to the interview schedule, beginning with the prompt, 'Tell me about your experiences of becoming a doctor', with a number of further topic areas and prompts (Appendix 4). This change followed critical reading and discussion around the choice of semi-structured interviews, with some authors suggesting these could interrupt the narrative flow of

participants' stories (Brenner 2006). The findings from the pilot study influenced the design of the schedule, with a focus on participation, practices, culture and identity. Discussion also focused on the forms of support, and potential negative factors, associated with their network of relationships. Students were encouraged to reflect on how their relationships impacted on their experiences and achievement, and to consider moments when they felt like they 'belonged' alongside moments of exclusion. The interview schedule evolved as data were collected, enabling me to focus on emerging themes and further explore areas of interest. This open and evolving design meant that not all topics were covered by all participants, therefore I am unable to know if some of the perceptions were shared by other participants unless they arose in the interview. Although this is a potential weakness of the method, I also feel that maintaining an open questioning style prompted most participants to speak in much more depth about their personal experiences. During several of the debriefs, participants indicated that at the beginning of the interview they were unnerved at my lack of set questions or interruption, as they were more accustomed to closed questions that had 'right' answers. Once participants overcame this they felt free to discuss their own stories, from their own perspective, without worrying about if it was the type of answer I was looking for.

4.8.2 Sampling

Students were purposively sampled from the population of participants in the previous phase (n=160). A sampling frame was constructed in order to gather a diverse range of experiences; this included gender, ethnicity, religion, hospital site, self-rated achievement and previously having failed an exam. Preliminary analysis of students' social networks were also included in the sampling strategy, as I selected students who had a range of network positions and formations, including those who were very well connected and those who did not appear to have any support network at all. Students who appeared 'unusual' were also contacted, for example one white male student had a personal support network in which many other members were 'Asian' females. Attempting to understand these anomalies provided contrasting examples and shed light on how and why networks formed. Unlike the previous survey phase, a decision was made to include non-UK born students in these interviews. This was to capture their important experiences of encountering both the new culture and practices of medicine alongside broader UK cultural practices. I also hypothesised that these students may have a heightened awareness of their own cultural background and how it impacts on their learning and achievement; thus they

may be well placed to describe this process. Finally, I wanted to find out about the impact of moving to a different country on support networks.

Students were contacted using the details they provided on the survey. I began recruitment as the cohort finished third year and resumed at the beginning of their fourth year. Initially I emailed 160 medical students, and text-messaged or phoned 36 of these individuals, using the sampling frame to direct my recruitment strategy. The majority of the students I attempted to make contact with did not reply to my invitation to participate. Six students actively declined to participate, 24 agreed to be interviewed. From these, I was able to set up interviews with 16 participants. A further two participants responded to a recruitment notice I placed on the medical students' intranet and a final participant contacted me because participation was recommended to him by a friend who had enjoyed the interview process. Recruitment was difficult and time-consuming and after struggling to recruit 14 participants I decided to offer compensation in the form of a £10 amazon.co.uk voucher to participants, both prospective and in retrospect to those who had already participated. This amendment was approved by the Research Ethics Committee chair.

Recruitment was closed at 19 participants as a sufficient level of saturation was reached, with themes recurring and less novel data being collected. This is not to say that new themes were not arising at all, as the diverse and individual nature of students' experiences would probably never allow for 'true' saturation to be reached. Looking critically at this decision, I am aware that I would have gathered a richer picture of students' experiences had I continued data collection. However, once the majority of the data I collected enabled me to create and test a stable theory, I made a pragmatic decision to stop interviewing at this point to allow me to focus on the analysis and write-up.

4.8.3 Data collection

Interviews were conducted in University buildings, at a place and time convenient for participants. As in previous interviews, data were digitally recorded. I tried to maintain an awareness of the dynamic and dialogic nature of interviews, as described by (Rubin and Rubin 2005):

Qualitative interviews are conversations in which the researcher gently guides a conversational partner in an extended discussion. The researcher elicits depth and detail about the research topic by following up on answers given by the interviewee during the discussion... each conversation is unique as researcher matches their questions to what each individual knows and is willing to share. (p.4)

In order to facilitate discussion, I used an open and informal style of interviewing, providing information about myself to participants in conversation to encourage them to do the same (Lee 1993). I also made it clear to students that I was an 'outsider' (as a non-medic) in the hope this would encourage more explanation of their experiences, rather than relying on assumptions about my understanding of the practices of medical education. I reassured students around issues of confidentiality and made it clear that they did not have to answer any question that made them feel uncomfortable. In one case, where a student was concerned about discussing difficulties with the medical school I offered the opportunity to read and edit their transcript if there was anything that they didn't want to be used. Whilst this participant did receive his transcript, he was happy for all data to be used. As in the previous interview phase, informed consent was obtained.

4.8.4 Participant information

The demographic information of the 19 participants who took part in Phase three interviews is summarised overleaf in Table 4.6. Ethnicity was defined by the participants to allow participants to freely identify, and no categories of ethnicity were provided. However, in order to maintain anonymity, some students self-identified ethnicity has been more broadly categorised, indicated with an asterix. Achievement was self-rated according to previous exam achievement and where the information was accessible, using their quartile position at the end of Year 4.

Name	Gender	Ethnicity	Religion	Self-rate	Quartile
Geoffrey	Male	Chinese' UK born	Christian	Mostly satisfactory	Not known
Andrew	Male	White' British	Christian	Mostly honours or distinctions	2
Luan	Female	Chinese' Malaysian	Buddhist	Mostly honours or distinctions	Not known
Owen	Male	White' British	Christian	Mostly satisfactory	Not known
Susan	Female	Chinese' Malaysian	Christian	Some honours or distinctions	1
Luqman	Male	Malaysian	Muslim	Mostly satisfactory	4
Adam	Male	White' British	None	Mostly honours or distinctions	Not known
Nadine	Female	White' British	Christian	Mostly satisfactory	2
Jasper	Male	White' British	None	Mostly satisfactory	3
Kate	Female	White' British	None	Mostly honours or distinctions	1
Kristina	Female	White' European *	None	Some honours or distinctions	1
Emily	Female	White' British	Christian	Some honours or distinctions	1
Ruth	Female	White' British	Christian	Mostly satisfactory	3
Matthew	Male	White' British	Christian	Mostly satisfactory	3
Graham	Male	White' British	Christian	Mostly honours or distinctions	1
Olivia	Female	Black' African *	Christian	Mostly satisfactory	Not known
Andrew	Male	Indian UK born	Not stated	Not stated	Not known
Hannah	Female	Asian' UK born	Muslim	Some honours or distinctions	Not known
Daniel	Male	Chinese' Southeast Asian*	Not stated	Not stated	Not known

Table 4.6: Table of phase three interview participants

Participants are presented pseudonymised alongside gender, ethnic, religious and achievement information

4.8.5 Analysis

Analysis was ongoing throughout the data collection process. I continued to use a code-to-theory model, but I further developed the existing coding template created in the pilot interview phase, along with the sensitising concepts from CoP, SNA and Bourdieu (chapter 3). Again, I allowed codes and themes to emerge from the data and used the constant comparison method (Glaser 1965) to compare and contrast emergent findings with existing data. Raw data were first categorised, before these categories were then compared and refined (Dye *et al.* 2000). No restrictions were placed on the number of codes or categories that emerged, and the same elements of the data were often coded in multiple categories, reflecting the complex meanings participants made of their experiences.

4.9 Triangulation

Triangulation occurred in several ways. Firstly, as explained in my theoretical section, different concepts were introduced to a CoP framework using a ‘plug-and-play’ approach as advocated by Wenger (Wenger 2010a; Wenger 2010b). This enabled the strengths and weaknesses of these theories to be highlighted and accommodated. For example, CoP theory does not offer an explanation of why students’ may be more successful than others because of their membership in other communities, however this can be explained by looking to social capital and social networks.

Looking at the same data through different lenses also enabled me to see different stories and patterns within and across students’ responses. Looking at students’ identities from multiple perspectives was highly beneficial; through interviews I could investigate the ways participants’ narrated their own experiences and selves and how they used language to position themselves as close to- or distant from others. Using SNA, I could then investigate positioning from a very different perspective, by mapping who interacted with whom. Using these methodologies together enabled me to explore two very different aspects of identity – who we say we are, and what we do. Taken together these provide a much richer, more explanatory picture as identity shapes and is shaped by experience.

4.10 Ethical considerations

Although it was expected that the study would cause minimum disruption to participants, several ethical issues had to be addressed as the group of people targeted in this study were potentially vulnerable (being members of an institution in which the research was taking place), and the topics of ethnicity and achievement

may be sensitive issues for participants to discuss. However, whilst the study sought to investigate the experiences and achievement of medical students and therefore required their participation, I was not a teaching member of the institution (which was made clear to participants at the start of each interview) and had no influence over students, their decisions to participate, or their future treatment and success at medical school. To address any issues of coercion or more subtle pressures to participate, it was made very clear that participation was entirely voluntary and that they were free to withdraw at any time or miss out any questions they did not want to answer. This was made clear in the information sheet and verbally either at the beginning of an interview or when seeking participation in the survey. Informed, written consent was obtained from all participants, after they had read a participant information sheet.

This study addressed several potentially difficult and distressing topics, including ethnic inequalities (Roberts *et al.* 2008), failure and isolation (Oates 2012). Family problems, harassment and discrimination were also topics that could, and did, arise. I decided to interview students individually to mitigate any concerns students may have about discussing these, yet there were further ethical considerations around raising these issues in an hour long interview only to leave the participant to deal with these alone. I was also very concerned about possible negative effects of suggesting underachievement among ethnic minority students leading to a self-fulfilling prophecy effect (referring to the concept that people may behave in such a way to confirm others' false expectations of them) (Biggs 2009), or an increase in stereotype threat (Schmader *et al.* 2008). These ethical concerns were mitigated by careful questioning and debriefing (Lee 1993) each participant immediately following each interview, with the provision in place that any student experiencing distress could be referred to the University counselling service. In fact, although several students discussed quite painful experiences, most participants said they were surprised at how much they enjoyed the process of being interviewed (both in the Pilot and Interview phases). This was supported by several emails of thanks and one participant getting in touch after a friend described the process as helpful in his personal development. With regard to my concerns about creating self-fulfilling prophecies around underachievement, I found that many ethnic minority students who participated in the interview phases already had well developed concerns around ethnicity and achievement and found having the opportunity to have these validated and challenged was a positive experience. Using a student co-researcher in the Pilot

phase carried particular ethical concerns. As a member of the cohort Thomas was interviewing, he had access to personal information about his peers and asked some difficult questions, as discussed above. I ensured that Thomas had training around data protection and confidentiality, although as a fourth year medic his understanding of these issues was already very well developed. Thomas was also debriefed after each interview to ensure that any issues were picked up on and, where necessary, a follow-up strategy developed.

There were ethical considerations around asking students to complete this questionnaire during formal PBL sessions, as they may have been at a learning disadvantage, potentially missing things non-participating groups covered. This was mitigated by ensuring the survey took no more than 15 minutes and by providing a certificate and feedback to all students about the links within their PBL group for them to reflect on in portfolio sessions. There were potential benefits to students of considering their support networks and those important for their success. Asking students to complete the survey in the presence of their PBL group was a concern, as students may potentially experience discomfort at filling in questions relating to others in the room, however it was decided that the PBL network question was relatively objective (asking about interaction, rather than, for example, value judgments about others). Any resulting feelings of isolation within a PBL group would also hopefully be addressed by asking students to reflect on their personal support networks in the next question.

In order to address confidentiality and data protection issues, all identifiable information was coded and stored in a secure manner. Transcripts were anonymised, stored securely and password protected. Uncoded data were not seen by anyone other than me as the researcher, or TM as co-researcher. Governance and institutional approval was sought from Manchester Medical School. Ethical approval was not required from The University of Manchester Research Ethics committee for the Pilot phase, as the data were collected as part of an ongoing service evaluation, part of a wider programme of curriculum change. Ethical approval for the Social Network Survey and Interview phase was gained from The University of Manchester Research Ethics Committee (Reference Number 09232).

4.11 Insider/Outsider status

As a newcomer to the field of medical education research, and an outsider in medical terms, it was important for me first to begin exploring the world of medical students, their relationships and their achievement – in their own words. The pilot phase was therefore a crucial phase, enabling me to gather data that would inform my later research phases. As I did not share the experiences or language of medical students, working alongside Thomas (a fourth year medical student at the time) helped me to gain access to these during the pilot phase. Through presenting my emerging findings at medical education events I became more of an insider, becoming an accepted member of the community. Although I became more of an insider within the medical education research domain, I was still seen as an outsider by most medical students, who were aware I came from a background in Sociology (an area that struggles to gain recognition in the medical domain as it often opposes the dominant bio-medical model of health and illness). I found that being an outsider with students was actually extremely helpful in the collection of this data, as students were unable to assume I understood the common experiences of being a medical student. I feel this resulted in much richer descriptions of their experiences than had I been an insider. I also felt that being unconnected to the medical school enabled participants to talk more frankly about negative experiences, without fear of ‘othering’ themselves by identifying as different from the mainstream (Johnson *et al.* 2004). Throughout the process of doing this research I had access to the stories and experiences of many medical students, both those I interviewed and those who I presented to or conversed with formally and informally. I began to feel like an advocate for these students as I became more of an insider in their world, resulting in feelings of being an outsider with regard to some of the medical school teaching and research staff who saw students as complainers or challenged my findings. This experience of being an ‘outsider-insider’ in medical student communities and those of the medical school staff was sometimes difficult and often lonely but was also a great strength of my research, as my findings were continuously interrogated from different perspectives.

4.12 Presentation of data

In the following results chapters data are presented from all three phases. Where students’ interview narratives are presented, their pseudonym, gender, ethnicity, and nationality are provided, along with their self-rated achievement and quartile location

where known. All participants have unique identifiers which include the interview study number (S1 or S2). For example:

Danielle (I25 S1: female, white, UK-born)

James (I2 S2: male, white, UK-born, self-rate 1, 2nd quartile)

Within quotes ‘...’ is used to signify when sections of speech have been cut to improve the readability of the text, whilst ‘_’ denotes a pause in speech. All names and places were altered within the quotes to preserve anonymity of the participants.

4.13 Summary

This chapter has provided a detailed description of the methods chosen to answer the three key research questions I began with:

1. How do students’ relationships impact on learning and achievement?

I chose to answer this question using qualitative interviews, utilising questioning techniques that were both semi-structured (in the pilot phase, n=14) and open (in the interview phase, n=19). This enabled me to find out about how students themselves conceptualised relationships and their impact on achievement. Focusing on practices, I gathered information on who students interacted with and how this was related to their perceived learning and achievement outcomes. These methods also provided rich data that I utilised in developing a social network survey and in refining my interview questions.

2. Which, if any, social network features (such as density and homophily) impact on achievement?

This question was addressed through the design and implementation of a social network survey (n=160). This focused on two networks that were found to be important for learning and achievement in the pilot phase, PBL group and the personal academic support network students developed in their time at medical school. Measures included network factors, achievement information and demographic characteristics. This phase provided more focused, quantifiable data to facilitate an understanding of the broader population and enabled statistical analyses of the relationships between multiple factors shown to be important in the previous phase.

3. How does ethnicity impact on relationship formation and social network features?

The impact of ethnicity was addressed using all three phases, by asking interview participants to describe their own ethnic identity and by focusing on how students' ethnicity could mediate their relationships with others. The social network survey was designed to gather information about the ethnicity of others in participants' network, enabling an analysis of how ethnicity impacted on social network features.

Looking critically at each phase of the research design, I have considered the strengths and limitations of my chosen methods and how this may have impacted on my findings. This section also provided demographic and achievement information about the participants in this study. It showed that, as with previously reported data at this medical school and more widely, the ethnic minority students in this study achieved less well than their white counterparts. Religious beliefs also appeared to mediate achievement, with Muslim students achieving markedly less well. This further supports the need outlined in chapter 1 for this study. The next chapter begins to describe my findings, beginning with the *learning trajectories* of medical students in this study.

Chapter 5

Learning trajectories

5.1 Introduction

This chapter introduces students' experiences of their medical education and how they linked these experiences with their academic achievement. I do this by utilising the concept of trajectory (section 3.3.5) as an analytical tool with which to examine the history and future of students' learning, allowing the experiences they described to be situated in time. The chapter begins by considering *students' changing identities* on their journey to becoming a doctor, how they must negotiate their *individual trajectories* between the different worlds they inhabit, and how these processes impact upon each other as their identities shape their path and vice versa. The chapter considers how positions, such as *being an insider* or *being an outsider*, and positioning, such as *cultural stereotypes* and *being pushed into medicine* shape different learning trajectories. I finally consider how *conflicting competencies*, specifically in *knowing* and *being proactive* mean that the practices of medical education are not equally accessible to all students.

5.2 Students' changing identities

Measuring students' experiences and achievement has most commonly been done separately, with the former often investigated using qualitative methods, and the latter using quantitative measurements. This is frequently done in ways that decontextualise performance from experience, examining performance at single points in time. Some of my interview questions, particularly in the first stage of this project, also conformed to this precedent as I asked students about their experiences separately from their perspectives on their own achievement⁴. What is clear, however, is that students do not always see these as two separate and independent elements in their lives. Throughout this study, participants described how experience impacted upon achievement and their achievement shaped their participation in medical school, intertwining as part of the larger narrative of their lives.

Each student described a unique path into and through medical school. Consequently, this thesis does not set out to provide a single, clear-cut 'answer' as to why some ethnic minority students do not achieve as well as other students; instead I will build a theory of achievement, describing how particular elements (or experiences) that students' journeys share can lead to an advantage or disadvantage in medical education that is transferred into academic achievement. This section begins by developing this idea of learning as a journey, or trajectory, looking first at the

⁴ Appendix 2

common elements all students share. From there, I will go on to examine those elements that form part of many minority students' journeys in this study, making the links between these and achievement explicit. In formal and informal discussion, participants frequently described themselves as being on a journey, having come from somewhere and with a developing idea of where they were going.

I feel like I'm on a path, becoming higher and higher up in that profession. It is my ultimate goal to actually be treating patients so I'm getting closer to that.

James (I2 S2: male, white, UK-born, self-rate 1, 2nd quartile)

In this respect, students themselves described their trajectory, often talking about the things they had learned and the ways they had changed, acknowledging shifting identity as they entered new territories throughout their journey.

I think every year of medical school is very different. I think looking back you start to realise you're very different in every year. You're a totally different person in a sort of positive, growing kind of way I suppose too.

Olivia (I16 S2: female, 'Black', West African, self-rate 3)

This theme of change is an important one for all students, but particularly for students from non-traditional backgrounds who often felt they had to change more than students who 'fit' into medicine more easily (Beagan 2003; Beagan 2005; Rampton 2010). From a CoP perspective, students who do not feel they fit in may be having trouble reconciling the different practices, competences and identities between the multiple communities they were part of; Bourdieu would suggest their habitus was mismatched to the field. This theme of fitting in, or belonging, will form one of the foundations of my argument as the thesis progresses and will be dealt with in detail later in this chapter. First I would like to consider how an understanding of students' perception of fit and subsequent change could be explained by looking in more detail at participants' individual trajectories.

5.3 Individual trajectories

Throughout their narratives, students discussed the people, places and practices important to them. In this way, they positioned themselves as actors in many worlds and as members of multiple communities of practice. The journey they described (their trajectory) linked the many worlds they were part of, creating a pathway that

crossed the boundaries between these worlds and provided the thread that made their learning meaningful over time.

I have to do this in order to get to the next step and stuff, so I, sort of everything I do has a meaning that is going to end in something. So I knew that very early on... I would think, okay, to get a good job I need a good CV, good results. So I say, okay, how should I get that and that? And then do I know what I want to do?

Luan (I3 S2: female, 'Chinese', Malaysian, self-rate 1)

Luan described how her imagined future, what she wanted to do, directed her learning and most other students talked with considerable reflexivity about this process. The 'typical' student trajectory (sharing elements common to the majority of participants in this study) was clearly situated in time, as the discussion of past and future was common to all students' descriptions of their present practices.

In their discussion of activities, students identified three key 'worlds': 'home' (including family environment, friendship and wider community), 'medical school' (including non-clinical learning environment and administration) and 'clinical practice' (including clinical placement, workplaces and their wider ideas and experiences of the medical profession).

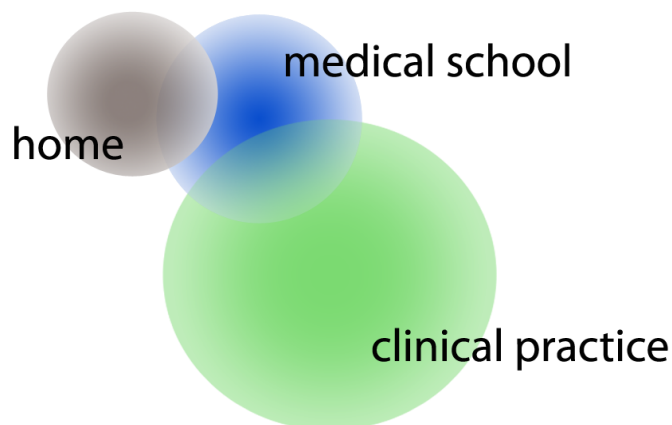


Figure 5.1 The 'worlds' of home, medical school and clinical practice. This should be viewed as an illustrative example of a typical trajectory, rather than something that applies in all cases. The size of the worlds indicates the relative frequency with which practices of the three worlds were referred to during interviews with participants. Those of the clinical practice world, including work-based learning in clinical placements, observations of clinicians and their imagined future practices as qualified doctors made up the majority of the practices students referred to.

The graphical representation above is a visual representation of the worlds a students' trajectory typically crossed. This is drawn from a composite of all participants' narratives and should not be considered as a model representative of all cases. I have represented the frequency with which participants discussed the practices of each world using the size of each circle, as the majority of students discussed the activities, norms and values of the 'clinical practice world' more often than those of their 'home' or 'medical school'. As with all models, abstracting the information can lead to oversimplification and a loss of meaning. In this case, representing the worlds as distinct from one another, albeit overlapping, infers that being a member of one world precludes membership from another. This is not the case, as I'll go on to describe students may physically move between worlds but continue to be members of a number of different worlds through processes of identification and accountability.

Participants described how their identities developed as they moved across the boundaries between these three worlds. Although students were part of other worlds, such as sport, religion or arts, all described these three main domains as they narrated their experiences of medical education. As I will explore, each individual student had different accountabilities to the various practices of their worlds dependent on their trajectory. A 'typical' journey, however, begins in the family, gradually moving from participating in the core activities of that family to the periphery in an outbound trajectory. Then spending time as a student (first non-medical in school and college, then as a medical student), increasingly independent of their family before gaining access to the world of medicine. Participants' narratives also included an imagined future as their path is projected into the core practices of medicine. As I will go on to elaborate, each of these can be conceived of as fields of struggle, with their own (and sometimes conflicting) 'games' that students had to play in order to succeed. In other words, each of these overlapping worlds has related sets of activities, norms and values; where the worlds overlap, so do the practices, for example a family's approach to ensuring homework is completed for school. Common to many other students in this study, Graham described how his parents' practices ensured he worked hard at school, enabling him entry into medical school.

When I was little, you know, no TV, homework first, which at the time was horrendous and now I look back and I'm like, oh my God, thank God they did that because for me the worst thing ever would be, you know, some sort of job where I couldn't be doing what I'm doing now because I absolutely love what I'm doing.

Graham (I15 S2: male, white, UK-born, self-rate 1, 1st quartile)

Graham went on to tell me how he continued to highly value 'hard work', and found himself drawn to others who shared his strict upbringing and values⁵, reinforcing the importance of considering students' belonging as historical as well as current. Entering the medical student world does not equate to leaving their family world behind, instead associated attitudes, values and practices become layered within students, as their earlier socialisation is embodied by students shaping and being shaped by their interaction (Reay 2010b), driving identification, a process to which we now turn.

Identification, or how students' situate themselves in relation to their experience, is a central process that determines the practices a student will engage in, how these experiences are negotiated and ultimately the learning trajectory of that student (Wenger 1998). During these interviews, medical students described this process relationally; they identified with people and their practices. The journey they were making was described in terms of interactions, moments that provided students with opportunities to accept or reject new possibilities for themselves and their imagined futures.

Throughout the whole time now, especially since our clinical year started you sort of, as you get more experience you sort of think, can I see myself as this, and for each sort of ward I've been on and for each placement I've been on I've kind of thought about that because I'm not... you know, I've always thought of that I wanted to do paediatrics but I've also thought what if I don't when I get there, what could I do other than that? And there hasn't actually been anything yet that's made me think this is what I want to do, so I hope that will happen with me because it's an interest of mine.

Kristina (I11 S2: female, white, European, 1st quartile)

⁵ This impacted on Graham's friendship network in an interesting and unusual way compared to the majority of other students. See chapter 7.

Kristina, like many students in this study, described a series of moments in which her identity was brought into focus, when she asked herself 'Is this me?'. Her motivation for this was to compare how much she identified each placement with her future self as a paediatrician, 'trying out' possible identities as she learned (Ellsbury and Stritter 1997; Oyserman and Fryberg 2006). This interaction between imagination and learning is important, as students could encounter aspects of medicine in their imagination (such as being fully responsible for patients' care) before they actually did in reality, driving their learning practices. In this way, imagination is an important tool for learning, and students who did not experience moments that fed their imagination had fewer resources to draw on. Throughout these interviews, students described significant moments in their experiences; memorable because new meanings were created, reinforcing and sometimes contradicting previously held beliefs. Students' trajectories were therefore described in terms of a series of these salient moments, forming a coherent journey when considered as part of the past and future of students' learning. These moments were often the context in which students' identities were brought into focus for renegotiation and where experience could shift from participation (for example, being a member of a team treating a patient) to non-participation (such as being told to 'get out of the way'), or vice versa. Students described how these experience points affected their trajectories, changing or reinforcing the direction of their experiences. Below, Kate talks about her contrasting experiences with Ophthalmology (a field she is considering entering) and A & E.

[A & E] was just awful. Like I didn't know what I was doing, I didn't know where I was supposed to be. The doctors weren't particularly helpful there, you know, partly because they were busy but there were occasions where they weren't busy and they still wouldn't sort of take the time to, to help you or anything. So that was a bit of a negative experience... In Ophthalmology... I had such a good time and I was sort of doing things. They really involved you and, you know, you went to theatre and they'd let you do things... I mean obviously like I hate A & E. I never want to go there again [laughter], if I can help it, touch wood, but yeah I think it does actually. I think if you have a positive experience somewhere it does make a big impact... just getting involved and just being made to feel like welcome and made to feel sort of the team.

Kate (I10 S2: female, white, UK-born, self-rate 1, 1st quartile)

With regard to learning, students in a PBL curriculum such as Manchester's must learn how to manage their learning more autonomously (Kumas-Tan *et al.*, 2007) and below Danielle describes how her learning practices changed over time. The significant points for her were the transition into clinical phase (a point common to all students) and her exams in third year. At each of these points she reassessed her approach to learning, readjusting her practices in an attempt to address things that weren't working.

First and second year it was pretty much I just read in books... then in third year it was quite difficult actually to make the transition to seeing patients. So, in third year I went too far, and I spent all day every day on the wards and didn't really back it up with that much bookwork... So I then went too far in the second part of my third year I went the opposite direction, and just got frightened and completely went back to my books, didn't see enough patients, didn't spend enough time on the wards, I was just worried about rote learning stuff, and it didn't work. And in fact I did probably worse in my exams for doing that. Then in fourth year, I finally found a nice balance.

Danielle (I25 S1: female, white, UK-born)

This example is relatively simple, concerning only her practices in the worlds of 'medical school' and 'clinical practice' directed at learning for clinical and academic success. However, even within this she clearly had to deal with competing demands for engagement. Danielle described how the clinical and academic worlds have different requirements for competence, with her early experience of the academic side of medical education promoting book learning and her transition into the clinical world demanding a more practical, patient-focused approach. The importance of feedback in these moments was evident, as students used multiple sources of information to assess their own experiences against those they saw as competent. These included official feedback from the medical school and hospital placement as well as explicit and (often) implicit information learned through interaction with peers, senior students and medical professionals⁶. These different 'experience points' can be conceptualised as forming the larger trajectory, pushing and pulling students' participation in different ways. Due to students' multimembership of their different worlds, descriptions of being pushed and pulled

⁶ This process in which students 'triangulate' the location of competence through their relationships with others is considered in detail in chapter 6.

in a number of directions were common. Readjustment of practices and redirection of trajectory could be significantly more complex, involving a number of worlds and communities that had to be negotiated by the students as they made sense of their experiences. For example, Matthew described how he had to sacrifice some of the practices associated with the wider student culture he was part of (going out drinking) as they threatened his competence in the medical world.

The exact moment that I realised that I couldn't go out midweek... I was in surgery helping [a consultant] perform the surgery and, er, I was really quite hungover and realised that it really wasn't appropriate at all, and that was the wake-up call.

Matthew (I14 S2: male, white, UK-born, self-rate 3, 3rd quartile)

Students may also have to negotiate their belonging to gender, religious and cultural groups, alongside their participation in the practices of medical education.

...if you look at religiously and culturally, we [as Muslims] should be only socialising with females, like people from your own gender and stuff. For me its probably not so much of an issue, probably because I'm married, so I haven't got that kind of thing in my head that perhaps he could be my boyfriend. But no, I, it's a mix but some people don't agree with that so they just sit on their own with just girls and just boys and stuff; its nice to have a mix.

Aminah (I23 S1: female, 'Pakistani', UK-born)

As I will show the 'distance' between the worlds students belonged to had a significant impact on their ability to negotiate these boundaries, with differing implications for their experience and achievement. Students' achievement depends on an in-bound trajectory into medical education and medicine; this is the only way that students are able to participate in the legitimate practices of this closed world and gain access to the discourses of success (Dornan *et al.* 2007), considered in more detail later in this chapter. A student necessarily enters the medical world from the periphery; in order to understand the relationship between trajectory and achievement, it is important to begin by describing students' different journeys into medical education. This allows us to consider how their different trajectories shape experiences and vice versa throughout their education, how this impacts on participation and, ultimately, learning. The data that follows are participants' narratives placed on this timeline, dealing first with students crossing the boundary

between the 'home' and medical worlds and their attempts to negotiate a legitimate place. I will then focus on the different experiences of 'minority' students, discussing how students' experiences are affected by pressure to enter medicine and cultural stereotyping and finally will describe how students form expectations of the medical domain that shape their participation and learning.

5.3.1 Crossing the boundary

Having a strong self-concept as a future doctor was important to help students cope with the negative aspects of their course and help them to sustain motivation through the various challenges along their trajectory. Home or school social networks provided some participants with opportunities for gaining work experience in medicine; valuable experiences both in exchange terms, to help in the application process, and in terms of having an opportunity to identify with the practices of medicine earlier, therefore beginning to imagine a future career. Support to engage with medicine was important, especially for students who were unable to obtain a window into the medical world through home networks.

My biology tutor was superb... she was just like, 'Do you not want to be a doctor?' And I was like, 'Well I have thought about it. It's not something I've really looked into that much but I do think being squeamish would be an issue,' and she was like... 'So I'll design a box. We're going to look at that today and then tomorrow we're going to take the eye out of the box and the day after we're going to do nothing'. And it would be like, 'You don't have to do the dissection but, you know, try'.

Graham (I15 S2: male, white, UK-born, self-rate 1, 1st quartile)

For Graham, a career in medicine was made imaginable through the support of this teacher, who challenged his identity as a squeamish student and enabled him to imagine himself as a future doctor, overcoming the distance between the two worlds. In one case, a student described direct 'teaching' on a dying relative; by familiarising her with the language, actions and removed, objectifying gaze of medicine (Kuipers 1989; Foucault 2003), this student describes how her father transformed an emotional family moment, opening up the world of medicine to facilitate her identification with its practices.

My very first, like, how it starts__ How it happened, I suppose it started with my Grandma, because she had chronic kidney failure and somehow, because my Dad is an orthopaedic surgeon... My Grandma was like really dying on the bed and he sort of asked me to come round and he started teaching me even though I wasn't at uni at that point – I was really in high school – and he was like, so in a chronic kidney failure patient you will see this, this, this__ It was quite__ like, 'Oh my God! That is my relative, you know, like my Grandma', and you're talking in a very formal way. But somehow that sort of made me think, actually this is a quite good profession, and I get a lot of support from my Dad.

Luan (I3 S2: female, 'Chinese', Malaysian, self-rate 1)

This is a clear example of what Wenger would call a 'window into a world' (Wenger 2009), an opportunity to see and engage (even if only in imagined ways) with the practices of a community. Simply providing these opportunities to engage with the practices of medicine is not necessarily sufficient for identification, and it is quite possible that the scenario described above by Luan could have been experienced very differently, causing her to disidentify with this foreign world. Luan's movement across the boundaries of the lay and medical worlds is almost palpable; as she describes her movement across the gulf between her role as a family member and a medical student, she is almost lost for words, perhaps indicating that the language she could use in one world is no longer sufficient to describe what is going on in the other⁷. Luan's experience is one of 'Legitimate Peripheral Participation' (Wenger 1998). It is clear that this requires the support of others as in order to engage with any practices, even at the periphery of a community, an experience of participation requires that someone from within that community grants access and facilitates engagement. As is clear from Luan's narrative, support was crucial to the negotiation of her experience and this was a prominent theme throughout participants' interviews. How the presence or absence of support impacts on students' experience will be examined in the next chapter. First, I would like to consider how students come to identify themselves as 'insiders' through their different trajectories into medicine, and how these impact on students' experiences, learning and achievement from the start.

⁷ This is an interesting example of 'language crossing' (Rampton, 1995), common for students from minoritised cultural backgrounds.

5.4 Being an insider

Being able to identify as an ‘insider’ was essential and students did this in a number of ways, positioning themselves as members of the medical world by utilising the discourses highly valued in the domain and silencing others (such as those from their ‘home’ world). This section describes two of these discourses: a longstanding commitment to the profession, and autonomy in career decision-making. I consider how variable access to these discourses facilitated or restricted identification, in turn impacting on participation and achievement. Gaining legitimacy is a social process, and the importance of being identified as an insider by others is also considered in this section. The participants in this study entered from a number of diverse positions, and as a consequence had different histories and experiences once inside this world. High academic achievement is an obvious, explicit form of legitimising entry to medicine, yet students’ narratives also indicated other ways to legitimise belonging.

I mean some people are obviously quite lucky and they just get in and they don't have to do much but I had to work quite hard just because__ and obviously I had to explain why I'd left Geography and, you know, why I wanted to do this so it was a bit more difficult... I had to explain because obviously there are people that are eighteen, you know, eighteen years old going like, 'Oh I've wanted to do this since I was five,' and, you know, things like that and they'd obviously demonstrated a lot more of a, you know, long commitment to it.

Kate (I10 S2: female, white, UK-born, self-rate 1, 1st quartile)

Despite her proven academic ability, Kate felt less legitimate in her application to medicine because, having started a degree in Geography before deciding to study medicine, this history conflicted with the demand to demonstrate a longstanding commitment. Of course, in order to identify with medicine from an early age, students needed the relationships and resources that facilitate this (they needed someone or something to identify with). Beginning much earlier than the application process, students’ teachers and families played an important role in shaping how they positioned themselves, acting as ‘significant narrators’ (Sfard and Prusak 2005). Through activities such as selective storytelling, family members built a motivation to study medicine into students’ memories of childhood. In this way, families ensured that students were able to draw upon the discourse of longstanding identification

valued by others in the medical world. The role of this selective retelling of the past, along with other more overt persuasion had to be negotiated by students, and was not guaranteed to be successful as ultimately the identification process rested with the student, as they chose to identify with the stories or not. Here, Julie situates pressure from her father and the stories told by her mother within her identification with the role models she found in her family's religious network. By weaving these together in this way she maintains her agency and ownership of her pathway into medicine.

But with me and my younger brother they__ not they, my dad specifically was like 'Yeah, go and do medicine, do it, do it, do it!'. I can't remember when he first started but with me growing up there were a lot of doctors in church and in our social environment and I just loved it, I loved talking to them about medicine... I had my role models and I loved what they did and I was always watching 'Holby City' and 'Casualty'. Even now my mum says 'oh when you were younger you used to run to the TV whenever there were operations', I was like, really? Really?!

Julie (I30 S1: female, 'Black African', UK-born)

Narratives of this of legitimacy did not necessarily appear to link to achievement, as several highly achieving students described their concerns at being unable to engage in this particular discourse. However, they became important when they were linked to a difficulty identifying with the medical profession, particularly disadvantaging students who were pushed to enter medicine. Not all students could identify as easily as insiders however, and many identified themselves, or felt identified by others, as outsiders.

5.5 Being an outsider

For Luqman below, identification with the medical profession was primarily driven by an obligation to his family and he was not able to integrate this into his own story. Instead, parental involvement amounted to coercion along an unwilling trajectory.

My mother was the biggest drive for me to do medicine. She's very adamant since I was like from four I think... She said you need to be a doctor, though she's often like, 'so okay you're free to choose' but when I did make a decision myself I put lecturer of science as first choice... So she's then, 'What, why this choice?' And then she goes to rewrite it again and put

medicine first. So I got the idea then, okay she really wants me to be a doctor so I conditioned myself to liking to be a doctor.

Luqman (I6 S2: male, 'Malay', Malaysian, self-rate 3, 4th quartile)

Luqman describes a process of alignment (Wenger 1998:178) with his mother's identification of him, yet he continued to struggle to identify with the profession, especially as he crossed the boundary into his clinical years.

To be honest, I was still 80/20 about being a doctor, being in medical school or especially in these clinical years now. In the first year and second year you don't really know much, what the weight of that job actually is but when you go into the clinical years and you start seeing patients and you start seeing things that happen, you start to think and step back, wait, is this the right thing?

Luqman (I6 S2: male, 'Malay', Malaysian, 4th quartile)

I do not want to suggest that these feelings were only a feature of being unable to actively identify with medicine from an early age, as almost all students in this study described similar doubts at some point in their trajectory through medical school. Luqman did seem to find negative experiences in his training more difficult, however; continuing to feel an outsider in this world also impacted on his ability to participate and achieve in it, undermining his confidence to engage in the clinical setting and making him question the activities many other students engaged in without this level of critical thought. Those, like Luqman, who lacked the strong identification with a future self were unable to legitimise their position within medicine, and often found their transition into the medical school culture traumatic. Those who felt like an outsider in medical school (and sometimes in their family as for Aminah, below) found negative experiences in their education more difficult to cope with.

I was coming into this whole new world like, without any like you know support really because you're in there on your own really aren't you? It's like the big bad world. I had to prove a point to them [my family] and... the medical school as well... I think they had their guards up probably thinking about what would happen if she does fail her exams and stuff, 'cause I had failed the progress test.

Aminah (S1 I38: female, 'Pakistani', UK-born)

Identification was not just a process driven by students, and participants were acutely aware of being identified in particular ways by others. Students described why it was so important to display the right dispositions and silence those not valued in the medical world, as being identified as not belonging carried serious consequences, from experiences of non-participation (impairing learning) to outright removal of legitimacy through allegations of improper conduct. It was also important in students' negotiation of their experiences as ones of participation or non-participation. In this process, others could reinforce students' status as insiders or outsiders. Specifically, ethnic minority students described more difficulty in crossing the boundary to become an insider.

Some people do question me about it while I'm taking a history or something... but they don't see me as a medical student, they saw me as a person wearing a scarf that's Muslim and so on.

Aminah (I23 S1: female, 'Pakistani', UK-born)

Participants described how the visibility of their difference such as the colour of their skin, their mode of dress or actions brought their identity into focus. For example, for some students, wearing a headdress, or hijab, made participation in some of the associated practices of medical education (such as learning to listen to a patient's heartbeat with a stethoscope) more challenging. One student described how deciding to stop wearing her hijab increased her participation in medical education.

I feel like people aren't judging me... And obviously wearing a stethoscope is a lot easier... If I was wearing a hijab, you know, people kind of leave you alone... like if [a clinical skills tutor] wanted to do a knee examination they wouldn't pick a Hijabi... but even other stuff you just feel sometimes you wouldn't be asked to volunteer.

Nasreen (I24: female, 'Pakistani', UK-born)

'Looking the part' was an issue raised by many participants, as for them 'professionalism' covered not simply knowing and doing the right things, but also other markers of style, particularly linguistic (ways of speaking) and dress (choice of clothing). This pressure to conform to a certain appearance was strongest for students such as Andrew, who had previously failed several exams.

I definitely do look different to how I used to... I've definitely become conservative and toned down because I thought it's important for me to

present the image of myself that will, that constitutes to an achiever in medicine and therefore if people see me that way and I start to see myself that way, it might actually happen, so erm__

SV: So you're sort of starting to fit yourself into the ideal of what a good student looks like?

Exactly. And it's gone, like I've gone over the, over the top, over the top and other people have been like, especially ones who, who are non-medics are like, Andrew, what are you doing?__

SV: __Where have you gone?

Where have you gone? What's happened to you?

Andrew (I17 S2: male, 'Indian', UK-born)

This sense of losing an element of identity in order to fit into medicine was expressed by other students, formally and informally. However, for many ethnic minority students this seemed to be a particular concern, as it was the elements relating to their ('non-White' British) cultural identity that were often in conflict. Remaining a member of their multiple communities was often difficult to balance, and many students described feeling under pressure to commit to medicine and forego other responsibilities outside of medicine. In a 'neutralisation' process (Beagan 2000), students read both clear and hidden messages about which parts of their identity could be expressed in medicine.

I had a portfolio review, and one of the check list [questions] was 'What do you do in your extra time?', and I said to him 'I study Arabic'... then he asked me, 'Why are you studying Arabic?' and I said 'to learn the Qur'an'. And you know he said 'Oh' and he just said a lot of random jargon like 'You'll never understand the Qur'an, it's a mystic thing'... 'You have to choose between being a scholar of medicine and a scholar of Islam', and after that I was quite off put about medicine... I had quite an unhealthy angry feeling towards medical learning.

Suleman (S1 I22: male, 'Asian', UK-born)

Suleman previously described how he had gained enough confidence of his place in medicine to openly talk about his membership of the Islamic community, but was told in no uncertain terms that competence in this community conflicted with competence in medical education. Unsurprisingly this resulted in an experience of

non-participation, with Suleman questioning his trajectory into medicine. In order to reconcile such conflicting expectations, students often found ways to manage their competing demands by negotiating a compromise. However, such an approach often involved engaging in 'hidden' practices or accepting that accountability to certain communities would be undermined. Participants described costs inherent in attempting to reconcile different dispositions in order to 'fit in' and maintain an inbound trajectory.

I've adapted to the British culture like the clothes I wear and stuff, I try to fit in as much as I can, but there's a limit and you start losing your identity, and when you start losing your identity that's when it goes a bit pear shaped.

Aminah (I23 S1: female, 'Pakistani', UK-born)

In this way, some students found that it was simply not possible to reconcile these competing expectations, and in order to participate in the practices of medical education they had to simply leave 'parts of themselves' behind.

I feel like I've accepted defeat. I put my hands up. Okay medical school I'll conform to what you want me to be because it's the only way I'm going to get through this damn course.

Andrew (I17 S2: male, 'Indian', UK-born)

In negotiating these conflicts, some students inhabited a metaphorical no man's land, making the journey from their home community to medical education across a vast cultural divide with little or no support. For these ethnic minority students, participation in learning experiences was modulated by ethnicity and cultural background, making engagement more difficult and as a result restricting learning. One theme several participants brought up was the idea that ethnic minority students had to work harder, both to be recognised by others in the medical community and to do well academically. Niyi described how his parents made him aware of this.

There was that sort of expectation that, at least for us that because we were ethnic minorities we had to work harder... because you know if your're going to sort of stand out and you're going to want to get a job then you kind of need to be you know the best you can be so, be up there essentially... before I came to uni my parents were very keen on me not really picking up a strong accent of any type, so any sign of that accent

they'd kind of pick me up on it and be like, 'Why you speaking like that?', because they thought that it's already hard and their thinking was that with a name like Niyi Aderinola, you can't hide the fact that you're not white, and some people may discriminate against you because of your name, so you kind of have to make up for that in being as good as you can be, so working as hard as you can'.

Niyi (I26 S1: male, 'Black African', UK-born)

Students were aware of how they were perceived by others and many described and reinforced stereotyping around ethnicity and culture.

5.6 Cultural stereotypes

Cultural stereotypes were reinforced by many participants, from both 'majority' and 'minority' backgrounds, and some students described being aware of their designated membership of a wider community.

You really feel like that because you're the minority you have to be careful... you have to present yourself well because you're representing your minority and you want people who come in after you to be well received... It's in my mind all the time. Whenever I meet somebody I'm like, you're black, present yourself well and be careful... there is a lot of pressure on you to do that... we were in a lecture and I was with my other black friend who's one of my medic friends, and we were discussing, not discussing but you know when you're in lectures and you'll whisper about, oh that's really good, or something. And [another black girl] just gave me this dirty look and then after the lecture she said, 'Oh, you've got to be careful you know, as black girl can't be seen as talking in lectures'... So we felt like we'd been put in our place, it was really strange... we weren't being rude, we weren't being aggressive as the stereotypical black girl is, or loud.

Julie (I30 S1: female, 'Black African', UK-born)

For Julie, this meant it was important to 'keep quiet' and not be seen as the stereotypically 'loud black girl'. She was not only aware of how she engaged in the learning setting, but also modified her behaviour. This is a clear example of self-censoring, silencing behaviours, norms and values she associated with her cultural background in order to avoid being identified, or labelled, as an outsider. This has implications for participation, as students such as Julie were wary of engaging with

enthusiasm in case she was stereotyped as a 'loud black girl'. Being aware of minority group membership also impacted on her behaviour as she described feeling the need to act as an 'ambassador' and to build capital on behalf of the ethnic group she felt part of. This was also mentioned by Hassan, who felt an obligation to help others from his community into medicine.

The fact that I'm from an ethnic minority, and the fact that I've got into medicine and things means that I feel I've got a responsibility towards my community to try and help other people achieve and stuff. Which is why I'm in contact a lot with people in year one, in year two of medicine just to try and encourage them.

Suleman (I22 S1: male, 'Asian', UK-born)

Having certain values and experiences were frequently associated with a more Westernised culture, which in turn was associated with success in medical education.

I think sometimes um some white students when they come into medical school they have a broader range of experiences which I think is a really important thing in medical school to help you do well... fewer ethnic minority students would take gap years or go traveling around the world compared to white students.

Nasreen (I24 S1: female, 'Pakistani', UK-born)

Nasreen failed to acknowledge that these experiences were not just related to culture, but also to financial capital, as not all students would have the resources to enable these types of activities. Another student recognised the advantage of having a 'Western mindset', with the implicit assumption that having a non-Western worldview would have disadvantaged him in his experience of medical school.

I grew up in a country that was really sort of westernised, it was just so western compared to the rest of the countries around us and, in a way it's helped to form my opinions about things, to have an open perspective, you know, have a broader mindset.

Daniel (I19 S1: male, 'Chinese', South-East Asian)

Despite students denying experiences of racism or prejudice in the most part, this is a clear indication that students perceive a disadvantage in belonging to certain groups, suggesting an ethnic component to the hidden curriculum.

Not only does this add an element of extra cognitive complexity for ethnic minority students, it also impacts on relationship formation and engagement in practices, both of which (as I will illustrate in the following chapter) are crucial for participation and learning in medical school. Being a legitimate player, then, requires students to see themselves as 'insiders' (reinforced by others) and identifying themselves as future doctors was an important theme throughout participants' narratives. For some minority students, seeing themselves as insiders was more difficult as they were sensitive to cultural stereotypes and other overt and subtle ways in which their outsider status was reinforced. Students read these implicit messages about which practices lead to success, and importantly, who can engage in these practices. Belonging to a minoritised group also impacted upon the possible futures perceived by students. One student told me about a racist incident her family member experienced during medical training.

My uncle, he's now a consultant in A&E__ and when he was on a surgical rotation he had his scalpel and he was operating and one of the white consultants said, 'Get your black hand away'. And, when I heard that, I was like, in this day and age, is that still happening? So when I'm viewing all of this I'm like, you know, you can't be oblivious of the fact that there is still, some people still have that mentality, some people are still obviously racist. So you feel like you have to work a lot harder to, not even just match up to the white or other students, it's just, you have to get above them because you really have to get that respect from society, because in the past society did not respect black people as a race at all.

Julie (I30 S1: female, 'Black African', UK-born)

In her narrative, Julie used a salient experience of her uncle to imagine what participation in the medical world could be like for her. She imagined that the colour of her skin would impact on her experience, just as it did for her uncle. Not only does this affect how she imagines her future, but also her practices in the present; she feels in order to overcome some of the barriers (racism) she might encounter, she has to work harder and achieve more than her white peers in order to gain recognition. Other students from ethnic minority backgrounds also felt this added requirement, a need to go beyond what was necessary for majority students that was particularly important in order to be recognised.

I mean I'll tell you, my clinical partner happens to be – worst thing ever, I'm going to tell you- he's Asian, so that means no doctor knows my name, I think I've had one consultant so far that knows my name. I'm either Suleman one day or I'm Roshan the other. That's just not happened with the two girls in our firm. They're both white, ones got black hair, ones got blonde hair, yeah they're very different. I've got a beard you know! The other guys Sri Lankan with much darker skin, how can you confuse us like? But you know, the doctors, no one seems to be able to get it right in clinical.

Suleman (I22 S1: male, 'Asian', UK-born)

This was very important because in order to be recognised as legitimate, something only more expert members of the domain can do, a student must first be recognised. Going further than this, Suleman describes how the colour of his skin meant that participating in activities, within and outside of medicine was more difficult.

I can guarantee you that if you had me and a clone of me that was white, 10 times out of 10, me and that clone applying for that job, playing in that football team, um, doing something in medicine, 10 times out of 10 that clone will get picked over me, because of my skin colour, and that's just neither here nor there.

Suleman (I22 S1: male, 'Asian', UK-born)

Of course, the discourse around the 'achievement gap' that provided the impetus for this study may also be used by students in forming their expectations about their future performance. When I asked Sameya if she thought students from ethnic minority backgrounds had any added responsibilities, she responded:

...when you asked that question I thought you meant something along the lines, in terms of how we're perceived and do we have an extra responsibility to kind of... like basically out there to prove something! That we're not like something. I don't know, I've had friends, mainly Asian male friends who've said to me that they feel they have to work extra hard in med school or in terms of OSCE situations. I'm not sure because I personally haven't felt this, even though I wear a hijab and I'm obviously quite__ people can tell I'm Muslim. But one of my friends was saying that as soon as he goes into an OSCE station, just because he's Asian and he's male, he

feels as though people question his communication skills already before he opens his mouth.

Sameya (I29 S1: female, 'Middle Eastern', UK-born)

The discourse around struggling students may be affecting some male 'Asian' students, who perhaps know they could be identified as being members of this 'failing' group. Being aware of a potential trajectory (and knowing examiners are too) made her friends feel there was extra pressure on them to perform well in OSCEs, a tough task in an already highly pressured situation. In the next section, I will go on to consider how students described their motivation to enter medicine. In medical education, it has been suggested anecdotally that the underachievement of some students from ethnic minority backgrounds could be a symptom of a cultural pressure to enter medicine against a student's wishes, and documented in one research study (Woolf *et al.* 2008). The next section considers in further detail if and how students are pushed into medicine and if this is different for ethnic minority students.

5.7 Being pushed into medicine?

How students experienced moments of engagement with the medical world prior to their admission to medical school affected the ways they positioned themselves once inside, driving the activities they engaged in and their future ambitions. All students described their motivation for this engagement and this appeared to be one of the first ways students could establish legitimacy in the medical field (by indicating their suitability for the profession and desire to become a doctor). There had often been a significant investment of resources by a students' home community to ensure they went to the 'right' schools, took the 'right' subjects, and so on. Students were highly aware of this, and an element of debt was evident in decision-making around future career choices.

I think probably they all expected me to do something, you know, scientific and maybe something challenging... They expected me to get three A's. They wanted me to like go to Oxford and Cambridge days and things like that. And then when it came to medicine, like the whole applying thing, and I suppose when you're doing medicine you get a lot more help for your UCAS than you would if you applied to a normal degree.

Nadine (I8 S2: female, white, UK-born, 2nd quartile)

This 'encouragement' to study medicine was mentioned by a significant number of participants (from a range of cultural backgrounds). However a pressure to study medicine (part of the cultural stereotype described by Woolf *et al.*) was discussed and reinforced with regard to ethnic minority students, by both white and ethnic minority students. Of the latter group, several described first hand experience of being brought up in a family or community in which becoming a doctor was one of the few highly prized career paths.

Coming from a, from a Chinese, Asian, Oriental, Southeast Asian background a lot of people expect parents to play a very big role in deciding what career they're going to do. They all want their kids to be doctors, lawyers, dentists because at the end of the day that's what social power is and that's what, that's where you earn your money and that's where people earn their respect and I suppose I see myself as a bit different because I decided all this myself and it wasn't, it wasn't due to any influence.

Geoffrey (I1 S2: male, 'Chinese', UK-born)

Geoffrey reinforces the cultural stereotypes previously highlighted whilst positioning himself outside of these and drawing upon the legitimising discourse of autonomy. Several students did mention personal experience of a pressure to become a doctor; however, this was on a broad scale, ranging from knowing it would be a source of pride for the family, to encouragement, to explicit command. More commonly, students described a more gentle (and effective) 'symbolic violence' (Bourdieu and Passeron 1977), where students were presented with a freedom of choice, yet through positioning and discourse were persuaded to see medicine as the most desirable career.

I think my father, for example, will say you can do whatever you want to do__ and you say, 'Dad can I be a dentist?'; and he'll say, 'Well do you want to play with teeth for the rest of your life?' So yeah definitely the values and the attitudes of certain society and the community, and the doctor is like a god in the part of the world I'm from... they can't go over to the local mosque and say, you know, my son wants to be a ventriloquist or a chef or something you know. I think for them it's like wow, my son's going to be a doctor, and everyone's going to praise that man because of the

achievements of his offspring you know. So there definitely I think some people are coerced, you know it's imposed on them.

Kassim (I27 S1: male, 'Middle Eastern', UK-born)

Experiencing a 'push' into medicine was not solely a feature of certain minority backgrounds however; as indicated in this student's critical reflection, many cultures have subtle ways of reinforcing the 'right' career choices:

My teachers said, well yes medicine, do it. I think medicine is the only thing at school that people tell you you'd be good at doing. Nobody ever says to you, oh yeah you'd make a really good investment banker, go and work for whoever, whereas with medicine they're like, have you ever thought about doing medicine? I think you'll be really good at it. So in a sense school helped me.

Owen (I4 S2: male, white, UK-born)

There were also descriptions of less subtle influences, in Nadine's case teachers at her school tried to ensure she studied at the most prestigious university.

When I got my offers I think I got like Manchester, Liverpool and Glasgow but the school was like, 'You have to go to Manchester. That has the, that has the best medical school... Manchester has the best prestige'.

Nadine (I8 S2: female, white, UK-born, 2nd quartile)

Whilst this description came from a white student, discussions of the prestige that studying medicine holds for the community were much more common from students of an ethnic minority background. 'The professions' (described by participants in this study as medicine, law, engineering and accounting), and specifically medicine and law were revered in many ethnic minority participants' home communities (and, importantly, other career paths were not seen as legitimate), conferring status not only upon the individual student, but on their family's position in the community. This discourse of 'the community' was not a feature of any white students narratives.

And my family, you know, I, I would say they... right from the very beginning they've always planted this, planted the seeds in my head about what I wanted to do. It's almost, do you want to be a doctor, do you want to be a lawyer, do you want to be__I don't know__ an architect?

Daniel (I19 S1: male, 'Chinese', South-East Asian)

Daniel described how other options were almost unthinkable, as they never entered his family discourse. In this way the respected (legitimate) professions became separated from other careers, with a strength highlighted earlier by Kassim, who categorised chef as equally inconceivable as ventriloquist. Despite this pressure being a common theme throughout the interviews, and instances where students described peers who did not want to work as a doctor after qualifying, all participants with the exception of Luqman positioned themselves as having a genuine desire to enter medicine; in other words, there was a 'pull' as well as a 'push'. This said, the pressure experienced by students did, in some cases, have negative consequences.

5.8 Feeling the pressure

All participants were aware that others had high expectations of them. However for many students from Asian, African and Middle Eastern backgrounds there was an added pressure from parents and their wider community to enter the medical domain.

I come from a Muslim background, they kind of think that doctors are good. It's a safe bet because you get money but it's also morally a really good job so you're basically sorted for the rest of your life in all ways, sort of spiritually and financially. But like it sort of leads to, we've got lots and lots of doctors but we're sort of lacking in other, we don't have any thinkers or any, any reasonable politicians. I think it's a really sort of dangerous sort of game to play because you sort of saturate, you've got lots and lots of doctors and its fine but... at the same time you're also forcing a load of kids who perhaps don't want to do it for the right reasons or don't want to do it at all, you're forcing them to work their socks off at an unattainable goal.

Farid (I31 S1: male, 'Middle Eastern', UK-born)

Farid makes the point that this pressure creates a social imbalance, encouraging members of their communities to become doctors meant these communities were underrepresented in areas such as politics and teaching, careers Farid suggested might be more beneficial in the long term. He also explains how being a doctor might be unattainable for those who don't want to enter medicine or for those who can't, yet young people are being forced to make attempts at significant cost to them. This cost was illustrated by Andrew, who had a strong desire to enter medicine, but also experienced a level of expectation from his family. Andrew worked extremely hard to get into medicine, to the point he felt he 'burnt out' at A-level. He reflected

on how gaining a place at medical school allowed him to relax, something in hindsight he felt impacted negatively on his achievement.

I was Head Boy, I was doing a lot of extra curricular things. I was doing, playing a lot of sport and just... I had quite a good all- round life. And then kind of when it came to A Levels, I started to feel like I was burning out and when I came to medical school it was almost like a release because it was like from an early age my ambition was to be doctor and I'd finally got to the stage where it could be realised__

SV: You could relax a little bit?

I could relax a little bit, but that isn't what you can do I don't think. I think at that point is when you have to really start investing and changing yourself to that new environment which, looking back on, I was just oblivious to. I didn't know how to do or what it involved or, and so kind of, I just kind of ambled along and then just had one knock back with an exam and thought nothing of it because I thought, oh, you know, maybe I just had a bad day. I could do the next one. I had another knock back, and then I thought, okay, this is serious.

Andrew (I17 S2: male, 'Indian', UK-born)

This has clear implications for others in Andrew's situation that have worked extremely hard in order to get the grades for medical school but feel unable to sustain that level of effort once they achieve their goal of entry. As suggested by Niyi earlier, the pressure to work harder and achieve was noted by students within and outside of these communities. Danielle, a white student who had a medical school friendship network almost exclusively made up of 'Asian' girls, described the extra pressure she perceived these friends to be under.

There's more of an emphasis put on them to do well and achieve... if I didn't do well in medicine, the only person I would be letting down would be myself. My mum and dad, obviously they'd be disappointed, but they only care about my happiness and we're not bothered about impressing Joe Bloggs next door to us. Where as I think again, Fahimah always says that if she doesn't do so well, it would be, it would look bad upon the community.

Danielle (I25 S1: female, white, UK-born)

As I will go on to consider, support plays an important role in students' success; just as Danielle experiences the lack of pressure from her family as positive support, this extra pressure experienced by some ethnic minority students equates to added difficulty. Clearly, students enter medical education from different positions, but how does this impact upon experiences and achievement? However students initially engaged with the idea of themselves as a future doctor, most important were moments that facilitated further identification with the medical world. Here I have characterised two effects on trajectory, the first as being 'pulled', where students identify with a future, doctor self. Events, individual people and wider social discourse gleaned from school, community and the media 'pulled' students trajectories into the medical education world as they negotiated their belonging through imagination and engagement (Wenger 2000). In contrast to this, a second effect on trajectory could be described as being 'pushed'; where students perceive a pressure to enter medicine. To use another of Wenger's modes of identification, all students must 'align', as medicine has a set of agreed practices, rules and norms that are not 'natural' to any other world. However, the way in which students align to these practices, through being pushed or pulled is important and can have far-reaching consequences on their experience of medical school. Although most students were keen to position themselves as having agency and autonomy over their entry into medical school, the narratives of students such as Luqman, Simon, Kassim, Niyi, Daniel and Julie told of how pressure from their families dictated their trajectory. This has implications for achievement, as students may struggle to maintain the level of effort they put into academic work in order to gain a place in medicine and may not have a realistic idea as to what being a medical student or doctor entails if they lacked a window into these worlds.

For 'minority' students, identification with the people and practices of medicine may be more difficult as they are not well represented within the profession and therefore have fewer resources and restricted support at an early stage in their trajectory (Lempp and Seale 2006), finding it more difficult to fully integrate in the medical school community and acquire the language, behaviour or aptitudes necessary for progression. Working class and ethnic minority students are less likely to have relatives who are doctors than middle class and white students (Bourdieu 2011); one way that these students may 'compensate' for a lack of early exposure in childhood to medicine, could be to modify their behaviour in the clinical setting, and to redress the 'racial stereotypes' previously suggested to affect ethnic minority student

performance (Woolf *et al.* 2008). Being acutely aware of how their behaviour may be received in relation to these stereotypes, some ethnic minority students are modifying their behaviour in the learning setting. As Andrew described, participation in medical school required a significant effort to adapt and change to the new environment and wider activities of medicine. However, this was driven by students' awareness of what was desirable and possible, advantaging students who can see these modelled by others and experience these as a pull to engage. Finally, I would like to turn to how being a 'good medical student' can conflict with the expectations and norms of some ethnic minority students in this study, describing how gaining competency in the medical domain is not as equally achievable by all students.

5.9 Conflicting competencies

As described earlier, crossing boundaries and multimembership requires students to reconcile the conflicting forms of competence in order to participate in different worlds. This section describes two areas of practice that required this reconciliation; firstly 'knowing' and secondly 'being proactive'.

5.9.1 Knowing

Formal knowledge plays a large part in the processes by which medical students can demonstrate competence. For the majority of students in this study, having moved from a school world in which competence must be demonstrated in designated, de-contextualised moments, a common theme running through students' accounts of the transition into medical school was the changing ways of achieving and the necessary changes to learning practices. Despite needing to pass multiple choice question based exams (MCQs) in a similar fashion, achievement was now conceptualised much more in terms of a trajectory. Passing exams was not an end in itself, they were instead formalised boundaries or rites of passage created by the medical education community that must be successfully traversed in order to progress to the learning students considered to be legitimate or 'real', in other words, that related to patients.

I've actually just changed my exam technique because my results weren't as good as I would like them to be because considering how much I study... so now I'm just doing questions instead, but I'm still doing PBL because I know that in regards to PBL that is better for real life and exam isn't real life.

Kristina (I11 S2: female, white, European, self-rate 2, 1st quartile)

In this transition, being deemed knowledgeable changed from 'knowing' (being able to answer questions in an exam scenario) to 'knowing how' and 'showing how' (Miller 1990). This was a difficult transition for many students who had all been very good at the former method. They realised that learning was no longer solely about regurgitating facts, instead competence was about 'being' a certain kind of person.

Learning to become a doctor, it's not about the knowledge that you've built, it's about how you shape yourself, how you regard people. So rather than any hardcore facts and figures and the skills that you practice, it's the soft things that you need to develop. That's not as easy as the hardcore things because knowledge you can always learn, clinical skills you can always practice but then to change who you are to be fit to become a doctor, it's a difficult thing.

Luqman (I6 S2: male, 'Malay', Malaysian, self-rate 3, 4th quartile)

This description by Luqman is both interesting and highly telling. He could feel that he must change as a person, and his identity was no longer one of competence. For him, knowledge was defined as tangible, existing in its own right and able to be learned or rehearsed. However, knowing is an active process. In order to be a knower, or have knowledge, students undertook a range of practices; these included finding out what was defined as knowledge and creating strategies to engage in activities that allowed them to access these ways of knowing. For several students, this was more difficult than learning about medicine from textbooks or internet sites as formal knowledge is more easily transferrable between the professional and student domain, particularly as this form of knowledge is highly recognisable to students from their previous education. Other forms of attitudes and behaviour are less adoptable by certain students, particularly those from a cultural background that values different and conflicting dispositions. One such key disposition highly valued in learning and being a 'good student' was 'proactivity'.

5.9.2 Being proactive

The discourse of the 'proactive student' was pervasive, evident in all students' narratives as well as in my informal interactions with staff and other students. Being 'proactive' was universally considered to be both a necessary and valuable trait for students in this medical school, yet exactly what is meant by this requires unpacking. Particularly important was to be proactive in the pursuit of moments of participation in clinical learning. Here I will describe proactivity as a disposition, involving ways of

thinking, speaking and acting. Proactivity requires a sense of possibility and entitlement, reminiscent of Bourdieu's concept of the pre-recognising habitus, as before students could bring themselves to think, act or speak in a certain way (in a certain time and place), they must first be aware of the possibility of doing so, and fairly confident of their right to do so. Emily, a high achieving student, described knowing about these possibilities.

We're in an environment where if we want to learn something we can wander down the corridor and ask someone if we can sit in on their clinicals and you can learn it.

Emily (I12 S2: female, white, UK-born, self-rate 2, 1st quartile)

A students' ability to be proactive was modulated by their social position, for example mature students described more confidence in seeking out learning opportunities.

I think it's about as a student... I don't know if it's got to do with that I'm slightly older. I might kind of have more of a confidence to kind of walk up to them and say, 'Hey, teach me'. Well I don't say it like that but, you know... I'll be the first one to say, can I come and see the patient with you, because I'll always do it that way and I know that a lot of students don't really take the opportunities, maybe because they don't see them and maybe they're too shy to ask them for that.

Kristina (I11 S2: female, white, European, self-rate 2, 1st quartile)

This was not something all students perceived immediately (and some never reached Emily's level of confidence), instead it was a social process of learning.

When you first come here, you don't really know what you can do and how much you can do on your own but then you sort of realise that you can do everything, so arrange things yourself and you have more connections I think like with different people because you meet... [A foundation doctor] said to me, 'Oh you can go to radiology and they can speak to the consultant there and they can get you sort of access to the CT scans and the x-rays and stuff'. So, using her advice, I went, and spoke to one of the consultants and he seemed really happy to, to sort of__ he went through it with me and like said to me which ones to use and stuff for my assignment... I don't know, you just kind of realise that you can go and ask

people and people would be willing to help you rather than just sort of sit in your own little corner and not be pro-active.

Hannah (I18 S2: female, 'Middle Eastern', UK-born, self-rate 2)

Hannah describes a process of coming to understand what is possible through her interactions with senior colleagues, creating a sense of entitlement to learning opportunities. Clearly, this sense of entitlement is dependent on social position; as without finding out about these possibilities for action, they remain unthinkable. Students' different social positions therefore have serious implications for their ability to be proactive, particularly with regard to access to seniors. This directly impacts on learning and achievement; in a self-directed curriculum, students who are more proactive have a much better chance of engaging in activities that allow them to experience moments of participation. Students who wait to be taught or invited to engage can wait a long time, expressed by several students as a failing of the institution.

I do really love learning, but I just feel also at the same time, one of the key things that's going to define my time at medical school is how much I feel I've been let down by the medical school because they've not provided us with, with enough sort of learning opportunities or I don't know how to describe it, they haven't taught us enough, so much of it has been self taught, which makes me feel a little bit like not confident in my own kind of, I don't feel so confident in what I've learnt because I've had to teach myself rather than you know the medical school teaching me, um, so that is one of the bitter sentiments.

Nasreen (I24 S1: female, 'Pakistani', UK-born)

Here Nasreen describes learning opportunities as a limited resource and found she had to rely on teaching herself what she needed to know. However, from other students' descriptions I could see that many learning opportunities were available to those who sought them in particular ways. Firstly, students needed to 'put in the hours'. This was a requirement as by simply putting themselves in the spaces their learning usually took place, mainly clinical wards, there was a much better chance they would have the opportunity to engage.

I know it sounds ridiculous but you have to put in the hours to see the volume of patients to actually see the stuff that you want to see, whereas if you just pop on the ward for an hour and take a history, then yeah you

might be really good at histories if you do what they suggest and go and take three histories a week, that's great, but then that's not what you're doing when you're on nights. When you're on nights you're seeing someone that's scoring a seven and the reg is asleep and you have to look after them.

Graham (I15 S2: male, white, UK-born, self-rate 1, 1st quartile)

This was not without difficulty, as students struggling to make themselves visible without 'getting in the way' of doctors and nurses described being told to go away. Students found this very difficult and confusing, as they were well aware of the discourse of proactivity being rewarded, yet when they attempted to engage in practices they deemed proactive, they were often rejected. Students therefore had to become savvy at reading between the lines, working out when it was acceptable to push the boundaries set by clinicians in an attempt to put in the hours. This was a risk however, and students often felt like they had got it wrong, through implicit or very explicit feedback.

[A lead consultant] looked at me and was like, 'Why are you here, you're not supposed to be here this week?' and I was like that is quite__ I was quite offended by that because she is supposed to be an educational leader that's supposed to be like, congratulations, you've got out of bed and come in for a ward round. She didn't send me away or anything like that. She had a moan and much more but at the same time that made me feel a little bit like, you know, and there weren't any other medical students on the ward. Fair enough if there had been, you know, a group of ten on there and I'd walked up and that would have been the straw that broke the camel's back but it wasn't.

Graham (I15 S2: male, white, UK-born, self-rate 1, 1st quartile)

Graham's confusion here was evident; he was reading messages from the institution that good students 'go the extra mile', yet when he attempted to take opportunities he was rebuked. Importantly, however, Graham did not take this to be the norm; he was offended by the consultant's actions and internally challenged them. This may not be the case for all students, others may simply accept this treatment as normal, impacting on future learning. This type of obstruction by senior colleagues was described by many students, who were frequently told to go home or get out of the way in the clinical setting.

Being proactive therefore had an element of resilience bordering on disobedience, as students had to work out when to obey the gatekeepers to experience and when to ignore these directions in an attempt to remain in a space (or make a further attempt to do so in the future). This was difficult and confusing for many students, but it was those with a sense of entitlement (gained relationally) that were better able to persist and were rewarded with more experiences of participation and learning. 'Being pushy' and asking questions were described as ways to participate, yet this was often in conflict with some ethnic minority students' cultural norms. For example, as previously described in the higher education literature, Chinese and British students have different expectations around 'good' teaching and learning (Zhou *et al.* 2008), and reconciling these different types of competency was difficult. For these students, in order to participate competently in the practices of medicine, they were required to change some of the behaviours or attitudes associated with their cultural background.

Asian culture is very, not as outspoken... You're supposed to keep it yourself and bottle it up or whatever. But I think here you just need to be able to express yourself well enough to be understood.

Susan (I5 S2: female, 'Chinese', Malaysian, self-rate 2, 1st quartile)

I'm the type of person that I do observe people around me so unless I really do have a burning question to ask, I will not ask. I would rather just keep it to myself.

Luqman (I6 S2: male, 'Malay', Malaysian, self-rate 3, 4th quartile)

Susan and Luqman described asking questions of senior colleagues as difficult, and there was a lack of cultural narratives for them to draw upon to support her identification with these new practices. Other students described how accountabilities to their family and cultural community, and the related competencies of these communities, conflicted with the practices associated with an inbound trajectory through medical education, something I will return to in the next chapter in the context of relationship formation.

Of the salient experience points described by students, the majority happened outside of formal teaching sessions, and often out of hours, when they were on their own with a junior doctor, clinician or consultant. Clearly, this was much more difficult for students whose accountabilities made it more difficult to engage in more

hours of medicine; those for example with families or those that lived at home (some distance from the hospital). Although the majority of all students lived on campus, living at home was more common for students from an ‘Asian’ cultural background, as indicated in Table 5.1.

	Home		Campus/ rented	
	n	%	n	%
White’	2	2%	95	98%
Asian’	5	17%	25	83%
Chinese’	0	0%	15	100%
Other’	1	10%	9	90%

Table 5.1: Place of residence by ethnic group
(P=0.01, established via one-way ANOVA)

This was even more marked by religion, with 24% of Muslim students living at home compared with 0%-6% of other students (P=0.001). An important theme raised by many UK born, ethnic minority students was the difference in attitudes towards family, specifically how their cultural backgrounds ensured they placed a strong emphasis on ‘putting family first’.

I think it’s higher up the list of priorities if you know what I mean. If you ask most of my mates who come from similar backgrounds, their family’s sort of on the list of things that they’ve got on their mind, its number one, like, even before university, before going out with their mates playing football, before their girlfriends, anything. Family comes first.

Farid (I31 S1: male, ‘Middle Eastern’, UK-born)

This directly contradicted the discourse of many of the white students in this study, who described the importance of ‘putting medicine first’; sacrificing activities and relationships outside of the medical world in order to further participate within the world of medicine. Students’ ability to negotiate these conflicting competencies influenced how far they were able to be proactive, with students unable to reconcile their different practices having less opportunity to think, speak and act in the ways recognised as competent in the medical domain.

5.10 Summary

This chapter presented students’ experiences of their medical education in their own words. I have shown that students describe their learning in terms of history and future, and unpacked this using the communities of practice concept of trajectory. I considered *students’ changing identities* as they moved between the different worlds they

were members of and crossed boundaries, and noted that doing so they had to negotiate their own *individual trajectories*. This was easier for some than others; I have shown in this chapter how *being an insider* was crucial for learning, but that many ethnic minority students experiences were better described as *being an outsider* in medical education. *cultural stereotypes* impacted on students' participation, with ethnic minority students more likely to describe a negative effect on experiences at medical school. Ethnic minority students also discussed *being pushed into medicine* and added pressures placed on them to succeed. Finally, I presented how *conflicting competencies*, specifically in *knowing* and *being proactive* meant that the practices of medical education are not equally accessible to all students as EM students found the cultural practices of their home communities conflicted with those in medical education.

The ability to identify as a future doctor is crucial to students' success as this equips students to deal with the pressures of medical education. Students who lack the resources to do so are more likely to experience moments of non-participation and find their learning impaired. In considering how students are pushed or pulled into the medical domain, I have suggested a new way to think about motivation to study medicine. Some of the available literature suggests that the motivation of ethnic minority students is different from majority students; however, here I have suggested that pressure from family or community may account for some of these differences, as students align themselves with the practices of medicine without the engagement or imagination that could facilitate their belonging. This discourse of being pushed was exclusive to students from African, Asian, Chinese, Malaysian and Middle-Eastern backgrounds; put more succinctly, it was not a feature of white British students' discourse. Patterns of lower achievement can be explained by looking at the difficulties students from ethnic minority backgrounds have in identification. Participation in medical education is modulated by ethnicity, and the added requirements on ethnic minority students in order to be seen as an insider are impacting on achievement by challenging their legitimacy and undermining their confidence to engage. Identification is the central process shaping students' activities, identifying with people and practices directs engagement and learning. Through identifying likely trajectories, students who belong to some ethnic minority groups may also self-select out of some areas of medicine, as they cannot see a space in which they can be successful. As the definitions of success changes, students must reconcile conflicting competencies, something that may be more difficult for

students from Asian, Muslim, and other cultural backgrounds that encourage staying at home and prioritising family over medicine.

As has been alluded to throughout this chapter, relationships and support are central in students' experiences and their narratives are always contextualised by situating themselves in worlds and communities of others. Trajectories should not be considered to be individual. Belonging to worlds, identifying, participating and being excluded all require other people. How students describe their changing relationships also allows us to illustrate trajectory, plotting points and people in a dynamic timeline. The next chapter will go on to illustrate exactly who these 'others' are and how they impact upon students' trajectories and achievement.

Chapter 6

Relationships: resources and support

6.1 Introduction

Having considered medical students' individual journeys into and through medical school, this chapter examines *students' relationships* and how these afford different forms of support and resources. All participants in this study were asked about the people they interacted with, the types of mutual activities they engaged in and how they felt these impacted upon their experiences of medical education. I will begin by briefly considering who the 'others' are that make up students' worlds of 'clinical practice', 'medical school' and 'home', focusing on *forming relationships in 'clinical practice'*, particularly with *seniors* and the ways in which this influences *changing relationships with 'non-medics'*. I discuss how participants' networks formed and changed, with a focus on ethnicity, culture and achievement. I then move on to how three key resources: *tangible resources*, *informational resources* and *social resources* facilitate students' increasing participation in the 'medical school' and 'clinical practice' worlds, providing *emotional support*, helping students in processes of *triangulating competence* and *unlocking doors*. I finish by considering two negative features of students' relationships: *competition* and *obstructed participation*.

6.2 Students' relationships

As we have seen, students entered medical education as members of multiple worlds and communities. Their multimembership and the path their trajectory had taken determined their relationships with others. These relationships and 'others' students described did, however, share many similarities; partly due to the nature of human interaction, but also more specifically because of the shared journey of many of the participants, and the educational background that necessarily facilitates entry into medical education. Figure 6.1 represents the 'others' most frequently mentioned by students, and the worlds they were most often associated with.

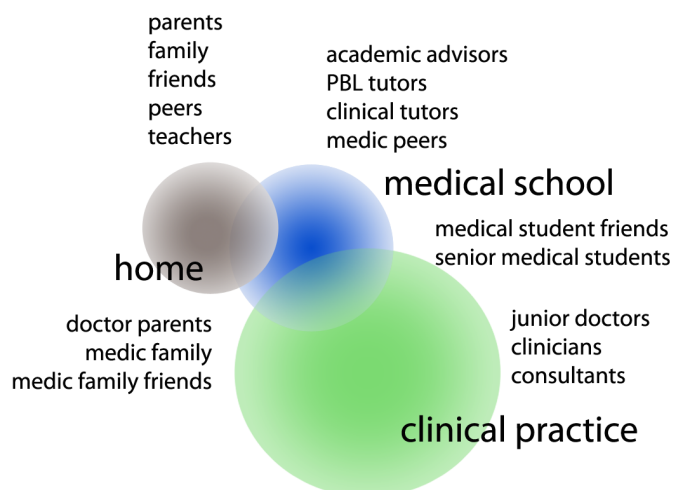


Figure 6.1: The people students interact with by, organised by 'worlds'

The social positioning of the ‘others’ students related to was important, as according to their position in different worlds, they had the ability to provide different types of interaction, support and resources. This in turn impacted on students’ trajectories. Importantly for medical students, having membership in particular networks, in particular worlds provides access to the ‘right’ resources and opportunities to develop the knowledge and skills that facilitate increasing participation in the medical world. The relationships with which participants began their medical education were very different and in many cases quite polarised. For students with access to doctors via their social network, relationships with others in the medical profession were common. Though there is little research on the personal networks of medical professionals, doctors do appear to have a tendency to be socially exclusive, interacting with other medics both professionally and personally, and in many cases marrying other doctors (Sobecks *et al.* 1999). Participants from a medical family background therefore were particularly advantaged.

I’m from a really medical family as well, as you probably know. My dad is a GP. My sister is a surgeon and my brother is in GP training.

James (I2 S2: male, white, UK-born, self-rate 1, 2nd quartile)

This ensured a wide range of helpful resources were available.

I did some [work experience] with my Dad at his general practice. To be fair, I must have only been about fifteen or sixteen at the time so I didn’t really see that much. Then what did I do? I got some work experience at Glasgow Royal. That was with a psychiatrist and he’d set up a whole load of things at the infirmary. He also set me up with a homeless drug rehabilitation clinic. What else? I saw quite a lot of stuff being on the wards and everything. I really did enjoy it. I’m trying to think if I actually did any other work experience. I think I did some more general practice stuff with a friend’s parent.

James (I2 S2: male, white, UK-born, self-rate 1, 2nd quartile)

For James, having doctors in his family and extended network enabled him to get a significant amount of work experience from an early age, putting him in a much better position when applying for medical school, but also providing the opportunity to engage with different aspects of medicine. It is clear from James’ narrative just how active friends and relatives were in helping him gain a range of experience. Many students did not have such close relationships with qualified doctors, however,

and their networks were made up of non-medical family members, friends and teachers. This is not to say that they did not have helpful support and resources; however, once they entered the medical world the forms of support that advantaged students' achievement became much more specific to that closed world.

6.2.1 Forming relationships in 'clinical practice'

As I established in the previous chapter, it is extremely important for students to be on an inbound trajectory into the world of 'clinical practice' ('medical school' is a gateway to this world). It is equally important for students to form relationships in this domain, as belonging is necessarily social. This section describes how students form networks in this world, and the sacrifices they must make along the way, highlighting two crucial 'types' of relationship: those with seniors (encompassing senior students, junior doctors and senior clinicians) and those with non-medics. Peer relationships will be considered in more detail in the next section.

6.2.2 Seniors

Participants' networks of relationships changed the moment they enrolled at medical school as they each became a member of a large 'medical student' year group and a larger 'medical student body'. From this point, students were exposed to significantly more 'medical school' and 'clinical practice' world figures with which to relate and identify. The most readily available group were peers, similarly located in the social and geographical space between these worlds, who played a large role in how students positioned themselves within this sphere. As students attempted to engage further in the medical world, particularly in clinical years, relationships with those who already had access to the activities of 'clinical practice' became increasingly more important as they were the people who could pass on the tacit and explicit knowledge they had learned. One student described how he came to understand just how important forming relationships with senior colleagues were for his learning.

Everyone said medicine is not an academic course, it's a vocation, and I didn't really understand that and now I really get it. It's not even a vocation; it's an apprenticeship. It's really important that you do find someone and as irritating as you can be to them, you just sucker onto them and just follow them on and on and on and that way you can like, you know, you get to know them so they're going to let you do stuff and you just, you get that experience.

Graham (I15 S2: male, white, UK-born, self-rate 1, 1st quartile)

Graham had a clear understanding of the centrality of relationships in learning; knowing he had to get to know medical professionals before they would let him do the ‘stuff’ he needed to gain valuable experience. His account also highlighted the difficulties inherent in building these types of networks; he had to ‘irritate’ a potential teacher with relentless determination in order to form a relationship. Many students found this type of persistence difficult or impossible, and participants’ narratives often included descriptions of attempts to engage with seniors that failed.

If you got rebutted after a couple of attempts to get some teaching off them then you’d just leave it because they’re kind of authority figures and if they’re not interested, they’re not interested.

Jasper (19 S2: male, white, UK-born, self-rate 3, 3rd quartile)

My firm in upper GI⁸ surgery, the consultant didn’t know my name. I turned up to a couple of the things. You’d go on the ward. The registrars were kind of__ He goes, ‘Oh you’re only a medical student then’. And I’d be like, ‘Well sorry’. And it put me off surgery and GI and I was just like, well no.

Owen (14 S2: male, white, UK-born, self-rate 3)

Clearly these early failed encounters had much wider implications than simply whether a relationship would form. As Owen describes, being unable to interact positively with the consultant and registrars on his firm made him decide against a future in surgery altogether. One of the difficulties students from minority backgrounds faced in these type of interaction was knowing if they were linked to their ethnicity or not.

I’ve had some, I wouldn’t say altercations, but some unpleasant experiences, negative experiences with the staff, the nurses, the doctors, the professors, but, yeah I’m not sure if that’s because of my ethnicity or just because I’m a medical student, these are the bumps and bruises that all medical students have to endure and sustain.

Kassim (127 S1: male, 'Middle Eastern', UK-born)

In some cases, forming relationships with seniors did appear to be mediated by ethnicity and culture.

8 Gastrointestinal

There's an awful lot of Asian doctors who see themselves as a minority and I would say would probably be more inclined to look after, because I've had a clinical partner that's Asian, I find that those, if there's, if we walk into a clinic and there's an Asian doctor they automatically they're talking about where they're from, you know interacting and they probably develop a strong bond straight away, and so I push for social networking more than Shafia ever would, so it works to my advantage because I'm linked to her so we get, and because I've been to India before, I don't know why, they love that, that we then get to have things again in the future but, um, Shafia I know has felt there's been a difference with nursing staff for instance, she's often felt that especially when she wore a hijab, she noticed that the nursing staff were quite off with her, some of the consultants were maybe, 'cause obviously when you wear something like that you, you're putting a barrier between you and other people. And I'd say it probably would be easier for me than it would be for somebody that was in that position, so I'd say you're right, but it does work the other way as well.

Danielle (I25 S1: female, white, UK-born)

In this scenario, Danielle described how her different background positioned her as different to these 'Asian' doctors, requiring more work to build the relationships in order to 'have things (learning opportunities) again in the future', but also acknowledged this was the other way around for her friend in different scenarios. Several students from ethnic minority backgrounds indicated extra difficulty as engaging with important figures such as consultants might be done in a way that contradicted their cultural norms.

I think like one time there's one of our consultants touched me on the shoulder and like put his arm round me, and I was like 'whoa!' [laughs]... in our culture, in our religion, that's not really accepted for a guy that's no relation to you like to put his arm across me. And if it'd been another person I would have been, like, blown off at him.

Aminah (I23 S1: female, 'Pakistani', UK-born)

The intersection between Aminah's culture, religion and gender meant that this type of touching put her in a difficult position where she felt unable to communicate her feelings to the consultant. Another cultural norm that impacted upon relationship formation was the use of certain types of discourse, particularly humour. Several

students describe the importance of humour in facilitating relationship and friendship formation, but some of these discourses often made students from a Muslim background uncomfortable.

Lots of consultants, especially surgeons love to use innuendo and that's something that a lot of Muslims, especially girls, really wouldn't find appealing. Perhaps if they were in an all girl group, I don't know, even the guys if they were in an all guy group and no one gets hurt its fine, but if it's a mixed group and there's a bit of innuendo going on, there's a lot of Muslim girls especially that would feel uncomfortable. Because they, they don't know how to react, especially if the consultant's a guy they're like, 'Well I should be telling you you're an idiot but I can't'.

Farid (I31 S1: male, 'Middle Eastern', UK-born)

One student described how one aspect of 'medic culture', forming informal relationships with seniors, was problematic as it directly conflicted with her own cultural norms.

I've grown up in a background where everyone who's older than you, you respect them, you call them sir or you call them Miss or Mrs. And it's just like 'oh yeah, I'm going out for a drink with Sam', and I'm just like, 'who's Sam? Isn't that Dr Keanes?!'... So it was very strange for me and I found that it was very difficult to adapt to that and to fit in with that kind of medic culture.

Julie (S1 I30: female, 'Black African', UK-born)

For students that perceived a clear line between professional and personal relationships and their corresponding behaviours, interacting in this way was very difficult. Returning again to the idea of intersectionality (Tsouroufli *et al.* 2011), gender, religion and culture impacted on some female Muslim students' experiences. This was particularly marked around humour.

I've had a conversation with a Muslim girl recently and she was saying that she can't have a laugh with her consultant because it's a professional relationship and she likes to keep things separate. She doesn't come to university or to hospital to make friends, she comes to university or hospital to get a career and be a good doctor.

Farid (I31 S1: male, 'Middle Eastern', UK-born)

Humour has been raised in the literature as important in demonstrating belonging in the medical world, acting as a 'secret code' and conferring 'insider status' (Wear *et al.* 2006); this was also reinforced by many participants in this study. One student reflected on how his gender and ethnicity impacted on interactions with others in the medical profession.

I'm white male, British, Scottish, whatever. I think that does [have an impact], because sometimes you might speak to people who, you know, give you a bit of chat, you know, are kind of really down to earth with you and stuff..., might even find it acceptable to kind of, you know, have a bit of a kind of crude joke with you or whatever and that's fine.

Adam (I7 S2: male, white, UK-born self-rate 1)

Particularly for women, the 'sexualised banter' frequently associated with medicine may contradict and force a renegotiation of students' norms and values (Wear *et al.* 2007). Students such as Farid's friend who are unable to reconcile these different norms may find it easier to 'keep their world separate'. However, as Graham suggested earlier, this separation is false as an element of personal relationship building facilitates the formation of a professional relationship and is important to gain access to opportunities for further participation that is crucial for achievement, something I will return to shortly.

The social side of things, it's a very, very powerful tool. It's almost as, as valuable as, you know, going to a good clinic every single day kind of thing. It keeps you on top of things, it teaches you things, believe it or not. You know, people will kind of come out with one liners and things and you'll be like, oh I didn't know that, that's quite interesting isn't it? We all have our little medical jokes... if you're at the pub on Friday after lectures and someone says, 'You know it was crazy what the lecturer was saying about that'. And you go, 'Oh I didn't really pick that up'. So that's pretty good. And then the next Monday you're in a clinic and the consultant asks you a question and you give an answer based on what you've heard in the pub. It sounds ridiculous but it's relevant... There are a lot of puns with medicine. I mean it's a human body... there's a lot of kind of innuendos in medicine which are quite funny and they can be applied to social circumstances.

Adam (I7 S2: male, white, UK-born self-rate 1)

Adam highlighted the importance of humour and particularly innuendo in this way of learning, something I have already shown to be difficult for students from some minoritised backgrounds to engage in. Added to this, he also indicates that this type of learning often occurs in the pub after hours, inaccessible to students who do not drink for cultural reasons and more difficult for those who travel home straight from their placements.

6.2.3 Changing relationships with ‘non-medics’

It was not only relationships with seniors that were important, and participants described how their networks formed with their peers. Whilst the majority of this chapter deals with participants’ networks with other medical students and professionals, it is important to note that non-medics did feature in participants’ narratives. Having relationships in different worlds enabled students to draw upon different perspectives that could be very helpful as they attempted the new and unfamiliar practices of medicine, unsure of what they were doing and whether it was ‘right’.

I’ll speak to my boyfriend a fair bit. He’s a good kind of__ he always has a good perspective on things so he’ll sort of say, well what about this, and then he’ll see it as a non-medic which is really nice because it gives you a perspective from, from the patient’s point of view almost, and that’s nice and you sort of think, oh maybe it wasn’t that bad then, or it might be the other way around. And then I’ll speak to a medic about it and they might sort of, you know, they’ll say, well maybe you could do__ differently, which is nice because then you get the input of how can I improve which someone else that isn’t a medic might not be able to give you because they’re not on the course so they don’t know.

Kristina (I11 S2: female, white, European, self-rate 2, 1st quartile)

The movement from the ‘home’ to ‘medical school’ and ‘clinical practice’ worlds was evident in participants’ descriptions of their friendship groups, and students constantly made distinctions between ‘medic’ and ‘non-medic’ friends. This served to emphasise their roles as key players in students’ membership of these two communities, yet a recurring theme was the difference and incompatibility of these friendship groups. A sense of the extent to which students identified with each community could be gathered from the ways they talked about these relationships as they were a central facilitator in identification, providing the context for engagement

of identity. Relationships require investment and a common concern for many students was their need to balance their accountabilities to their different communities. Particularly important was the cultivation and tending of relationships in the worlds they felt were becoming marginalised in their lives. This was frequently evident in the ways they discussed their ‘medic’ and ‘non-medic’ friendship networks.

I was drawn to people who weren't medics because they were interesting. They were doing different things to what I was doing, so yeah. And because I never really got flustered about exams to the extent when they didn't have exams and I didn't but other medics did, they were okay with that.

Owen (14 S2: male, white, UK-born, self-rate 3)

Many students found that they had to sacrifice some activities as they crossed the informal and formal boundaries⁹ that characterised their journey. Sacrificing activities also meant sacrificing relationships as students found they simply did not have the time to maintain many of their relationships outside of medicine, with non-medics. This is reminiscent of the process identified by Beagan (2000) who described the importance of social relationships in changing the ways students see their world, describing their resocialisation through isolation from non-medics. Students began to see themselves as ‘medics’ with distinct discourses and activities that separated them from other students.

I'd describe it as a culture. I would describe a group of medics as a clique. Medics are friends with other medics because of what they do on a daily basis. Erm, you know, we're in the hospital all the time. We do similar things. We talk about similar things. We have a laugh and joke about similar things, believe it or not. It's all that kind of thing. But I wouldn't have it any other way because it's good fun, you know. And I think that a lot of other students looking in, they kind of think, oh the medics, for heaven's sake. Sure, whatever. I really don't mind if that's what people think but it's inevitable when you get people doing the same thing, so close-knit, you're going to get that.

Adam (17 S2: male, white, UK-born self-rate 1)

⁹ Formal boundaries are those students must cross in order to progress through medical school, such as an end of year exam; informal boundaries mark the boundary between certain forms of participation or ways of knowing, such as being accepted as part of the team by the nursing staff or seeing a patient die.

Several participants described how ‘medics’ were seen by ‘non-medics’, identifying themselves as members of a group through others’ eyes. Although there were clear pressures and benefits to forming networks comprised almost exclusively of other medical students, some participants described resisting this trend, either by cultivating friendships outside of medicine, or by forming relationships with individuals they considered different from the medical student stereotype.

At the end of the day you’re going to become a doctor but I don’t think that means training up who you are as a person, as an individual, you know. A lot of it is to do with balance, balancing your life and trying to maintain relationships with people who are not from the same background as you are, and I can safely say that most of the friends that I’ve made, they’re not typical kind of medics. You know, they’re the sort of people who hang out with union students. They get involved in theatre and art.

Daniel (I19 S1: male, 'Chinese', South-East Asian)

Daniel challenged the need to become a medic by leaving all other parts of himself behind, a pressure on many ethnic minority students I described in the previous chapter. This directly contrasts with Luqman’s description of the successful medical student as one who adapts their entire person to become a medic¹⁰. Daniel described how these relationships performed a valuable function, protecting him from some of the negative aspects of the medical school culture, such as competition, by providing a different mirror through which to see himself.

It’s survival of the fittest. Some people don’t quite make it through the exams or they’ve not made the necessary grades and make the cut, and what you do realise after a while is you’re just competing with people who are more and more competent and, as a result, there is a lot of pressure on you to keep, keep up your standards but at the same time you have to remember that these are people who are A students, best of their class wherever they’ve come from and whilst in the medical school it might seem like you’re a pretty average person, I think when you sort of tell people, oh I’m a medical student, and they think, ‘God that must be crazy, it’s amazing that you’re a medical student’ and you tend to forget that when you’re, when you’re constantly surrounded by medical students which is, which is something that’s always kind of kept me in contact with the rest of the

¹⁰ Presented and discussed more fully in chapter 5

world, just not hanging out with medical students all the time. In a way, it helps you reclaim that, that feeling of being special.

Daniel (I19 S1: male, 'Chinese', South-East Asian)

Maintaining these relationships with non-medics came at a cost however. Due to differences in their timetables, living with non-medics meant spending time in their house alone during holidays when most other students return home, another factor that needed to be 'balanced'. Many students also described the difficulty of maintaining friendships with non-medics as their trajectories diverged as, for the majority of their non-medical undergraduate friends, the end of third year signalled the end of their course. This often meant they must begin to look for work and many move away in search of employment or in order to return home. Above, Daniel raises several points I will return to in the course of this chapter; adjusting to being average, fear of failure, social comparison, competition, and struggle to be recognised. What is clear is that other people figure in all of these themes and that support can be both positive and negative.

I now turn to three types of support in more detail: 'tangible', 'informational' and 'social'; examining the processes by which they impact on students' learning trajectories. Specifically, I will examine how they impact on students' participation in the activities of medicine that translate into academic achievement, to establish how resources and support flowing through students' networks facilitate or obstruct participation and achievement.

6.3 Tangible resources

Students described a range of support they obtained through their relationships. These ranged from tangible resources that could be directly exchanged, for example money or other goods, to the more complex that supported their identification and participation in medicine. This section deals with the implications of these tangible resources on participation.

Financial support was mentioned by many students, often in the context of how parental or family contribution enabled them to engage more fully in the activities of 'medical school' and 'clinical practice'. This type of support was easier for students to describe and relate to academic success, as students appreciated that they had little time outside of the formal timetable and any paid work would take them away from their studies. Financial capital was not mentioned as a difficulty by the students I

interviewed, who appeared to have sufficient access to the financial resources required to engage in medical education (in order to live near campus, purchase books, spend time on wards and so on). This was not the case for all students however; for some, new peer networks in medical school enabled them to secure crucial financial resources.

I've actually lent money to one of the students in order for them to be able to carry on at medicine... he paid me back for it but he certainly wouldn't be here now if I hadn't been playing that role of being able to tide him over between loans and stuff.

Jasper (I9 S2: male, white, UK-born, self-rate 3, 3rd quartile)

Receiving financial support was not without its drawbacks, as students became indebted to their patrons implicitly and in some cases explicitly¹¹. For international students in receipt of government scholarships to attend medical school, there was an added pressure to succeed, being well aware that they were accountable to not only their family but also their home country, in some cases for a considerable amount of time post-qualification.

You need to have a guarantor for the contract of the scholarship body. So if something goes wrong in the middle of it we need to pay back... [In Malaysia] if you got scholarship from the public service you get a ten-year bond with them. You can't go anywhere else.

Luqman (I6 S2: male, 'Malay', Malaysian, self-rate 3, 4th quartile)

Financial difficulties had implications beyond participation for one student who needed to work to support his studies.

I'm an independent student, I didn't have any money to feed myself, I'd apply for a hardship fund and the medical school wouldn't give it to me, why not? I'm not eating, I'm stealing biscuits from the clinical skills unit, I'm losing weight... when you have a part time job and you're also trying to study medicine as well, you know there's a lot more to it than just you know, allocating some time for the part time job.

Kassim (I27 S1: male, 'Middle Eastern', UK-born)

¹¹ Bourdieu (1977) would suggest that all forms of 'capital' (including gifts) incur an element of social debt in a wider system of exchange, however some are better disguised ('misrecognised'). Interesting parallels may be drawn here with the section in the previous chapter 'Being pushed into medicine?' as many students described subtle and overt indebtedness or expectation in their motivation to enter medicine.

Except for Kassim, none of the students I interviewed mentioned working during term time, although amongst the larger survey sample 21% of participants (n=33) indicated they worked during term-time or had caring responsibilities, such as parenting. Although this was not significantly related to ethnicity, white students more commonly mentioned these responsibilities (24% of white students compared with 16% of ethnic minority students). With regard to achievement, having these responsibilities did not appear to link to failing exams, with students with work or caring commitments indicating having failed an exam slightly less frequently. However, students' self-rated achievement did appear to be linked to these extra commitments.

Working or caring commitments	Self-rated achievement					
	Honours		Satisfactory		Low pass	
	n	%	n	%	n	%
None	64	83%	60	79%	0	0%
Yes	13	17%	16	21%	2	100%

Table 6.1: Students' term-time work or caring commitments by self-rated achievement

With regard to interactions in PBL groups, these commitments also appeared to have an impact on whether students engaged in study-related activities with others in their group. Students who had working or caring responsibilities were named less frequently by others in study related activities: only 20% were mentioned by over half of their PBL group, compared to 41% students without these responsibilities, indicating these students may be missing out on some of the important social learning resources I describe later in this chapter.

The survey did not ask students whether they worked in the holidays in order to supplement their student loan and/or parental contribution, although several students in this study did mention this. Those who engaged in part-time work during holidays felt they were disadvantaged compared to many of their peers as they could not participate in many of the activities they knew formed part of other students' experiences. In this way, it reinforced their outsider status.

I found a lot of medics were from the upper class schools and they went to private school and they like going skiing on holidays. And for me holidays is like I need to work to get my money because I need to pay for rent I need to pay for my car... you do feel a bit like, 'ooh, what are you doing for summer holidays?', oh, I'm working. They're like, 'oh no, I'm not working, I'm going

to France and then Italy then to Milan' and like, wow, you do your thing, I don't have the money to do that!

Julie (I30 S1: female, 'Black African', UK-born)

Supporting themselves financially through paid work would necessarily take them out of the medical world, or at least place them on the periphery in non-medical healthcare roles. Engaging in activities unrelated to medicine took students out of the medical world, calling for investment of other resources such as time and energy that could otherwise have been used to facilitate their participation in medical education, their ongoing professionalisation and ultimately their achievement.

if I wasn't married and didn't have children I would have been more successful, and then it would have been like, I wouldn't have accepted getting an unsatisfactory or a low pass of a satisfactory, I would have worked harder towards like getting an honours, and now I work hard towards passing... family commitments do [have an impact], finances do a lot, there was one time when me and my husband were both in a bit of a pickle, but we had family to sort it out. But when you're on your own it's pretty difficult, finance, and I know other people have got like a big financial burden when their families are not very well off at all so it's really hard for them.

Aminah (I23 S1: female, 'Pakistani', UK-born)

This was recognised by Jasper, who was particularly sensitive to the struggles of working class students due to his background¹².

Other people are having to do non-clinically related work so they're not even getting the benefit of spending hours in the hospital and, you know, you see that quite a bit that various people have to work a lot harder than other people, and that puts pressures on them... It affects their mental health, it affects how, you know, their morale.

Jasper (I9 S2: male, white, UK-born, self-rate 3, 3rd quartile)

Students also described how engaging in multiple worlds could lead to identity conflicts, as they encountered badly behaved doctors and medical students or by

¹² State school educated, at the age of 18 Jasper attended a well-established university drawing the majority of students from well-off, privately educated backgrounds.

being immersed in alternative discourses that challenged the dominance of medicine in society.

I was working with a speech and language therapy student last week and she was just so shocked that I was talking to her because she said that her experience of medical students is that they think that they're better than her and that they've been really rude. And the same with the speech and language therapists__ they're professionals and we're students but people have been so rude to them.

Emily (I12 S2: female, white, UK-born, self-rate 2, 1st quartile)

This was less of a concern for Emily, as although she disidentified with many of her medical student peers, she identified strongly with the medical domain as her father was a doctor.

Other tangible resources, directly relevant to the formal curriculum were gained and shared through students' networks. These included lecture and revision notes and previous exam questions. These supported peripheral participation in 'clinical practice' by ensuring students could utilise the skills and discourses valued by more competent members of the community, and enabled them to pass the boundaries marked by examination. Although these resources are 'tangible' (they could be held and passed on), I have classified them as 'informational', in order to distinguish them from financial capital. The next section considers forms of informational capital, how they are created and exchanged to support or obstruct participation, learning and achievement.

6.4 Informational resources

Students experienced a great deal of uncertainty around what they needed to know in their self-directed PBL curriculum. Information directly relating to exams was therefore very important to students, particularly in view of the competitive climate at this medical school. Information generally served two key purposes, firstly in assessment (to either direct revision or be recalled in examinations), and secondly to demonstrate or experience legitimacy (such as competently answering a question from a patient or senior colleague). Participants were highly aware of how obtaining information was dependent upon their location in networks of relationships.

*There's a lot of rumours going around as well... mainly it's about exams...
And everyone is panicking, and it's things like that. I find sometimes that I*

struggle because sometimes you hear it from some people but then you'll just hear it because two other people are talking about it and I might just be standing by my locker and doing something and I'll overhear something and then I'll be like, I've never heard that before. Then you panic and you think that I'm not doing this and then you get really, really frustrated but I think that's got to do with that we don't have clear guidelines of what we need to do and this is exactly what's going to happen.

SV: So it almost relies on you having the right network?

Yeah, absolutely. And if you don't then... I think that might be a problem for people who aren't interacting with each other so people from like, let's say they're just sort of with their ethnicity and their group in there, then they might not interact with other people and so we don't... the information isn't spread out evenly and I feel like I'm losing out on the information sometimes.

Kristina (I11 S2: female, white, European, self-rate 2, 1st quartile)

Kristina worried that she might be missing out on this important information because of her network structure and identified this as a problem for others who may have a particularly closed or homophilous network. Another student, Hannah, also identified this as a problem that undermined the supposedly meritocratic ethos of medicine.

I think it's quite unfair in some ways because some people will have more connections than others and some people__ like even for OSCEs and stuff, erm a girl who was in my group, she'd had like a huge folder from someone from the year before who'd given her like a huge folder of all his work...

SV: And did she share that with the group or was that something that was a personal resource for her?

No, a personal resource.

Hannah (I18 S2: female, 'Middle Eastern', UK-born, self-rate 2)

I will look at network structure with this in mind in the next chapter. Gaining the correct information in an often highly competitive and tense environment was difficult for students. Being marked against each other made obtaining information that others had very important. This was made even more difficult for students who

failed exams forcing them to resit a year, as they lost the networks that facilitated the flow of information.

The stuff that you find out always comes at the worst moment and it's just like a panic. And you find out your first point of call is each other and I think if you don't have a good, social network or a good comfortable supportive peer group within medicine then, you're probably going to really struggle. And I know, especially because I had to drop down [a year] and re-adjust to a new year group and all the social support networks that I had weren't relevant anymore.

Andrew (I17 S2: male, 'Indian', UK-born)

Senior students were an important source of information as they could pass on their learning. One student described how 'tricks' could be learned from others that made it easier to gain a higher grade in the progress test.

The progress test is ridiculous... If you've got an Afro-Caribbean man, sarcoid, if you've got a Mediterranean or a Greek lady, thalassaemia¹³, and things like that, which you learn from fifth, sixth years and things like that. And there's like these banks of Manchester MCQ's¹⁴ that people have access to that I don't even know exist, well I know exist but... I've never seen them. It's kind of a mystery to me. And people come out being like, 'Oh I'm so glad I did those MCQ's because five of them came up', and it's just like yes you've just got five marks just because you learned how to answer that one question.

Owen (I4 S2: male, white, UK-born, self-rate 3)

Students were therefore able to relate the information they obtained through their interactions with others into exam success. This was true of peers and senior colleagues.

If I felt that swotting was important then I'd get my head down but I think as well you should learn from consultants, from patients, from doctors. Books are not the best way to learn medicine.

13 Owen's description also highlighted the way ethnicity was only discussed in the curriculum when related to specific diseases, as found by Turbes et al. (2002) at a US medical school over a decade earlier.

14 Multiple-choice questions

SV: ...Does that translate into exams? Have you actually been in an exam where it's been like, 'Yes, that particular situation has helped me answer this question?'

OSCEs yes. Progress test is such a minefield... but then your consultants do teach you things to pick up on.

Owen (I4 S2: male, white, UK-born, self-rate 3)

Whilst relationships with those in the medical world, such as medic parents or senior role models could be helpful here, students described how the information (often described in terms of knowledge) they provided could be outdated or not specific enough to their needs, especially in the early, non-clinical phase.

In the first years when you were doing all the anatomy and physiology and things like that, [my dad] can't remember it and the university he went to was very traditional so he doesn't know anything about PBL or anything and he just thinks it's completely weird.

Emily (I12 S2: female, white, UK-born, self-rate 2, 1st quartile)

In this respect, peers and senior students were often considered best able to provide informational support directly pertaining to the 'medical school' world, as they understood the requirements of the course better. Gaining support from those who were considered to have more knowledge and skills than the participant was considered especially important for success. The relationship between legitimacy and trajectory was clear, and some students indicated they would not consider their peers' knowledge or practices legitimate as they were not yet in a position that infers competence. As James stated, if he needed to know something he would

look it up myself or I'll ask a consultant. I'll ask one of my peers, but I take it with a pinch of salt. That's why I don't like PBL that much because I'm listening to people who are on my level talking about a subject that they've taught themselves. I wouldn't accept that everything they say is correct unless I hear it from someone who has actually got proper experience, is at least a qualified doctor, and that's why I'm not the biggest fan of PBL.

James (I2 S2: male, white, UK-born, self-rate 1, 2nd quartile)

Despite the fact his peers could tell him exactly the same thing as a consultant (and in some cases may have better general knowledge than a specialist), James refused to see them as a source of legitimate knowledge. It may well be that this was because, as

a student achieving well in his cohort, he felt further along the inbound trajectory, creating a need to seek information from outside his year group. Geoffrey reinforced this sentiment.

[Peers] don't know what exams are like and they don't know what's expected at a high level, we can critique each other as much as we want but we will hit that peak and we won't be able to get past that peak until someone who is at that peak tells us how to get there, you know.

Geoffrey (I1 S2: male, 'Chinese', UK-born, self-rate 3)

For this reason, highly valuable support came from 'experts', reinforcing the importance of forming relationships with qualified professionals. The student below described how his relationship with the clinical skills tutors enabled him to gain access to information he believed helped him score more highly in OSCE examinations.

Because they're OSCE examiners and they can't be like, 'Right, so their station's coming up and you need to revise this', because they don't know what the stations are until they come up but... they will actually say, you know, 'These are the things that you need to do to hit the points'... they're the ones that sort of highlight to us that it is a bit of an act and you need to just make sure that you're hitting these points and it is all about looking really good so if you can say some particularly nice buzz words, that they'll really like that... So that, I think that was the way that we first came across this way of being like, everyone is going to do the bog standard cardiovascular exam, not everybody is going to put in these nice extra little bits that they've told us.

Graham (I15 S2: male, white, UK-born, self-rate 1, 1st quartile)

Graham indicates that not everybody has access to this highly prized information, hinting at the hidden nature of these transactions to those outside of these interactions¹⁵. This is also an example of an experience of participation as not only are the tutors passing on information that enables future participation (in exams), but they also bring the student into their world, letting them into the 'secret' that the exam is 'a bit of an act' and that there are 'buzz words' to 'hit'. Although the 'informational resources' I have demonstrated in this section have a clear social

¹⁵ I will explore students' relationships and social networks with seniors/clinicians in more depth in chapter 7.

element to them (they flow through individuals' networks of relationships), the next section considers 'social resources' in much more detail. These resources are distinct from 'informational' and 'tangible' resources as they are built and shared in moments of mutual interaction.

6.5 Social resources

Social resources refer to forms of capital that are built and exchanged in moments of interaction. In this section I identify three key forms of social resources: 'emotional', 'triangulation of competence' and 'unlocking doors'. Each of these three forms of support has crucial implications for participation and achievement, as examined below.

6.5.1 Emotional support

Throughout students' descriptions of facilitators and barriers to success in medical school, emotional support was a very common theme. Simply knowing what to expect removed significant anxiety from times of transition, making senior students and peer mentors very important.

Last year [the 'mummies and daddies'¹⁶] were helping choose which hospitals like you go to and also just sort of like what to expect from like exams... and yeah just sort of like how much work you need to do, like when you need to go into hospital, you know, like just little bits of__ just what to expect in phase two.

Ruth (I13 S2: female, white, UK-born, self-rate 3, 3rd quartile)

Family were a key source of emotional support, almost all students described the importance of this in helping them negotiate the stresses of medicine.

I'd speak to my mum every day on the phone and they are really supportive and really proud. Like I passed some of my exams last week and I haven't got them all back yet but, you know, they're the first people I ring... I went home last week to do this project and literally I had to, like, write down a thousand words but it was just nice to be home and have that support.

Nadine (I18 S2: female, white, UK-born, self-rate 3, 2nd quartile)

16 The 'mummies and daddies' scheme is a formal peer mentoring scheme that allocates small groups of new students to two students in the year above. This scheme was highly valued by several students in this study. However, many did point out problems with it, particularly around the ways relationships were often formed and cemented in events that centred on alcohol. I will go on to address this in more detail in chapter 7.

Doing academic work was made much easier by having this support. Several students linked their emotional support to their ethnicity or culture, describing how cultural norms such as an emphasis on education or living at home created a more emotionally supportive environment, allowing them to focus on medicine.

I love living at home. It meant that I always have, I remember in the first two years it used to be really stressful with semester test revision and stuff and if I didn't have my family to go home to and just switch off and that's it then I think I probably would have gone crazy at some point!

Sameya (I29 S1: female, 'Middle Eastern', UK-born)

Another student described how, although his project had been challenging, support from tutors enabled him to really enjoy it. For him, this experience was drastically different from 'the rest of medicine', potentially going some way to explain his previous exam failures and poor achievement.

I enjoyed it so much more than I've been enjoying the rest of medicine because it was just so stress free, well, it was stressful but because they were so good and so supportive...

Andrew (I17 S2: male, 'Indian', UK-born)

Andrew also described the positive feelings he associated with going out for lunch with the senior colleagues supervising his project, returning to the importance of the benefits of more relaxed boundaries between personal and professional relationships. This was particularly important for international students, or those that lack supportive 'home' relationships, such as Luan; she described how having a consultant who interacted with her both as a teacher and 'like a friend' helped her learn and achieve in her SSC.

I was quite lucky that in my SSC I had a very, very good SSC consultant and he really helped me in like how to properly do research or like, you know, how to critically read a paper; all these things. And he helped me with that and he wasn't just being more like a teacher. He was more like a friend.

Luan (I3 S2: female, 'Chinese', Malaysian, self-rate 1)

This demonstrates the importance of emotional support in facilitating an experience of increasing participation; for Luan feeling a friendship connection to this consultant helped her to feel more like an insider in the medical world.

6.5.2 Triangulating competence

Successful students are on inbound trajectories into the worlds of ‘medical school’ and ‘clinical practice’. They journey from the periphery of these worlds towards a location of competence. Competence however is not a thing, state or place that can be achieved; rather it is a collection of activities, values and norms that are constantly being negotiated. Because students encountered so many different practices in their learning, gauging which ones they should be accountable to was a social process; in effect, they triangulated the position of competence by using multiple sources. For passing exams, a theme all participants discussed, peers were particularly important. Acting together, students were able to triangulate their learning to increase their confidence in what they had learned directly, and increase their knowledge through peer learning.

We’re never learning the same thing but then we do come back and feed on experiences and say, ‘Oh I saw a really interesting patient with this’, and then it will be like, ‘Oh well what is that?’ and then we’ll teach each other so it’s not just our own clinical experiences but theirs as well... it’s good because the rarer stuff you might not get to see but then when someone is kind of telling you about it, unless you’re going to read through the Oxford handbook from back to front, learn every eponymous syndrome, then there’s some stuff that you’re not ever going to come across. So that’s a really good way to fill in the rarer bits or the more atypical.

Owen (I4 S2: male, white, UK-born, self-rate 3)

Being able to compare experiences and learn from each other was very important for students’ learning and achievement. As Owen describes, being able to come home from hospital placement and discuss what they had learned was helpful to him and his friendship group. Clearly not all students are able to put as much time into this activity, such as those who worked and those who lived at home or were otherwise socially isolated. Other students described being initially unaware of this form of supported learning.

I’ve always worked quite independently because that’s pretty much how you’re brought up to work for A-levels... but now, um I recently started to work within group study, um, for my OSCEs, and I just found it amazing... And I realise that that’s how medicine is often studied, and most people do tend to have a sort of a study group regularly, if not once twice a week.

Danielle (I25 S1: female, white, UK-born)

The importance of relationships in facilitating this was evident. Again, personal relationships facilitated professional learning.

In first and second year... I just got so nervous, like oh God, I don't know this, I don't know this but I think as you become more friends with people you don't care if you make mistakes.

Nadine (I8 S2: female, white, UK-born, self-rate 3, 2nd quartile)

Particularly important for practical exams, students described how working with others was translated into better exam performance.

I think the OSCEs I've done better in are the ones where I've practised with other people beforehand... I think that does help [with progress test] as well, it's definitely more enjoyable studying with a group of friends and going through some practice MCQ's or something than it would be sitting and doing it on your own. Its probably just about, I think its maybe a little bit more beneficial.

Sally (I20 S1: female, white, UK-born)

It was not only explicit knowledge that was being exchanged, participants also described getting senior students to pass on their embodied knowledge, asking them to talk about their experiences of participating in an OSCE.

we've got seniors from Malaysia who one weekend we invited them just to talk about their experience but what we ask of them, it's not really the knowledge that you have but their experience with the... For example, in the OSCE we just want to know what the situation would be like and then any tips or tricks that you learn at that point that you can share with us. So that's the main thing that we seek help from them but other than that, no.

Luqman (I6 S2: male, 'Malay', Malaysian, self-rate 3, 4th quartile)

Luqman hints at one of the negative aspects of social capital here, that the very group closure and membership that facilitates exchange of resources (in this case students from Malaysia) may also increase the homogeneity of groups and prevent access to outsiders, a point I will return to consider in more detail in the next chapter. Where students were unable to access experiences of participation, for example

exam scenarios, they were able to simulate these settings with support and some organised practice OSCE sessions, engaging senior students as ‘examiners’.

This year we did twelve stations, three houses and then we rotate__ we were doing a mock OSCE and the seniors were so good. They were really like examiners; they really grill you. And they were like so, I would say, so fierce. I was like, oh my God. And then after that they are like really nice people but (sharp intake of breath).

Luan (I3 S2: female, 'Chinese', Malaysian, self-rate 1)

Imagination was clearly an important part of the process of triangulation, as students had to play the role of candidate and see senior students as examiners, setting up the future scenario in which their competence would be formally recognised. However, this process of triangulation was only as good as a student’s social network and students who did not interact with higher achievers lost out.

I think possibly yeah the people that you hang around with, you can learn so much from them, especially if they’re really intelligent or if they’re really focussed or whatever, that really rubs off on you. Um, but I don’t think particularly I was in that situation, kind of, the group of people I was with were similar to me so it wasn’t like there was somebody who was a lot better than us sort of to guide us or whatever.

Nasreen (I24 S1: female, 'Pakistani', UK-born)

In order to triangulate competence, students strategically sought to revise and learn with others they knew to be successful in exams. This further disadvantaged students like Simon, who had previously failed and therefore felt excluded from revision groups.

I realised no-one wanted to revise with me because of my track record... I’d suggest it and people weren’t that keen... They’ll organise their social network around that especially when it comes to the benefits of learning.

Andrew (I17 S2: male, 'Indian', UK-born)

Andrew did mention quite a moving experience of receiving support from a fellow student, though this was surprising as she was outside his existing network.

And there was one occasion when I was really surprised, but really grateful at the same time, that in our last OSCEs in third year, a girl who I didn’t

know particularly well... had list of all the OSCE stations that had come up over the past five years that was given to her by an FY1 who had done it all before and she was like, 'Andrew, photocopy these, this is what you need', and I was just like__ I almost had to be like, are you sure you want me to have this? Do you know what this means? I'm going to know better what's going to come up and I'm going to be able achieve better and that means that you might not achieve or, you know, it won't mean that you won't achieve but it might mean that I'm therefore more of a competitor with you__

SV: Just on that example, did that help having that list?

Totally helped. If I didn't have that__

SV: Did similar ones come up?

Definitely.

Andrew (I17 S2: male, 'Indian', UK-born)

It may be that because Andrew was a lower achieving student, he was perceived as less of a threat and therefore not someone from whom resources should be withheld, or it could simply be the case that whilst some students do compete for resources, others do not. I'll return to the competitive climate and its effects on students' networks later in this chapter, but first I describe another distinct form of support, 'unlocking doors', which was specific to students' interactions with senior colleagues.

6.5.3 Unlocking doors

Through their relationship networks, participants were able to access support directly beneficial to their progress in medical education and medicine, in the form of experiences of participation. Students frequently described the boundary between non-participation and participation as a threshold, across which senior colleagues could facilitate their journey. In this way, this form of support or 'unlocking doors' catalysed students' inbound trajectories into the medical domain, increasing their competence and reinforcing their identification with the profession.

It's all about sort of getting in there and it sounds quite dodgy and a bit like an old boys' club but unless you're in with the house officers, you're just not going to get the experience.

Graham (I15 S2: male, white, UK-born, self-rate 1, 1st quartile)

This was explicitly recognised by several students; as one student described, gaining access to these opportunities for increasing one's competence involved 'knowing the right people'.

Students who come from [more privileged] backgrounds, who have those kind of links... will have friends throughout the whole years and they'll have friends who are, you know, fifth years and F1's here... when we were wandering about lost, people would say, 'Oh I've just been taking bloods with my friend in the fifth year, or my friend the F1 has just been letting me in on something or other or, you know, my big brother works in that department so I've just been in theatre with him or with one of his friends'.

Jasper (I9 S2: male, white, UK-born, self-rate 3, 3rd quartile)

Experiences that reinforced students' inbound trajectory in the medical domain (such as praise or encouragement from clinicians or peers) became moments of participation, whereas those that did not (such as criticism) were experienced as non-participation and barriers to learning. Support was crucial in this process, as peers and seniors could act as gatekeepers and patrons who facilitated experiences which students' peripheral position made impossible to access alone, such as entering a surgical setting.

The reason why I did so well on Mr Jones' firm was because I was thinking this guy is so nice. He teaches incredibly well. He would__ like at every single surgery he would stop and show me things and, you know, show me things on the patient... I think if you do that you will get better medical students who are more motivated. **Geoffrey** (I1 S2: male, 'Chinese', UK-born, self-rate 3)

Geoffrey firmly identified as a future surgeon, as his emerging identity was supported in this way. These moments facilitated students increasing participation in the world of medicine, increasing students confidence to engage and helped them to form an idea of themselves as legitimate and able to help, two key element of the 'proactive' disposition. Trust, both a cause and an outcome of this social resource, was essential in these interactions with busy colleagues in a high stakes environment.

There's only really two house officers that I've done [on calls] with but because I've done them just with them, they'll trust you a bit more and sort of they'll be able to gauge what you can and can't do... we just had this

one chap that was really, really ill and we went to see him and they were just like, 'Yeah he's fine', and we looked at him and he just started projectile vomiting blood, but I got a lot out of that because we literally just both leapt on, on this chap and we were like, you know, cannulas and taking ABGs and squeezing blood into him left, right and centre and calling ITU and stuff and it was really good because I got a lot of, you know, acute management of this but genuinely a very, very ill patient and a condition that I'm likely to see and I felt really very rewarded that, because at the end she was just like, 'Oh my God, I'm so glad you were here because you could do one thing while I was doing another'... I get a warm fuzzy glow at the end of it and I've learned loads as well.

Graham (I15 S2: male, white, UK-born, self-rate 1, 1st quartile)

It is clear that this one event was a significant learning experience for Graham. However, again he described the need to build these relationships over time and with significant input in the form of time and perseverance. It was important to the student that the house officer could gauge both what he could and what he couldn't do. This was common to many students as support was central in helping students participate more fully in the activities of medicine. The level and type of support was seen as positive when it was appropriate to their experience point. This was individual to all students, whose needs changed from moment to moment, requiring support to enable them to access new experiences, but enough space to engage in new practices on their own.

And they just took me under their wing and threw me in at the deep end I guess but were there to support me if I needed it. But then if I was happy swimming, they let me swim.

Owen (I4 S2: male, white, UK-born, self-rate 3)

Owen describes this complex dance in mixed metaphor; on his placement he needed to be *both* 'taken under the wing' *and* 'thrown in at the deep end', only together were they seen to be positive forms of support. Here we can see how support impacts on participation. On an inbound trajectory into medicine, students necessarily engage in new practices. These must be facilitated by more competent members of (in this case) the ward staff, who grant access, demonstrate competence and legitimise the student's actions, but must also create enough space for a learning experience.

6.6 Negative aspects of the relational culture

Having discussed the ways in which relationships can facilitate participation, it is very important to describe the ways in which it can be detrimental to engagement and learning as this was something all students described. First I would like to turn to the discourse and climate of competition, a specific aspect of the relational culture of this medical school.

6.6.1 Competition

Competition between students was a major theme throughout this research and a major feature of this medical school's culture. One way students competed was through comparing themselves to their peers. Participants were often conscious of how they were positioned in relation to others, particularly with their medical student peers.

...in third year you see people getting more intense and they study more. It's quite a good thing because it sort of like makes you go and do work.

Luan (I3 S2: female, 'Chinese', Malaysian, self-rate 1)

Using their peers as barometers of success, they described social comparison as one of the main ways of ascertaining how they were doing on the course and importantly where they were positioned in relation to other students.

I think you always want to be uh, in terms of what you achieve you know the examinations and things, you always wanna be around your peer group, so, cos you're kind of looking at them as a barometer to say ok they're doing that so I'm ok where I am, so I think the group that you fall into is very important in deciding where you go, or can be very important in deciding where you go academically, and how much time you take to learn and study, I think that's definitely important.

Nasreen (I24: female, 'Pakistani', UK-born)

Participants used this knowledge to assess if what they were doing academically, in terms of their perceived knowledge base and their levels of study and revision, was 'good enough'. This process exacerbated a culture of competition, to which participants widely referred, becoming much more evident around exam time when anxiety was generally high amongst the medical student population.

I think people are just afraid of that maybe that they're not good enough... fear diffuses through everyone. The minute someone starts working, everybody suddenly drops down. It's almost like a herd of buffalo or whatever; one starts running and everyone starts running... the fact that it's marked in relation to your peers, it's going to be [competitive].

Owen (I4 S2: male, white, UK-born, self-rate 3)

As well as being important channels of support, peers could also be seen as competitors fighting for what were often described as limited resources, especially once students reached clinical years.

Fourth year now I'm finding really very difficult because there's not that many opportunities in the Children's Hospital and it's only six weeks so everyone is feeling the pressure... you know, six weeks, got to learn everything and there's the exam... Everyone needs to do general paed[iatric]s, so that one, general paed's ward is just hammered by medical students.

Graham (I15 S2: male, white, UK-born, self-rate 1, 1st quartile)

Students often felt that others, to maintain the competitive advantage, withheld support from them.

[In clinical phase] you then started seeing your peers as your competitors, as your direct threats, and that's something which wasn't apparent... So when it comes to a learning experience and wanting to ask someone for that, - so 'can you go through this and teach me how to do this examination or like practice the history or just watch me take that history', people won't do it in the comfort, er in, within the vicinity of others. It will be very much something that's done outside. So you never know what anyone else is doing.

Andrew (I17 S2: male, 'Indian', UK-born)

Going a step further in describing this competition, below Geoffrey suggested that it was more accurately described as a battle for positioning rather than resources.

*People get competitive over which ward they're on and which teacher you get... what you'll find is it's not actually about their teaching. It's not about the opportunity. It's about the fact that this is **their place**.*

Geoffrey (I1 S2: male, 'Chinese', UK-born, self-rate 3)

6.6.2 Obstructed participation

A student's network of relationships was not wholly beneficent, and many students described interactions that negatively impacted on their experience and learning. Mirroring my earlier discussion, peers, seniors and family could all have a disadvantaging effect on success. Just as students described their peers as important in helping them work well and achieve, the opposite was equally true and students described how others created experiences of non-participation and exclusion. For students who were hard working, being in a group with others who did not put in as much effort made them feel they were being held back.

We were a group of eight and there would be four people that did work and four people that didn't... And it makes your group unproductive because you can't stimulate good discussions.

Kate (I10 S2: female, white, UK-born, self-rate 1, 1st quartile)

Eventually Kate moved away from the students who did not work both in social and academic interaction, engaging with her friend who was also a hard worker (and high achiever). In this way, she avoided what could otherwise have been a downward levelling of norms that can be a feature of some social groups (Portes 1998). Some participants also resented feeling they were doing the hard work to the benefit of others who were able to passively learn from them without the associated investment and risks. Withholding potential support is also a form of obstructed participation. This was felt more acutely in scenarios where the exchange of support was seen to be unequal. Geoffrey described how majority students would engage with minority students in order to get academic information and support but would not respond with friendship.

Look at groups where there are two or three Malaysian, Chinese, Singaporean, Egyptian, Malays, Indian, whatever you want, people and if you track their movements and you track who they hang out with, yeah in tutorials they'll be the best of friends superficially... Once you walk out that door, lunch, they don't sit together... They'd quite happily accept their teaching... and their knowledge but they're not willing to offer, if you like, an olive branch in terms of friendship or in terms of just getting to know you.

Geoffrey (I1 S2: male, 'Chinese', UK-born, self-rate 3)

Providing support to others can, of course, have positive outcomes in terms of possible returns to an ‘investment’, such as helping a fellow student in times of difficulty in return for friendship and future help. However, especially in relationships where student had been in receipt of support, several participants described being in a difficult position as they felt an accountability to help their family members to the detriment of their studies. One student described how his parents’ divorce just prior to moving to Manchester left his mother in need of emotional support; however the provision of this support had a negative effect on his ability to revise for exams.

I didn't have support from my parents because I was supporting one of them... it was like being dropped in or drowning in the deep end... I mean the night before the OSCE that I failed - actually thinking about it, that might be part of the reason - I had a particularly bad phone call from my mum who was__ I don't remember the circumstances but I just know that she'd been on the phone and she was in a bad way and like I was, I was trying to go over the last few things I needed to know and it just threw, it throws you like.

Matthew (I14 S2: male, white, UK-born, self-rate 3, 3rd quartile)

Instances such as this (other examples included supporting family members through serious illnesses and having a family) present a double disadvantage to students, as not only do they lose the support most other students receive from family members, but they also have to invest extra time and energy in providing support. As described in the previous chapter, this accountability to family can conflict with the demands to be accountable to the medical world. Clearly, supporting others requires energy that could be used to build relationships, skills and knowledge within medicine, making participation in medical education more difficult. In order to form and maintain relationships, it is necessary to engage in shared activities (Thomas and Bailey 2009), with implications for students as they move from the ‘home’ into the ‘medical school’ and ‘clinical practice’ worlds.

Withholding support was particularly evident when students described their relationships with tutors and clinicians. According to participants (and in contrast with the expectations that students must be proactive), proactive teachers were relatively rare; instead students described members of the profession who appeared to be deliberately obstructive in denying access.

'[A consultant] had been saying all term, yes of course you can come [to clinics], but never would tell us when they were, and then he would say, 'Oh yeah ring my secretary', expecting you not to do it... he was nice enough when we turned up but certainly didn't help us at all.'

Jasper (I9 S2: male, white, UK-born, self-rate 3, 3rd quartile)

Participants described teachers who clearly lacked any obligation or enthusiasm to teach students. Again, looking at networks can help us understand this process, as without the established relationship, the consultant described above refused to invest any support in Jasper and his peers. This was experienced as non-participation, and many students talked about the feelings of rejection when attempts to engage with qualified doctors were unsuccessful.

I find that like as a student you tend to sort of get a bit rejected sometimes but I think that's just, I think that's the same for everyone – most people who I've spoken to have had similar experiences.

Andrew (I17 S2: male, 'Indian', UK-born)

The ways students made sense of these experiences were also relational. As Andrew describes above, being aware that this was a common experience made it more bearable. Simply knowing if their treatment was acceptable was also ascertained in relation to peers' treatment. Being surrounded by others having similar experiences acted as a support in itself (with the opposite also being true). In this way, students gained a sense of their social positioning by comparing their own experiences to others. This process was both positive and negative, acting as reassurance but also maintaining the status quo. Although accepting experiences of obstructed participation often helped students deal with them, it also normalised such experiences. This was particularly problematic for students who were dealing with the micro-inequities of everyday racism and sexism that pervade medical education (Beagan 2001; Babaria *et al.* 2011). From a network perspective (something I explore in depth in the next chapter), having a homophilous network may mean that individuals' experiences are similarly negative, meaning these students accept more experiences of non-participation.

6.7 Summary

In this chapter I have described who the ‘others’ are that make up students’ worlds of ‘clinical practice’, ‘medical school’ and ‘home’, demonstrating that it is the positioning of the individuals in and across these worlds that is most important, rather than their role or job title. I have described how experiences and resources were afforded through these interactions. Participants’ networks formed and changed at medical school; ethnicity, culture and achievement were key mediators of these processes. This chapter described four key resources - tangible, informational, emotional and social - that facilitated students increasing participation in the ‘medical school’ and ‘clinical practice’ worlds, before finally considering the negative or obstructive features of students’ relationships.

The existence or lack of support and resources that are afforded through students’ relationships can explain how and why students’ learning trajectories differ. Students able to form relationships with peers and seniors are more likely to have the experiences of participation crucial for an inbound trajectory and achievement in exams. Building these relationships can be a risky business, however, as students must overstep existing relational boundaries in order to form new connections. Clearly this takes a level of determination and perseverance, or ‘proactivity’, as I suggested in the previous chapter, not necessarily available to all students. Relationships with senior students were extremely important in helping participants negotiate their learning trajectories, passing on tacit knowledge that was highly valuable to students. Having previously (and recently) engaged in the practices of medical education, they were more easily able to translate their embodied learning into a form communicable to junior students. Students do appear to have ‘their own’ peers and seniors, and I will go on to consider these social divisions in the next chapter, where I examine network formation and structure. As well as obtaining access to resources, students use others in their networks to position themselves in their landscape of practices (Wenger 2005), specifically as a learner in the constellation of practices that comprise medical education.

This chapter has built a case for the importance of relationships in learning, showing how individual students are advantaged or disadvantaged through their networks, and how networks drive learning practices. The next chapter will describe students’ social networks, illustrating the patterns of interaction and considering how these, along with the theory I have built so far, can help to explain the achievement gap.

Chapter 7

Social Networks

7.1 Introduction

Having established the importance of relationships in learning and achievement in previous chapters, this chapter turns to look at the role social networks play in students' achievement. Moving away from the focus on social resources and approaches to learning examined in the last chapter, this current chapter will focus specifically on how ethnicity, culture and other demographic factors are linked to different network structures, and consider how this may help to explain patterns of underachievement amongst ethnic minority students. This chapter first describes students' interactions, focusing on *PBL peers and achievement*, examining the demographic factors impacting on these interactions, specifically ethnicity, being a non-drinker, and gender. The chapter then moves on to look at students' *Personal academic support networks*, describing the demographic factors that mediate network factors and the network factors that mediate achievement.

7.2 Social network measures

In order to facilitate interpretation of some of the new terms I introduce, below is a recap of the key analytical tools I described in detail in chapter 4.

Sociogram or network diagram	A visualisation of a student's network of relationships. Each shape represents an individual, each line a relationship between them. Where arrowheads are present, this indicates the direction of relationship (who named whom). These qualitative tools help to identify and illustrate quantitative patterns.
Degree centrality in-degree = sent out-degree = received	A measure of the number of ties (relationships) an individual has to others in the network. In-degree described the number of times a student is named by peers, out-degree the number of times they name others. Here I present this as a percentage of all possible ties. For example, an in-degree of 40 means that 40% of the PBL group indicated they interacted with that individual.
Ego density	A measure of the interconnectedness of an individual's network, ranging between 0 and 1, with 0 being no connections (other than to ego) and 1 being everybody connected.
Homophily (E-I index)	A measure of the tendency for individuals to interact with others from the same group. An E-I index score ranges from -1 (interacting only within group) to +1 (interacting only with other outside group). Individuals are assigned to groups according to different variables, such as ethnicity and gender.

7.3 PBL peers and achievement

In this section I investigate how the different measures of achievement gathered in the survey relate to students' interaction with their peers. Students were asked to name others from their PBL group with whom they interacted outside formal teaching sessions in study, social and emotionally supportive activities. Throughout this thesis, I have built an argument for the crucial role these relationships play in students' socialisation and achievement; below I test these hypotheses, describing

observed patterns and using statistical analysis where appropriate. Statistical inferences are made to trends ($0.01 \leq p \leq 0.1$) and significant differences ($p < 0.01$). I used t-tests and ANOVA to investigate the difference in means between groups. Given that the statistical analysis would involve many multicomparisons, I used a significance level of $p = 0.01$ to reduce the chances of obtaining false-positive results due to chance.

The majority of participants self-rated their achievement. These data were dichotomised, forming two categories for comparative analysis, allowing me to investigate differences in how the lower achieving half of the cohort compared to the higher. With regard to study related activities, lower achieving students more frequently named others in their group in interactions (52% of PBL group compared to 42% named by higher achieving students), whilst the mean number of ties each group received was comparable. This might suggest that lower achieving students rely more on their PBL group for study interaction, rather than their own informal study groups. These groups were important when ‘triangulating competence’; it was helpful for students to be able to learn in and with their current PBL group, then revise in another group, allowing them to compare and contrast their knowledge and ensure any gaps were accounted for.

Students at this medical school are placed in an academic quartile in their fourth year. This quartile forms the basis of competitive selection into Foundation Training (the two years as a junior doctor immediately following medical school in the UK) and is a composite measure of achievement in different assessments. With regard to students’ degree centrality in their PBL group, students in the lower quartile named more of their peers in study-related activities, but were named less frequently in return by others (Figure 7.1, overleaf). This suggests that higher achieving students in a PBL group may be choosing not to interact with students they perceive to be lower achieving, reinforcing the strategic interaction described by interview participants such as Andrew¹⁷. The peripherality of lower achieving students could be seen in students’ PBL network diagrams, where they were less well connected in their peer group than better achieving students (Figure 7.2, overleaf).

¹⁷ See chapter 6

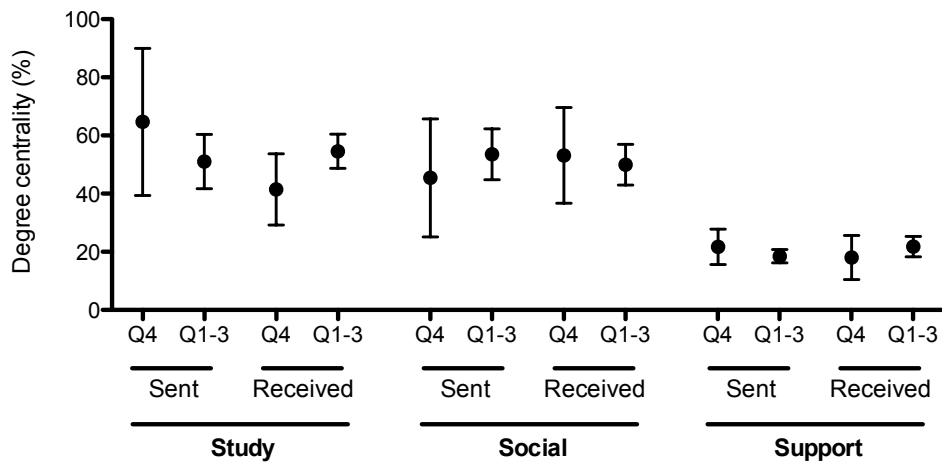


Figure 7.1: Comparison of students' study, social and support degree centrality by quartile. Degree centrality scores were calculated from questionnaire data and participants were grouped according to location in fourth quartile using exam data. Data are mean \pm 95% confidence interval (CI).

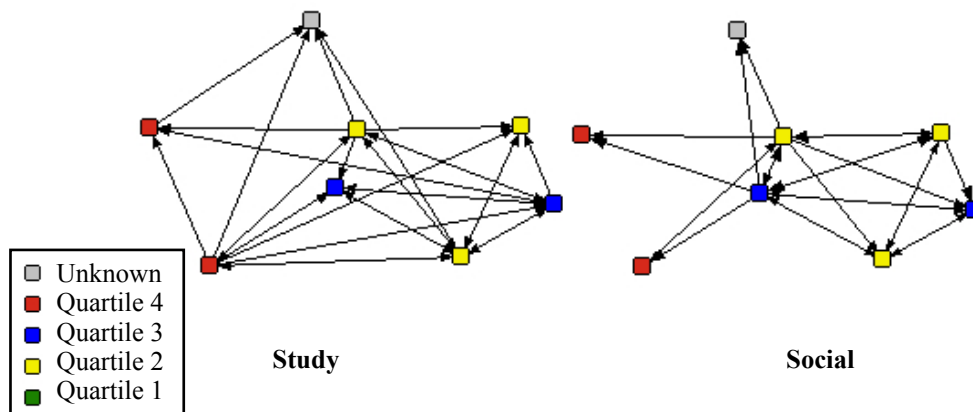


Figure 7.2: PBL group 10 students' study and social interaction sociogram Individuals are coloured according to achievement by quartile. Arrows indicate direction of tie. 4th quartile students, indicated in red are more peripheral and less well connected. These sociograms are broadly representative of wider patterns in the data.

Students in the lowest quartile named fewer peers in social activities, but were themselves named slightly more frequently than other students. This was a puzzling finding, contrasting with the pattern seen in study and support activities, where students in quartile four received fewer ties, but sent more than their cohort. This could suggest that different students make up these groups, in turn suggesting different ways that social ties could obstruct learning. Having a lack of social connections may restrict support and resources, but having too many friends may also create a number of accountabilities to sustain relationships and activities, taking students away from medicine. The reasons for this finding may be multi-factorial, although having discussed this with current medical students it is likely that this is an

artefact of the survey method. As students completed the survey in the presence of the rest of their group, there may have been a social pressure not to completely leave out peers with whom they did not interact in other ways¹⁸. An alternative explanation is that these students do socialise more, leading to lower academic achievement; however, if this were the case, I would expect more reciprocity of ties than observed, meaning these students would send out higher number of ties for social activities as well as receive them.

Highest and lowest achieving students appeared to be interacting differently in study-related activities compared to their cohort, both sending out more study-related ties. However, comparing the number of ties a student received in these activities, a clear difference emerged between quartile one and quartile four. Presenting the mean number of times each group was named by others in their PBL group with the mean number of times that group named a peer, it was clear that the lowest achieving students had characteristic patterns of interaction (Figure 7.3).

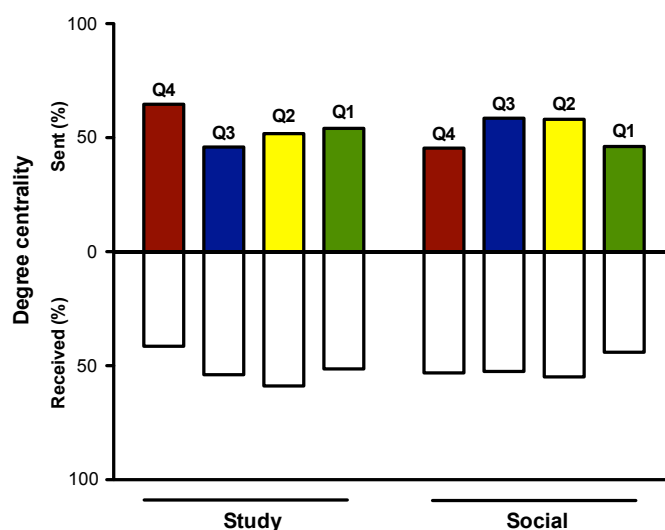


Figure 7.3: Mean number of study and social ties, sent and received, by quartile.

Degree centrality scores were calculated and participants grouped according to quartile location. Sent ties are presented above the axis, received ties below, illustrating the proportion of sent versus received ties. Quartile 4 students (in red) send out proportionally more ties than they receive for study activities.

Using another measure of underachievement, students who had previously failed an exam were compared with the rest of their cohort. There were clear relationships between some network factors and this measure of underachievement (Figure 7.4, overleaf).

¹⁸ Discussed in more detail in chapter 8

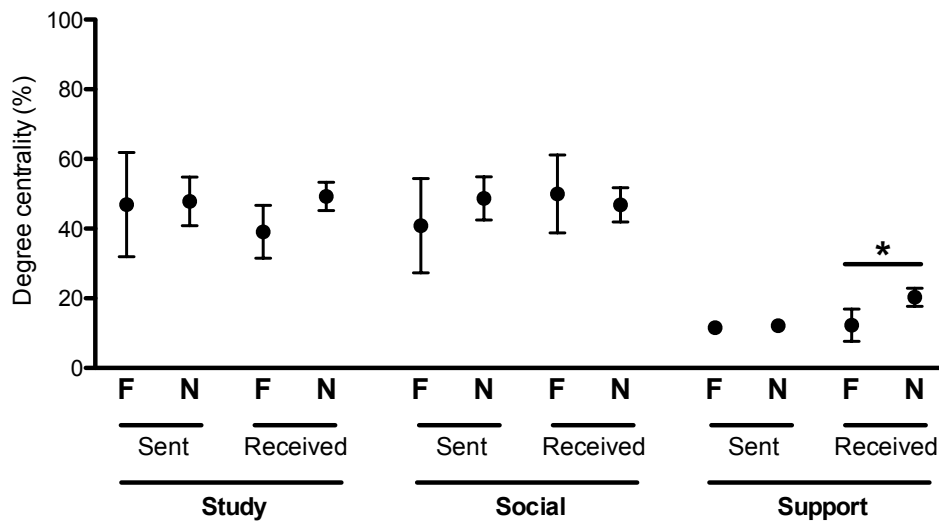


Figure 7.4: Comparison of students' study, social and support degree centrality, grouped according to previously failing an exam.

Degree centrality scores was ascertained and participants were grouped according to having previously failed an exam (F). Data are mean \pm 95% CI, * $p < 0.01$ (t-test).

Students who had failed an exam had a lower study in-degree centrality, meaning they were less likely to be mentioned by others in their PBL group in study related activities. Mean scores indicated that whereas non-failing students were mentioned by almost half of their PBL group in study activities outside formal sessions; students who had failed were mentioned 10% less frequently.

This pattern was mirrored in activities for moral and emotional support, where students who had failed were less likely to be mentioned by others in their PBL group, with 'non-failing' students mentioned twice as often in these activities. This may suggest that failing students were more reliant on others in their PBL group for support in coping with the medical course (and may be an indicator of role modelling peers). These relationships do not appear to be reciprocated, as students who are named by others are much more likely to be students who have always passed exams. This indicates that 'failing' students may be missing out on some of the support and resources indicated in the previous chapter as they are less likely to have a high number of active relationships with others in their PBL group for study-related activities (which play a key role in learning and achievement). Not interacting in this way means students may be missing out on the collaborative learning and

social comparison that drives other students' learning and achievement. Importantly, it may indicate that other students know who do not achieve well and strategically seek others with whom to interact in study and supportive activities (as indicated by several interview participants).

Three of the students I interviewed had previously failed an exam, reporting different reasons why they did not feel they fully interacted with their PBL groups. Owen suggested that his earlier experiences of temporary friendships through attending a private school away from home meant he did not create lasting relationships within his PBL group, whilst Matthew found it difficult joining MMS in third year and having to support his parents. This translated into different patterns of interaction within their PBL networks, most marked in Olivia's case, who struggled to deal with the extra pressure to succeed she felt under as an international student with higher tuition fees¹⁹.

I find that I tend to panic a bit more about the little things. I can't afford to fail. It's not an option... I think it can be a bit difficult going through life feeling like everything has to be right the first time round and everything has to be this way and it has to be that way. I think it's affected everything else in my life... So there's certain times when I could have been more chilled out about things and had more fun, but I just was sort of too wound up about work and stuff.

Olivia (I16 S2: female, 'Black', self-rate 3, West African)

For Olivia, the pressure to achieve meant she did not socialise as much with other students. She revised and practiced for OSCEs alone, practising with pillows instead of people and missing out on much of the collaborative learning linked to achievement described in the last chapter. Her isolation was evident both in her PBL group network overleaf (Figure 7.5), and from the fact she was unable to name anyone outside of her PBL group with whom she interacted in activities important for her academic success²⁰.

¹⁹ At the time, international student fees were £12,150 per year in years one and two, increasing to £22,100 per academic year in clinical years

²⁰ In later sociograms depicting every participant's personal academic support networks, Olivia is represented as a single shape with no connections.

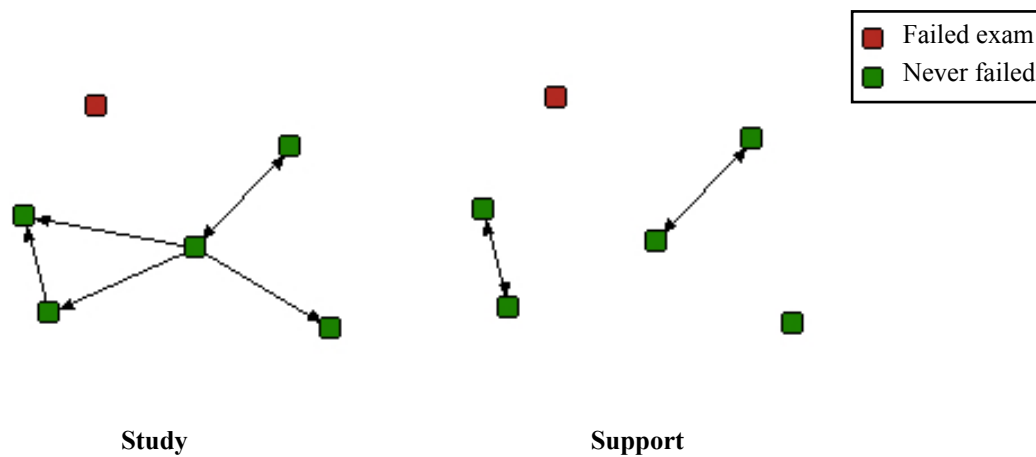


Figure 7.5: Olivia's PBL group (21) students' study and support interaction sociogram
 Individuals are coloured according to having failed an exam. Arrows indicate direction of tie. Olivia is represented by the red square, she is not connected to anyone in her PBL group.

Olivia's network properties changed between when she was surveyed in third year and when I interviewed her in fourth year, as she had formed a friendship group with several Erasmus students (a scheme enabling overseas students to study in the UK as part of their degree programme) and intercalating students who were new to the year. This allowed Olivia to reflect on how these relationships changed her experience.

It's been a lot more fun, a lot more enjoyable. It's just sort of going into teaching and having people to sort of talk to about it afterwards, and it's just having that little support network as well so we've all kind of been there for each other... I did get a better grade this time round than I did about the same time last year... So I think, yeah, sort of having that support network and that revision group helped.

Olivia (I16 S2: female, 'Black', self-rate 3, West African)

Olivia's was an extreme case; however her story, along with the wider patterns highlighted in Figure 7.4 described above, suggests a strong case for an association between integration in PBL and problems with achievement. That these students also have fewer active relationships in which moral and emotional support is exchanged, may be both a symptom and a cause of students' lower attainment, as others did not see them as people who can help them through the difficulties of the medical course (perhaps because they were struggling themselves). In my discussions with medical students and academic staff, personal or family problems and poor (mental) health have frequently been mentioned as reasons why students fail exams. Though these

data cannot statistically prove these anecdotes, it does support them, as students who have failed exams do not interact in the same way with their PBL group, affecting their network formation.

7.4 Demographic factors related to interaction with peers

Clear patterns were evident in network data that elucidate the relationship between students' interaction with PBL group peers and their exam success. Students achieving least well are named less frequently by others in their group in study or emotionally supportive activities, missing out on the benefits of these interactions described in earlier chapters. Having considered the impact of peers on achievement, I now examine the factors that appear to shape networks into the formations described above.

7.4.1 Ethnicity

There was a trend for non-white students to name more of their peers in study related activities. Ethnic minority students named on average 10% more of their group. On further analysis, 'Asian' students' responses appeared responsible for this difference, as they indicated interaction with 56% of their peers in these activities, compared with 43% named by white and 'Chinese' ($p=0.08$) and 35% named by students from 'other' ethnic backgrounds. This finding perhaps reflects the cultural norms of many 'Asian' students in this study, who described the greater importance of engaging in study practices and avoiding social activities that involved alcohol (discussed in more detail in the next section). Furthermore, as the popular discourses of white and 'Asian' students could be very different, study-related interaction may have been a more accessible way to interact with peers. Farid, who had two friendship groups, one white, and one Asian/Arab Muslim, described how study and talking about medicine was mutual ground.

Inside medicine they can talk about medicine and in PBL I'm sure they'd get along, but in certain social, I couldn't see... some of them wouldn't feel comfortable in those situations... they wouldn't have anything to talk about really. I think the focus of, I think, I know it sounds really really sort of over the top, but sort of what they want out of life is perhaps different... Yeah, everyone wants to enjoy themselves to an extent, but the extent to which some of my Muslim friends, sort of a lot of the conversation will be sort of philosophical or religious, rather than sort of social about entertainment.

Farid (I31 S1: male, 'Middle Eastern', UK-born)

Farid describes how his friends intersectional identities (Tsouroufli *et al.* 2011), as Asian or Arab and Muslim impacted on friendship formation and participation in activities, leading them to be more active in ‘serious’, study-related activities.

In social activities however, a contrasting trend was observed as white students were more likely to name and be named by others in social interactions (Figure 7.6, $p=0.04$).

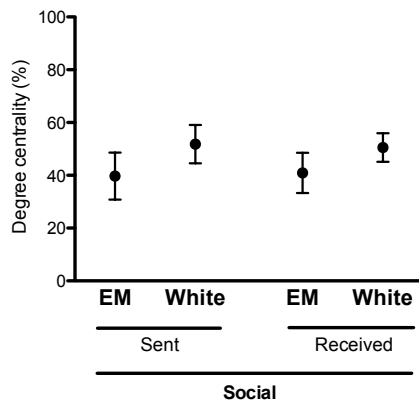


Figure 7.6: Comparison of students' social degree centrality by ethnic minority status.

Degree centrality scores was ascertained and participants were grouped according to non-white status. Data are mean \pm 95% CI (t-test).

Within the ethnic minority group, ‘Chinese’ students appeared to be interacting in different ways compared to their peers (Figure 7.7). With regard to their PBL group, ‘Chinese’ students were named more frequently by others as people they had no interaction with outside of formal PBL sessions. In social interactions outside of formal PBL sessions, ‘Chinese’ students were also named less frequently by others in their group when compared with white or ‘Asian’ students ($p<0.01$). This difference within the ethnic minority group highlights the importance of analysing groups separately, rather than simply categorising as white or ‘non-White’.

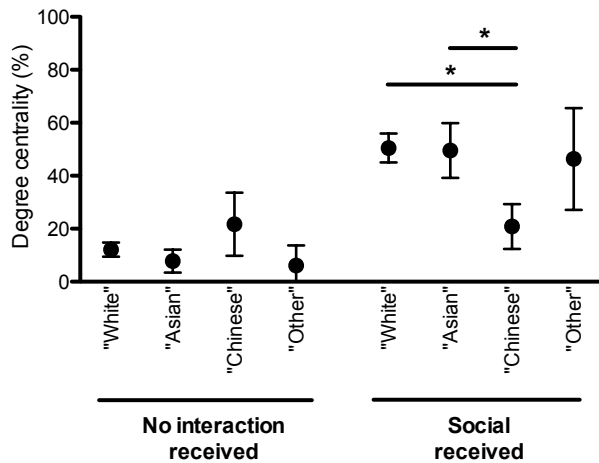


Figure 7.7: Comparison of students' 'no interaction' and social out-degree centrality by ethnic group.

Degree centrality scores were ascertained and participants were grouped according to three largest ethnic groups plus 'other'. Data are mean \pm 95% CI. * $p < 0.01$, via one-way ANOVA with post-hoc Scheffé's test. This shows 'Chinese' students are named by significantly fewer PBL peers in social interactions.

Why some of these students, specifically 'Chinese' students, do not interact with others in the same way with their PBL group is likely to be due to a number of factors. MMS has a large Malaysian cohort, many of whom self-classify as 'Chinese'; which may be having an impact as students' struggle with English as a second language and other cultural barriers that make interacting with their group more difficult. Interview participants who identified as 'Chinese' such as Susan, Daniel and Geoffrey can also help us to understand these patterns, as they described the tendency towards remaining quiet in PBL sessions, 'struggling to be proactive' and an observed tendency for Chinese students towards homophily. Although these students did not describe difficulty with the concept of group learning, which necessarily involves students' exposing themselves to criticism, they did describe difficulty 'competing' with those who were more adept at being heard in these sessions.

Initially it was quite difficult to actually express myself openly in a group of people, but as you go along you just realise that, you know, you just need to.

Susan (I5 S2: female, 'Chinese', Malaysian, self-rate 2, 1st quartile)

It is important to remember however, that 'Chinese' students were the highest achieving ethnic minority student group. This may also help to explain their isolation

from others in their PBL group, as they may be sub-consciously (or even strategically) interacting with each other rather than other ethnic minority students²¹.

In emotionally supportive interactions, shown to be linked to achievement, white and ethnic minority students identified a similar number of peers, yet ethnic minority students were named less often by others (16% of their peers named ethnic minority students, whereas 20% named white students, $p=0.1$). An explanation for this pattern may be that ethnic minority students are not as open to engaging in personal relationships, preferring to keep their personal and professional lives separate (as suggested in chapter 6). This may prevent a level of trust being reached that facilitates the sharing of problems and emotion. However, another possible explanation is that white students are unable to identify with EM students or feel uncomfortable about their lack of 'cultural competence'.

[Coming to Manchester] was quite a shock. My first PBL session there was like international students, erm and now I'd say I'm so much more aware of cultures but then like... oh it must make me sound so ignorant but I didn't know what, what cultures people were. It was like... but yet I don't think that stops me at all. I might be unaware but yet I still will talk to erm the people. I found it like quite shocking in the first lecture how many people were like, you know, wearing headdresses and all that type of__ which is to do with their culture and I, I understand that now but then I didn't.

Nadine (18 S2: female, white, UK-born, self-rate 3, 2nd quartile)

This is problematic, as these types of relationships also facilitate ability to discuss difficulties, gain support and share academic problems, all of which were identified as crucial for students' achievement.

Being in both an ethnic minority (i.e. non-white) and a numerical minority in medical school (i.e. being Afro-Caribbean, a group from which less than 10 students per year are from) may have a compounding negative effect on students' experiences. For example, 'Black' students were a visible minority within this medical school (as in UK medical education more widely); with this group remaining conspicuously absent despite efforts to widen participation. Julie and Olivia, two of the three 'Black' students I interviewed in this study indicated difficulties interacting with their peers.

21 As I'll show later, white students are much more likely to interact only with other white individuals, therefore 'Chinese' students may be faced with the choice between interacting with other ethnic minority students or each other.

Julie had direct experience of racial harassment and described the subsequent effect that this had on her friendship formation with other medics.

I had a bit of a disagreement with one of the other girls who went and reported me to the consultant, which is fine but it's just the way she did it. She did it publicly, instead of speaking to the consultant on a one-to-one basis. So she did it publicly and then said, 'oh, it's because she's African, she doesn't apologise, she's black'. And that hurt, a lot... But I didn't think it was because she was white that she did it, I just thought, is this is medicine, is this how medics are? Is this because she's feeling competitive, does she feel I'm a threat to her? So I was like, wow, if this is how medics act then maybe I should just be professional and just forget about forming friendship ties with medics and just step back... it might sound illogical but I just thought it was protective.

Julie (I30 S1: female, 'Black African', UK-born)

Negative experiences and social isolation may be why students grouped in the 'Other' ethnic category more frequently reported failing an exam. Although my data does not permit statistical analysis of smaller ethnic groups, from my qualitative work I would expect that their patterns of interaction and achievement would be different from other students, something future work must consider.

7.4.2 'We don't drink'

Religion was a large part of many students' cultural practices and strongly influenced the ways in which they interacted with peers. Although faith helped students such as Susan and Julie to form friendships and gain support, it was also a factor in social divisions and isolation from peers and the wider medical student culture, as many activities involved alcohol. For Muslim students, and several Christian students, drinking alcohol was undesirable or not permitted. Many students described medical school as a place where people 'work hard and play hard', with drinking alcohol being a central part of this. This excluded many people, most obviously those whose religious or cultural background precluded drinking alcohol.

The socialising outside, some of that's kind of drinking related so it will be a lot of the Muslim girls just aren't going to go out to most of the places most of the white students will go out to, erm and a lot of the kind of drinking culture like when you're in the first or second year and you go to the beginning of the year curry and all that kind of stuff and they're dancing on

the tables downing pints of vodka by the time you've had your poppadom and you're thinking, right yeah. For the non-drinking members of the medical school__

Jasper (I9 S2: male, white, UK-born, self-rate 3, 3rd quartile)

Many of these early para-institutional activities (those organised by the students but sanctioned by the medical school through the publicising of events) involved alcohol. This was something several students saw as problematic, particularly because many friendships were formed during the first few weeks, a critical time for students to interact in common activities.

I know a lot of people get upset and say that there's not enough to sort of, cause, help cohesion I think the word is and make us interact more. But probably because a lot of the social events that medics are involved in involve alcohol, which stops a lot of the Muslim or non-drinkers getting involved... I think after the first couple of weeks if people feel that they can't go to any event they'll say no to everything.

Farid (I31 S1: male, 'Middle Eastern', UK-born)

There was a clear breakdown in communication between non-drinking students and their peers, with Muslim students (such as Luqman) avoiding the topic to avoid offending their counterparts. In doing so, they caused inadvertent offence as their actions are interpreted as not wanting to join in social events²².

I choose not to drink and I choose not to associate with it in any way. If there's a ceremony with alcohol in it, even though I'm not drinking, it's still not right. Most of my friends locally here they invite us to the pub and stuff. No you don't need to drink, just order a coke, and stuff but that's not the problem. We don't want to say__ To be honest with you we don't want to say that we don't want to be anywhere near the drinks, the alcoholic drinks, but we thought that probably would sort of insult, make them feel bad__ So we don't really say that. We just say, we don't drink but they're quite adamant in wanting us to join them in the club. That's quite a pity.

Luqman (I6 S2: male, 'Malay', Malaysian, self-rate 3, 4th quartile)

²² See Adam's comments later in this chapter about his failed attempts to include Malaysian students in social activities.

Despite desire from both groups to interact more, social activities were divided up into those involving alcohol and those that did not. This was of particular relevance for Muslim students, whose religious practices directly contradicted the drinking culture of medical school (and medicine more widely, as many medical communities meet, bond and make decisions around alcohol). Many relationships formed in the initial few weeks, when social events were the most concentrated and many students were away from home for the first time. The fact that non-drinking students are excluded from many of these activities has an important and lasting effect. This was reflected in Muslim students' interactions with their PBL group peers; they named and were named by at least 10% fewer peers on average in social interactions (Figure 7.8).

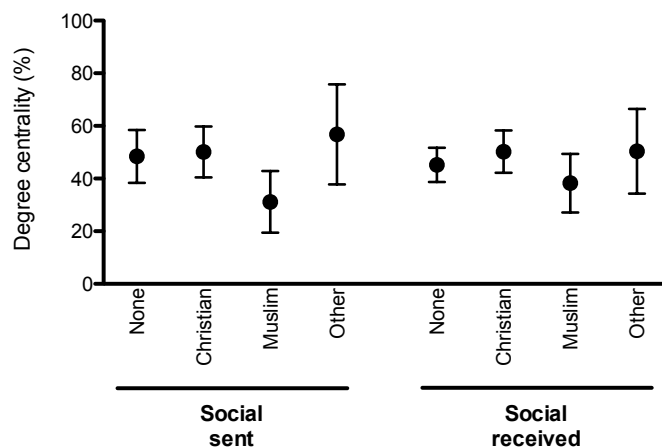


Figure 7.8: Comparison of students' social degree centrality by religious group. Degree centrality scores were calculated from questionnaire data. Participants were grouped according to religious beliefs. Data are mean \pm 95% CI.

As already discussed, lower interaction in social activities may have encouraged Muslim students to interact with their PBL group in study activities. Muslim students had a higher mean score than their peers (naming 57% of their PBL group, compared to 45%-49% by students with other beliefs); however, this pattern was not reciprocated when examining the ties Muslim students received from others, as they were mentioned with the same frequency as students with other beliefs. This could suggest that Muslim students define study interactions differently. Parallels may be drawn with fourth quartile students, who also named more peers in study interactions but were named less frequently by others. It is possible that both Muslim students and lower achievers are not engaging in the level of activity other students

define as studying; however, these groups are likely to be unaware of this, as they clearly perceive that they interact with their PBL peers. Lacking a reflexive awareness of the difference in their interactions compared to other students means that Muslim and lower achieving students are unlikely to change their behaviours. Another explanation for the observed difference between study ties sent and received by Muslim students is the social pressure hypothesis introduced earlier. In order to avoid leaving out PBL peers they did not interact with in other ways, Muslim students may be naming their peers in study related activities. Unable to name peers in social interactions (often involving alcohol), study interaction may be these students' catch-all category.

These different ways of interacting may help to explain the link between religion and academic performance, as a trend emerged for Muslim students to be more commonly placed in the lowest quartile, and least commonly placed in the highest quartile (Figure 7.9, $p=0.06$).

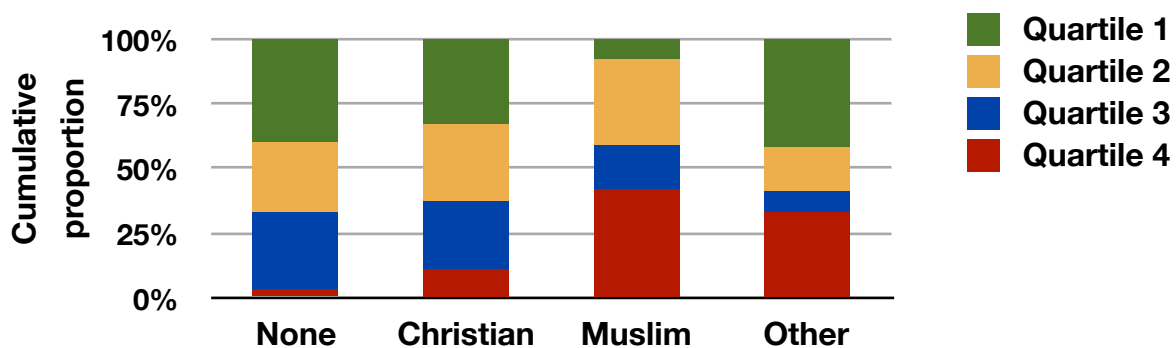


Figure 7.9: Comparison of students' quartile achievement by religious group.

Achievement by quartile is presented as a proportion of all students in each religious group, coloured by quartile.

However, the fact that 'Other' religious groups are also more frequently in the lowest quartile compared to Christian students and those with no religious beliefs suggests there are other factors at play disadvantaging students learning and achievement. I will now go on to consider the effect gender had on students' interactions and achievement.

7.4.3 Gender

The literature suggests gender is an important factor in achievement and experience more generally. It is therefore important to investigate the impact it has on students' social networks. As in other published data, male students in this study were more

likely to have achieved less well and to have failed an exam. With regard to interaction with PBL peers, male and female students had different patterns of interaction. The table below compares male students to female students across the other key network measures.

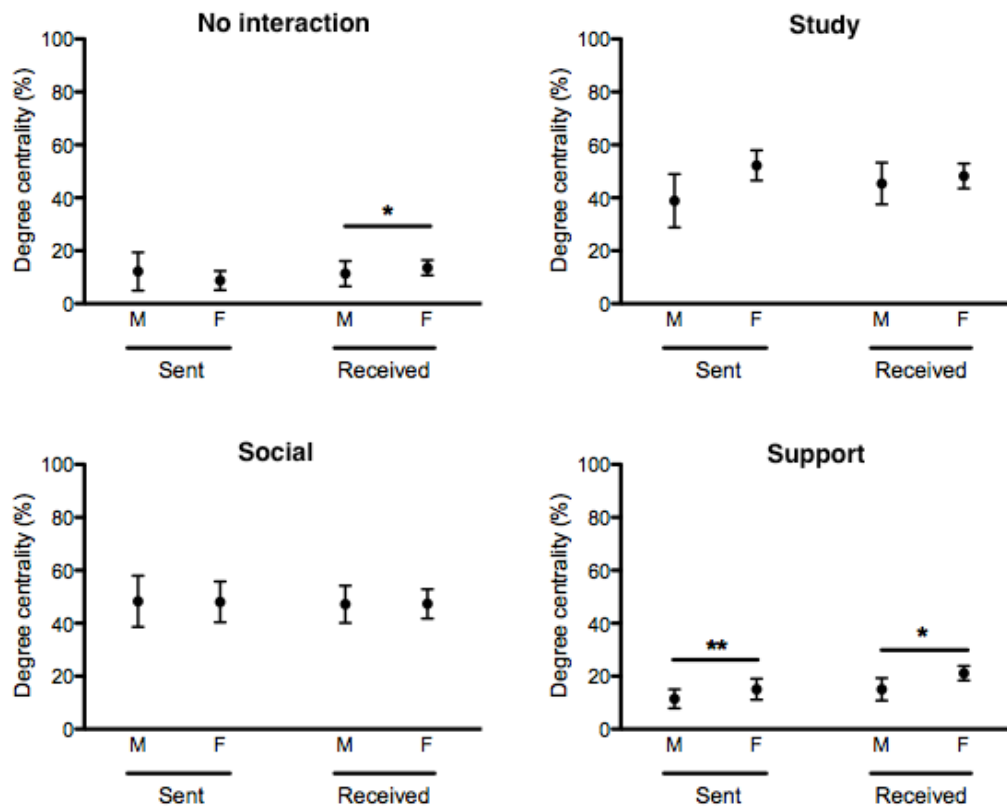


Figure 7.10: Comparison of students' degree centrality across all interaction by gender. Degree centrality scores were calculated from questionnaire data and participants were grouped according to gender, male (M) and female (F). Data are mean \pm 95% CI. * $p < 0.01$, ** $p < 0.001$ (t-test)

Figure 7.10 shows that male students more frequently name others in their PBL group as individuals with whom they have no interaction outside PBL sessions. This may reflect broader gender differences, as studies have shown that women spend more energy on cultivating and maintaining networks (Burt 1998). This is also likely to explain the significant difference between students' in-degree centrality scores with regard to no interaction. Female students are named by others significantly more often as individuals with whom they have no interaction outside formal sessions. As these groups change approximately every 14 weeks during term time, some male

students (like Owen below) may not wish to put in the effort to create friendships from these temporary groups.

Each kind of PBL group I've started again. I haven't known any of them. You know them just from face because in medicine you do but then I've formed friendships within that group when I've been in that group but then when I've moved on to the next you do make the same effort but it's nowhere near to the extent that when you're actually in the group with them.

Owen (I4 S2: male, white, UK-born, self-rate 3)

With regard to study related activities, female students more frequently name more of their PBL peers. This supports a strengthening hypothesis that being well connected in a PBL group for informal study related activities is important for academic success. This relationship is likely to be complex, as male students were overall only slightly less likely to be named by others in these types of activity (the network measure that was significantly related to failing an exam). It is possible that female students are conceptualising 'study' or 'learning' moments differently or more flexibly; however, this would require further work to confirm.

Finally, an analysis of students' emotionally supportive interactions revealed that male students were significantly less likely to name, or be named by others in their PBL group. Being able to provide this type of support may be beneficial to students as these relationships are likely to put them in a position where other types of resources are available in exchange for this support and may be a reason why male students do not achieve as highly as their female counterparts at medical school. Additionally, this may suggest that male students may be struggling to identify with others in their PBL group, and are not identified by others as capable of providing support.

Overall, male students appear to perceive themselves as less well connected to their PBL group, naming fewer others in study and supportive interactions. This may have important consequences, as male students as a group achieve less well than females and may be missing out on opportunities to exchange support or resources outside formal sessions. This finding may also indicate a trend towards medical education becoming more feminised, suggesting males are participating in their education in a different (less visible) way to their female counterparts.

7.5 Personal academic support networks

Participants were asked to provide information about up to ten people with whom they interacted in activities important for their academic success. These ‘personal academic support networks’, as I refer to them here, contained peers, seniors, family members and people that did not fit into any of these categories (such as friends, and partners). The composition and structure of these networks is perhaps more important than the PBL networks described earlier in this chapter, as these networks were the ones students formed and maintained independently and provided access to the resources described in the previous chapter. In the following section I discuss how the relationships, support and resources described as important can be demonstrated by looking at students academic support networks. This is examined in two broad themes, ‘social resources’ and ‘seniors’.

7.5.1 The flow of social resources

This section takes a network perspective on the flow of resources (tangible, informational and social) introduced in the previous chapter. Social network theory highlights size, interconnectedness and homophily as important; and it is these three concepts I use to analyse medical students’ networks, looking at their impact on achievement and how they may be mediated by a student’s ethnicity, gender and background.

7.5.2 Size and interconnectedness

Size of network did not appear to have a significant effect on students’ achievement, though students who had previously failed an exam had, on average, a slightly smaller personal academic support network (7.54 compared to 8.08 for those who had never failed, Figure 7.11).

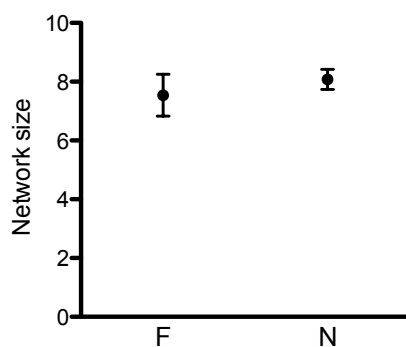


Figure 7.11: Comparison of students’ personal academic support network size by exam fail.

The network size of participants who had failed an exam were compared with those who had never failed. Data are mean \pm 95% CI, showing students who had never failed to have larger network size.

Having a highly interconnected network can be supportive of students' learning; it can create a microclimate within medical education in which a student feels supported and recognised (things students repeatedly felt were lacking from their experiences with the medical school). On the other hand, being closely knit can also prevent individuals from accessing information and resources outside their own group, something described as important for learning by participants. Despite these theories, students' achievement was not affected by the overall density of their network. There were also no significant differences or trends with regard to demographic groups and density.

Structural elements of students' personal academic support networks did not appear to interact with either achievement or ethnicity, and did not significantly interact with other demographic variable. Having considered these factors, I now examine the impact of diversity within students' networks.

7.5.3 Homophily

Diverse networks are important as they benefitted members by providing them with access to different types of resources and support. Having a number of forms of expertise, experience and viewpoints could help groups to problem-solve and ensure creative disturbances that facilitate learning. This section examines diversity across ethnicity, religion and gender by measuring the homophily within students' personal academic support networks.

7.5.4 Ethnicity

In order to answer the research question posed at the very beginning of this thesis, it is important to return to the impact of ethnicity on social networks. Returning to students' personal academic support networks, there is clear evidence of clustering by ethnic group (Figure 7.12).

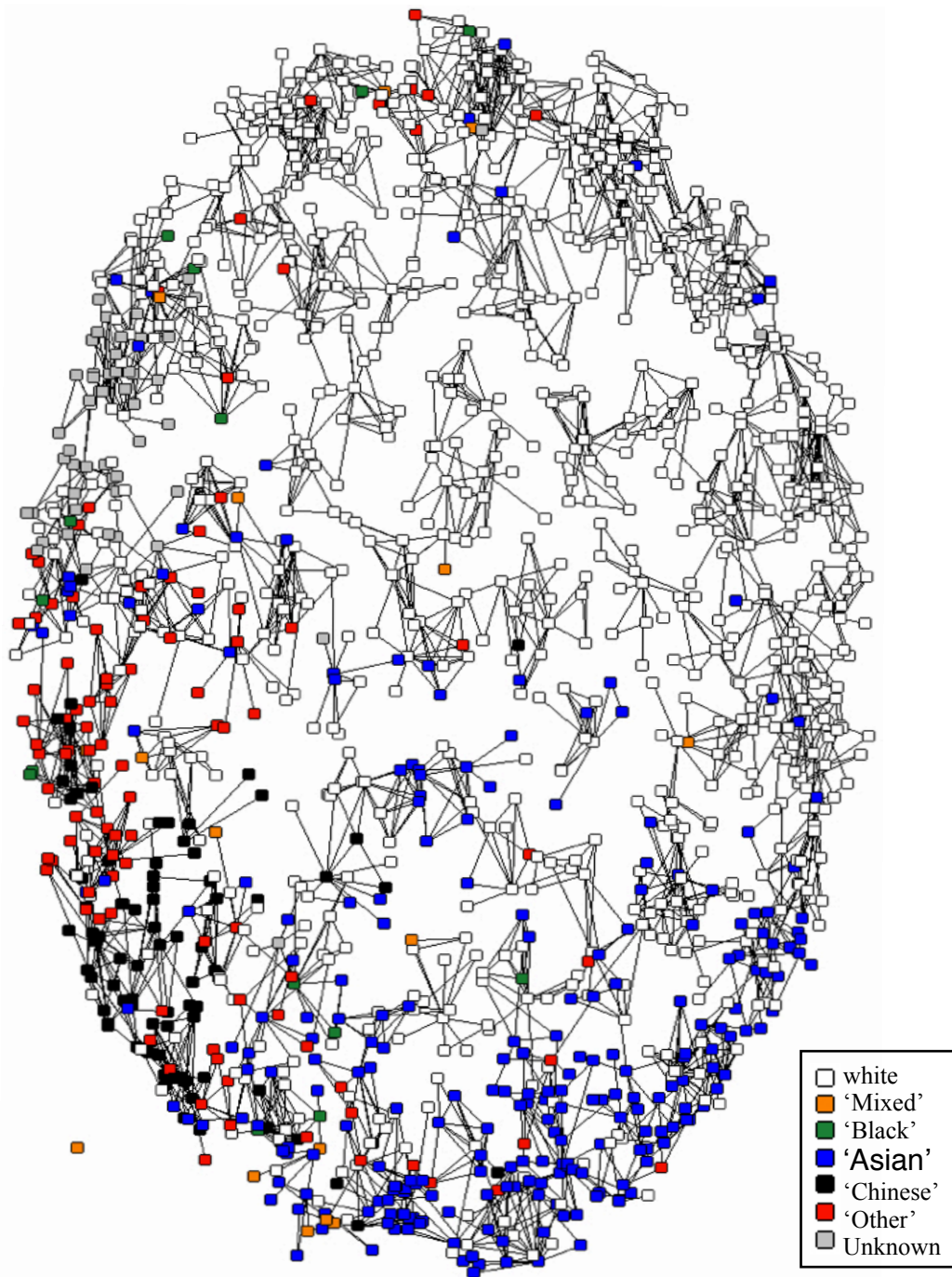


Figure 7.12: All participants' personal academic support networks, coloured by ethnicity. Individuals are coloured according to ethnic group. This sociogram indicates clustering by ethnicity, with white students more likely to interact with other whites.

Although students were reluctant to describe their own friendship groups as divided along ethnic lines, they did describe divisions in their own cohort and in medicine more broadly.

I noticed it in the first week really, but there was kind of like the white people and then the rest. So its not like I'm friends with a lot of Asians, I'm just friends with the guys that don't fit into that typical category.

Suleman (I22 S1: male, 'Asian', UK-born)

Suleman indicated non-white students were more likely to form a group, not through their own shared characteristics, but through their shared experience of being the 'other'. This is an observation not commonly heard in the medical education literature on ethnicity, which often focuses on 'ethnicity' and 'culture' as non-white. Suleman suggested that white students had a tendency to form groups together. This was reflected in students' individual network E-I scores²³, with the median score being -0.6, indicating that out of the ten people mentioned by students as important in their academic success, only two would be from a different ethnic background. white students were significantly more homophilous by ethnicity compared to all other ethnic groups (Figure 7.13, $p < 0.01$).

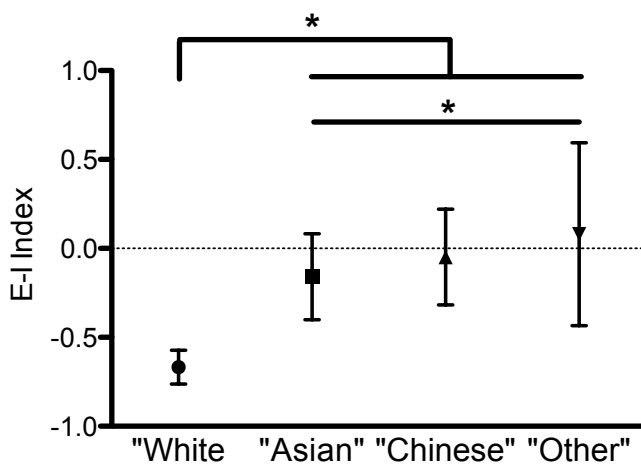


Figure 7.13: Comparison of ethnic homophily by ethnic group.

E-I index scores were ascertained and participants were grouped according to three largest ethnic groups plus 'other'. Data are mean \pm 95% confidence interval. * $p < 0.01$, via one-way ANOVA with post-hoc Scheffé test.

²³ E-I index scores range from -1 (homophilous: interacting only with others in the same group) to +1 (heterophilous: interacting only with others from a different group). For students who named 10 people, each person from a different group would add 0.2 from a starting point of -1.

In simple terms, white students were more likely to interact with fewer people from non-white backgrounds, supporting Suleman's earlier observation. Although, more homophily is expected among the majority group (as there are more people from that background with whom to interact) these figures indicate that white students interact with only one or two people from a different ethnic background. On the other hand, around half of the ten people ethnic minority students described as important for their academic success were from a different ethnic background. Returning to the median score I reported above, this strongly homophilous median score of the whole cohort is actually driven by white students' interactions: an important finding that challenges much of the popular discourse around 'integration', as students and staff I spoke with informally described ethnic minority students as forming homogenous groups.

I think there could be a lot more integration but there's just not. I don't know what it is. You know, you'll be in PBL and you finish your PBL and you say, 'Right, are you, you know, are you going to the bowling tonight? Are you coming down to the pub on Friday?' And it's like, 'No, no we're not'. And I think within our year group people kind of form their own little groups and do their own things. That's fine. I'm not going to make anybody integrate with the rest of the year group but I just think that it would be nice just to get to know them a bit better.

Adam (I7 S2: male, white, UK-born self-rate 1)

The medical school's social divisions by ethnicity were described as physically manifest, with certain groups sitting in certain places inside and outside of lectures.

We went to a lecture, run by one of the fifth years and on one side it was all of the Asian people and on the other side it was all of the Caucasian people, and I'm not kidding you, it was that clear cut. It was that clear cut. And it shouldn't be like that at all.

Geoffrey (I1 S2: male, 'Chinese', UK-born, self-rate 3)

It is important to state that ethnicity was not the only factor that modulated network formation and participation in medicine. The 'pre-med students' were another small group, who enter at an earlier point and were recognised within this cohort also occupying their own spaces.

By the time we started first year we had quite a strong group would always meet there, sit in same place in lecture theatre, go for lunch.

Kristina (I11 S2: female, white, European, self-rate 2, 1st quartile)

This said, non-white ethnicity was a topic several students discussed with regard to social groups. Several white participants described cliques of non-white students, including the ‘hijabi crew’, the ‘Malaysians’ and the ‘Asian medics’. Ethnic divides were particularly marked outside of formal teaching sessions, in social and extra-curricular activities. This was not necessarily because of students’ ethnic groups however, but more their cultural background, specifically, whether they engaged in drinking alcohol.

And then there was the Asian medics. Because a lot of the Muslim medics, I think most of them were based in either Hulme or Whitworth Park²⁴ in first year and they stayed together and they often socialised together. A lot of them went up to Preston together and they applied to the same hospital so that they could be together, because I guess for them they were all very similar. There was no way they were going to go out clubbing and drinking. And yeah, and like the Asians, they wanted to go to... Was it Opus²⁵ on a Thursday last year? It was like Asian invasion. So they always used to go to that and that was just their friendship group, and stuff.

Owen (I14 S2: male, white, UK-born, self-rate 3)

When discussing ethnicity, students were always keen to point out that within ‘ethnic groups’ there was just as much variation as between them. For them, culture was a much better way to explain why some people tended to interact with each other more easily.

[My friendship group]’s not definitely based on specifically Nigerian ethnicity but it’s a cultural thing because our cultural backgrounds are quite similar... I find that we all really work hard. We strive for excellence__ and I’m not saying that people in other cultural backgrounds don’t, it’s just that that’s what I’ve found with the girls and we all click on that side. We all have very, very, very strict upbringings so we can get together and laugh about things like that! So that was quite interesting. And from a Christian

24 University halls of accommodation

25 A nightclub in Manchester city centre

perspective as well, we're all Christians and that would be my number one focus in terms of forming friendships.

Julie (I30 S1: female, 'Black African', UK-born)

This description was very similar to Graham's description of his friendship group, again formed around a 'strict upbringing'. Although initially his personal academic support network looked highly unusual because of its heterophilous nature by gender, ethnicity and religion, understanding it in terms of culture made much more sense. His network is presented in Figure 7.14 below.

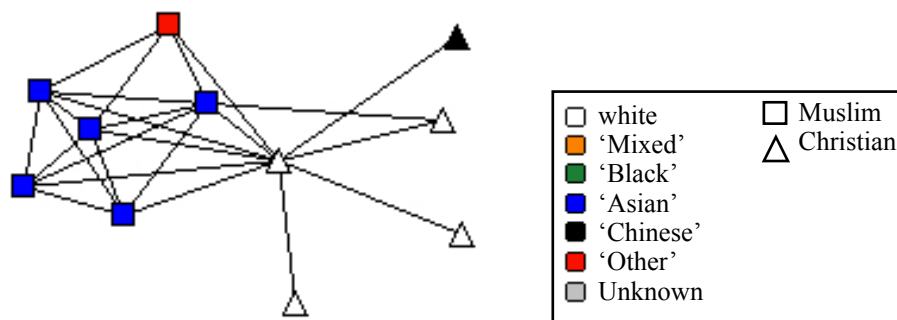


Figure 7.14: Graham's personal academic support network sociogram, coloured by ethnicity and shaped by religion

Graham is represented by the central white triangle linking all others. Individuals are coloured according to ethnic group and shaped by religion. The group of 'Asian' muslims were all female students he met through his initial PBL group. They revised with in an informal group.

7.5.5 Religion

Religious beliefs were mentioned by many students throughout this study, and something that I asked all survey participants about. For statistical analysis, the wide range of religious beliefs students described were categorised as 'Christian', Muslim' and 'Other'²⁶. These groups were then compared across different network homophily measures, indicated in Figure 7.15 overleaf.

²⁶ These data must be interpreted with caution, as with 'ethnicity' there is an obvious danger in considering members of any one religious group to share the same practices.

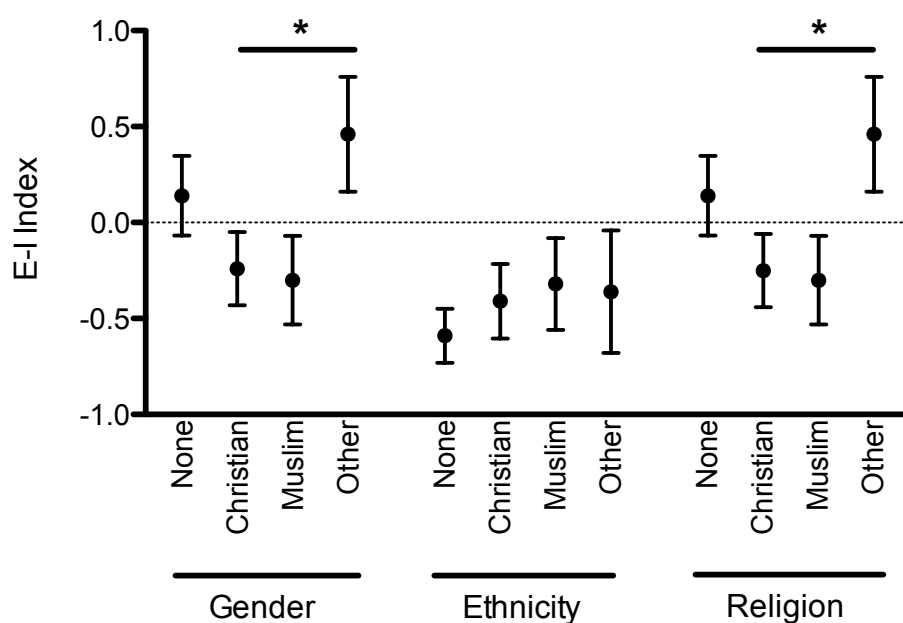


Figure 7.15: Comparison of gender, ethnic and religious homophily by religious beliefs.

E-I scores were ascertained and participants were grouped according to three largest religious belief groups plus 'other'. Data are mean \pm 95% CI. * $p < 0.01$, via one-way ANOVA with post-hoc Scheffé test.

The data indicated that students who identified as Christian were more homophilous by gender and religion than those in the None ($p = 0.05$) and Other ($p = 0.01$) categories. Muslim students were significantly more homophilous by gender and religion than Other faith students ($p = 0.01$). This suggests that members of these faiths are more likely to interact with others of the same gender or religion, further impacting on the visibility of some groups to other students.

There's a group of like probably about fourteen or fifteen and I think they're all boys but they're all like Muslim, you know, like...they all sat together in the common room. They had their place to sit in the lecture theatre like, you know, that was known as theirs. You wouldn't go near there. Not you wouldn't go near there but you knew they sat there.

Nadine (18 S2: female, white, UK-born, self-rate 3, 2nd quartile)

This description from Nadine is another reminder of the discourse around integration being focused on the ethnic minority 'other'. Despite the fact that minority students' 'ownership' of small enclaves within medicine could also be read as white students having an entitlement to the rest, something Geoffrey made very

clear, referring on several occasions to ‘White British’ students who saw the hospital as ‘their place’. These spatial divisions served to reinforce social divisions, making it less likely that relationships would be formed and obstructing the flow of information and resources between groups. The sociogram below (Figure 7.16) depicts this clustering using colours to indicate these four groups organised by religious beliefs.

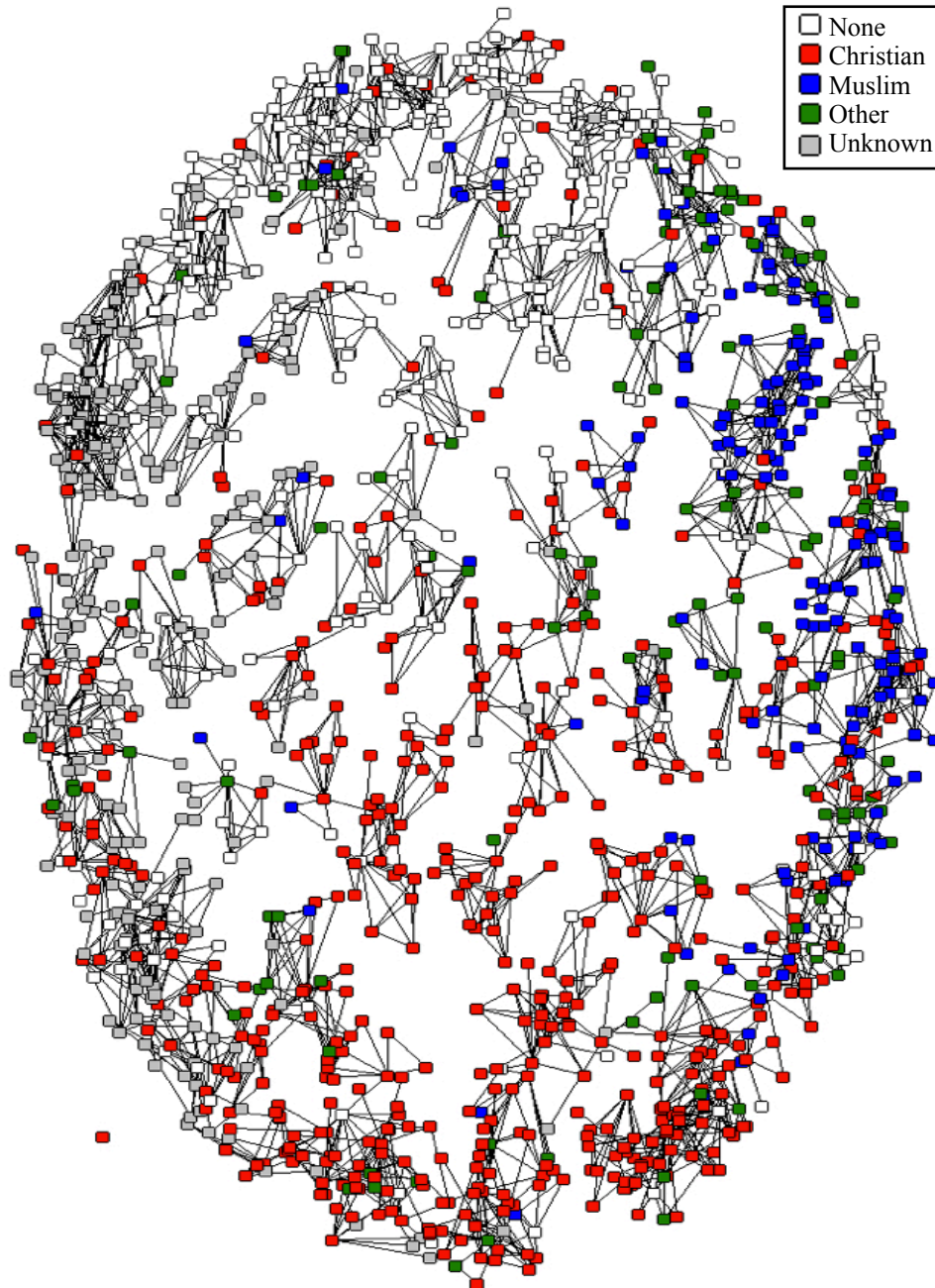


Figure 7.16: All participants’ personal academic support networks, coloured by religious beliefs

Individuals are coloured according to three largest religious belief groups plus ‘other’. This demonstrates clustering by religious beliefs.

7.5.6 Gender

Supporting Nadine's earlier observation, ethnic minority students were more homophilous by gender than white students, though the difference in means was small. However, upon closer analysis there were no significant links between ethnic groups and homophily by gender, instead this was driven by students' religious beliefs considered previously.

This reflects the narratives of students such as Nasreen, Farid, Julie, who described a difference in cultural practices, specifically around romantic relationships, where to avoid engaging in practices that would be culturally frowned upon (from being 'too friendly' with members of the opposite sex to engaging in sex before marriage), friendship groups tended to be single sex.

7.5.7 Homophily and achievement

Homophily by ethnicity appeared to be positively related to achievement, with students in the higher quartiles being more homophilous by ethnicity, a reflection of the fact that white students, who are the most homophilous by ethnicity are also the highest achieving students. For gender and religious homophily, students who achieve least well in exams are less diverse than their lower achieving peers (Figure 7.17). However, upon further inspection the link between these patterns of homophily and achievement are not clear cut, as in fact although quartile one students are much more diverse, students in the second quartiles were actually less diverse than their lowest quartile counterparts.

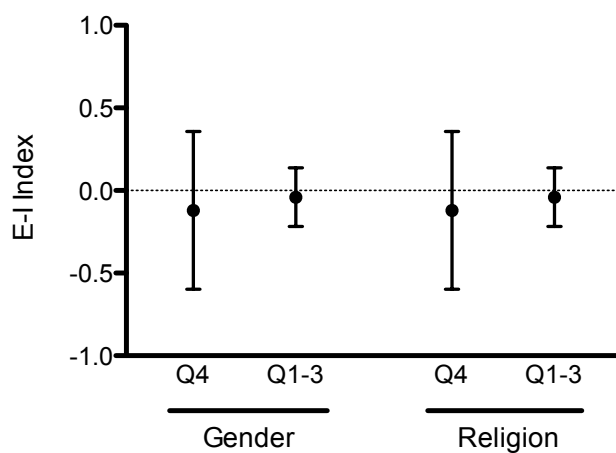


Figure 7.17: Comparison of gender and religious homophily by quartile.

E-I scores was ascertained and participants were grouped according to their position in quartile 4. Data are mean \pm 95% CI.

This section considered the size, interconnectedness and homophily of students' personal academic support networks and how these relate to achievement. Other than some weak trends, few patterns appeared to link these network factors to exam success. This is an important finding in itself, suggesting that network composition does not have a significant impact on achievement. In straightforward terms, my data suggest that it may not be detrimental for students to have a homogenous network by ethnicity, religion or gender. However, as I will go on to show in the next section, diversity by age did appear to have a significant impact on students' success.

7.6 Seniors

In previous chapters, I established the importance of seniors in students' trajectories and achievement; as parents, teachers, role models and gatekeepers. Whilst this was a known and published fact, I have demonstrated the processes by which seniors can provide emotional, informational and social resources that facilitate learning, and how they are crucial in 'opening doors' to participation. This section considers whether students' networks contain seniors, examining how factors such as ethnicity and achievement relate to these network features. I identify 'seniors' in three ways from the survey data; firstly by age bracket, secondly by non-student role, and thirdly by the label 'tutor or clinician'.

7.6.1 Demographic and interaction patterns

It is clear that students mostly interact in activities important for their academic success with others in the same age bracket as them (Table 7.1. 98% participants were under 25).

Age	n	%
<25	1040	74%
25-35	88	6%
36-55	185	13%
>55	67	5%
Missing	22	2%

Table 7.1: Alters in students personal academic support network by age (n, %)

As anticipated, there was a significant relationship between age and role ($p < 0.01$). The majority of individuals under 25 were also students, whilst the majority of those over 25 were tutors, clinicians and family members, as depicted in Figure 7.18 overleaf.

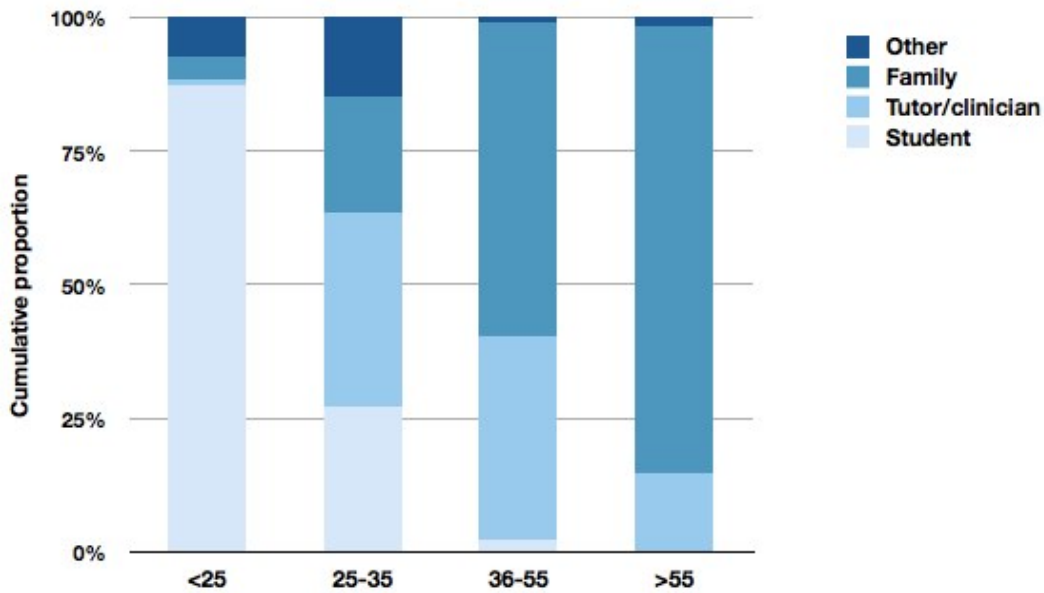


Figure 7.18: Proportion of alter roles by age group (%).

Chart shows the proportion of each role within an age group. Colours indicate different roles.

Patterns of interaction also varied depending on age, with students significantly more likely to interact with peers on a daily basis, and seniors on a less frequent basis ($p \leq 0.01$). Very few people were named in interactions occurring less than once a month, suggesting that frequency is an important part of activities important for success (Figure 7.19).

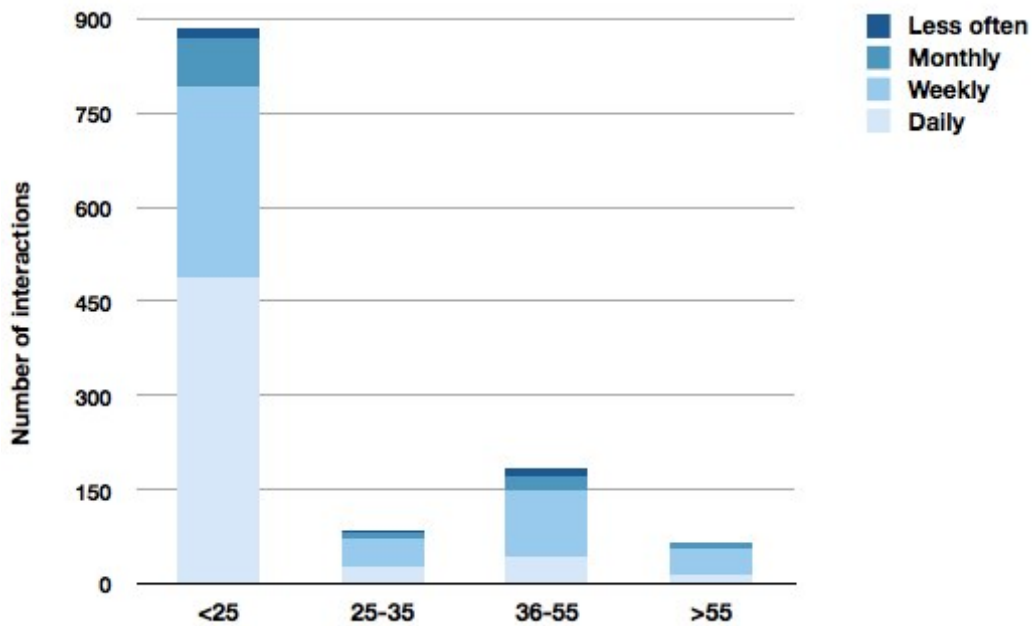


Figure 7.19: Frequency of interaction with alters by age group (n).

Chart shows the number of alters named in each age group, with frequency of interaction shown as a proportion of each group.

7.6.2 Seniors and achievement

Whilst there were no statistically significant links between the number of tutors or clinicians, family members or others students named in supportive interactions, students in the lower quartiles were much less likely to have academic support networks containing at least one tutor (Figure 7.20).

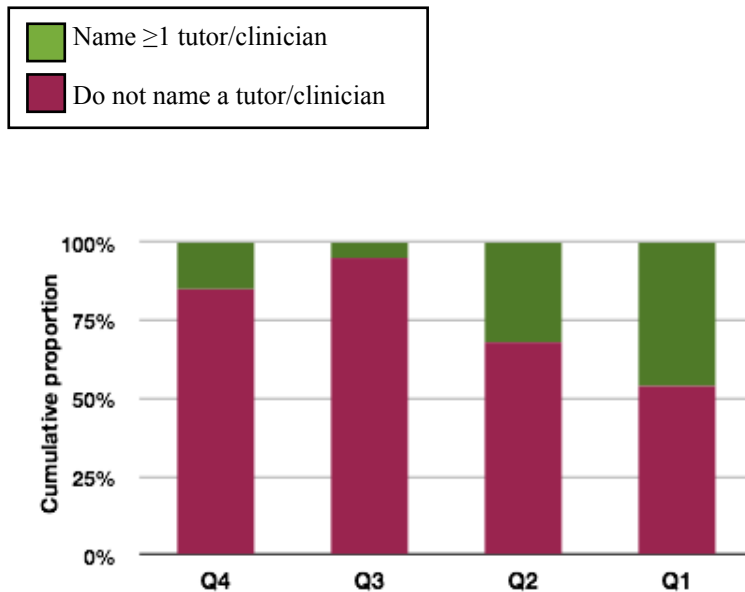


Figure 7.20: Proportion of participants naming at least one clinician or tutor in their personal academic support networks (n, %).

One reason why students in quartile 4 may have more tutors in their network than their peers in quartile 3 is that they have been identified as struggling and so have come into contact with more support staff. When exploring students' networks by age and role, those in quartile four are different when compared with those of students in quartile one, demonstrating that the latter have access to more seniors in their network. In Figures 7.21 and 7.22 overleaf, each member of the network is represented as a shape according to their relationship to the participant. Students who achieve least well have a more homogenous network by age and role; they are less likely to draw upon family members, tutors and other non-students for academic support.

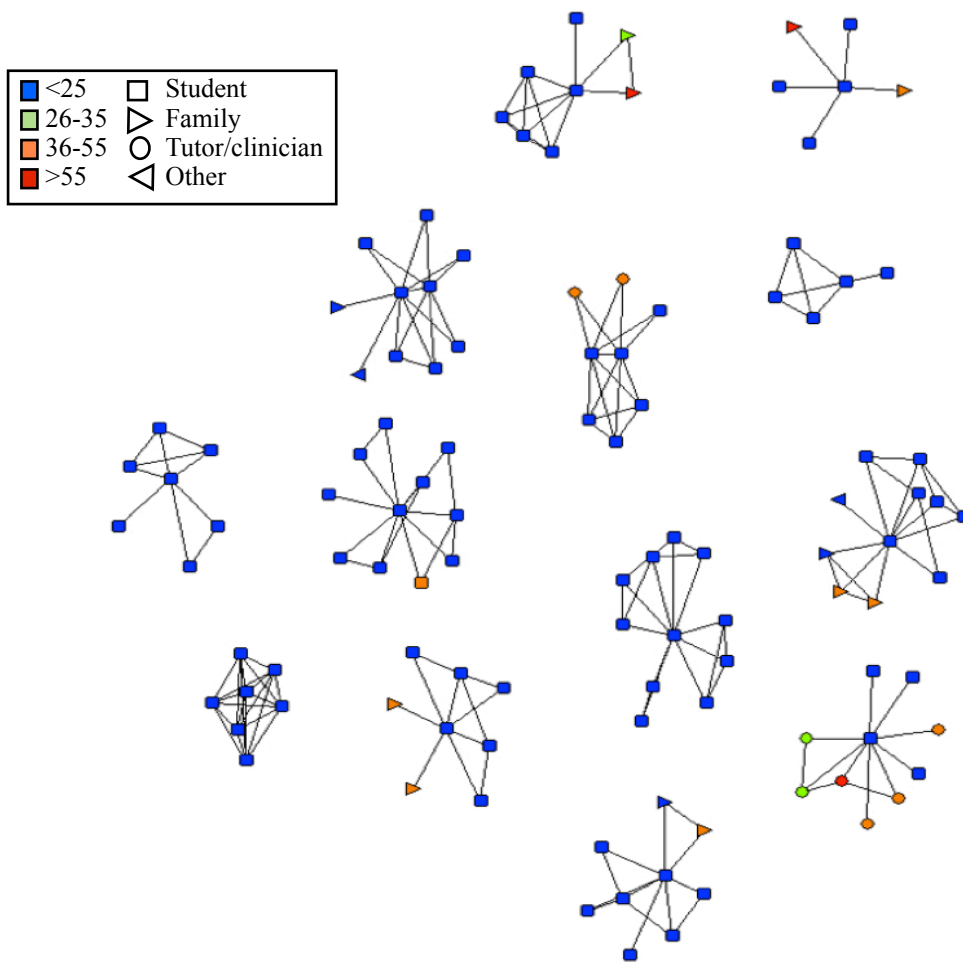


Figure 7.21: 4th Quartile students' personal academic support networks by age and role
Individuals are coloured according to age and shaped by role.

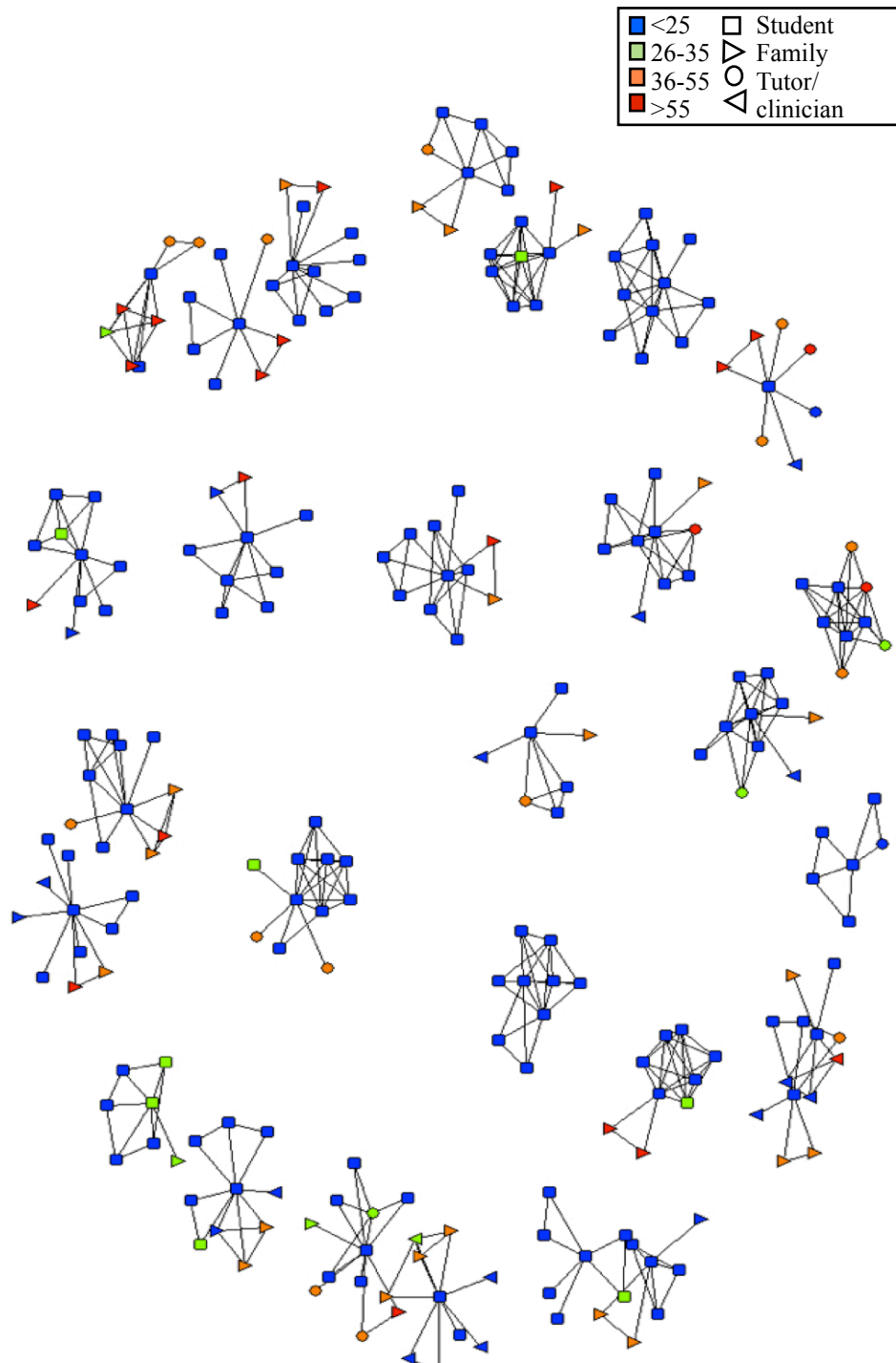


Figure 7.22: 1st Quartile students' personal academic support networks by age and role. Individuals are coloured according to age and shaped by role.

Beyond descriptive analysis, certain patterns of network features appeared to be linked to achievement. Specifically, the level of homophily (how far students interacted with others with shared characteristics) appeared to be important. Two patterns emerged, with students in the fourth quartile having a lower E-I index score by role and age, indicated in Figure 7.23.

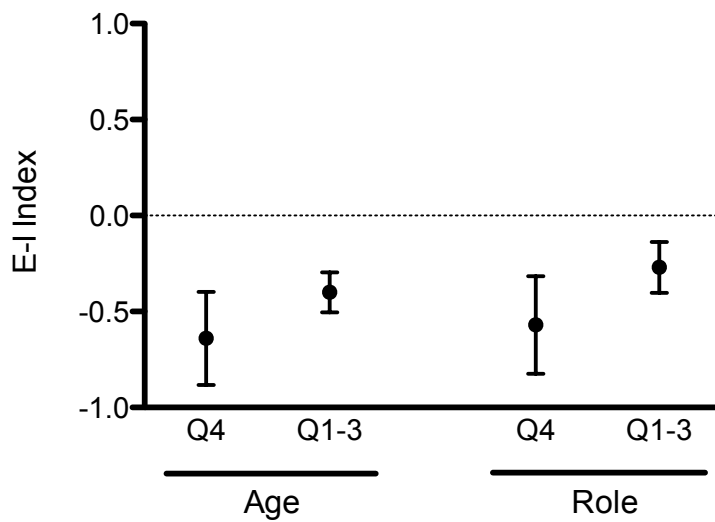


Figure 7.23: Age and role homophily by quartile.

E-I index scores were ascertained and participants were grouped according to location in fourth quartile. Data are means with 95% confidence interval.

This demonstrates that participants in the fourth quartile are less likely to interact with non-students in activities important for their academic success, making them more likely to be missing out on much of the support and resources available from senior medics and other gatekeepers to participation mentioned by students throughout the interviews. Students in the fourth quartile had a mean E-I index of -0.57, a score that would indicate only around two of the ten people they mentioned would be non-students²⁷. Students in quartiles one to three had a mean E-I index of -0.27, meaning they interacted with around three or four non-students for academic support. Students in the fourth quartile were more likely to have a homophilous network by age, meaning they were more likely to be interacting with others in their age group (for most students this was ‘under 25’ years old).

As described earlier, there was a strong relationship between students’ self-reported achievement and the academic quartiles they were placed in by the medical school at the end of fourth year according to their exam achievement. For this reason, it was unsurprising that other measures of achievement also related to students network structure with regard to homophily by age and role. Students who self-rated as

²⁷ E-I index scores range from -1 (homophilous: interacting only with others in the same group) to +1 (heterophilous: interacting only with others from a different group). For students who named 10 people, each person from a different group would add 0.2 from a starting point of -1.

‘Mostly satisfactory’ or ‘Mostly low passes’ had significantly more homophilous networks than their peers; they were far less likely to name others of a different age in their personal academic support networks.

Repeating the patterns identified above, lower achieving students were more likely to interact with others their own age (Figure 7.24), having an E-I index mean of -0.51 compared to their peers who rated as higher achievers who had an E-I index mean of -0.29.

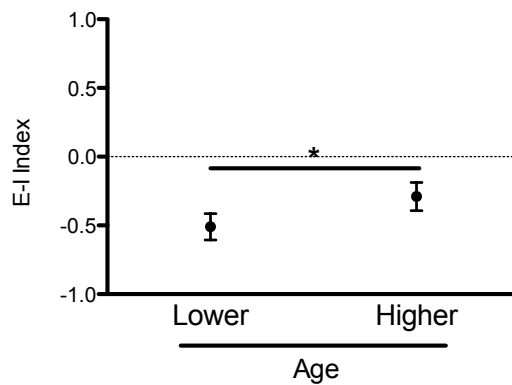


Figure 7.24: Age homophily by achievement.

E-I index scores were calculated from questionnaire data, and participants were grouped according to self-rated achievement in the lower two categories. Data are means with 95% CI. * $p < 0.01$ (t-test)

Using another measure of underachievement, students who had previously failed an exam also more frequently had a more homophilous network by age (Figure 7.25).

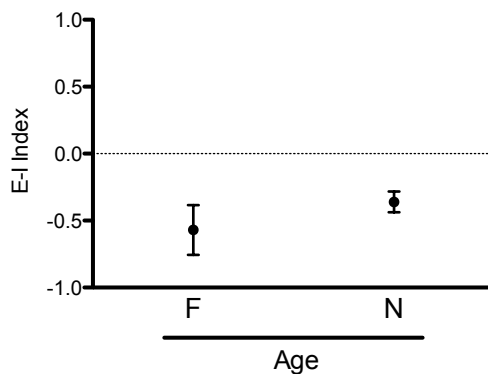


Figure 7.25: Age homophily by previous fail.

E-I index scores were ascertained and participants were grouped according to having previously failed an exam. Data are means with 95% confidence interval.

This again suggests a lack of interaction with the senior colleagues and family members important in supporting students to participate in the formal and hidden curriculum. Although this difference in means between these groups equates to having perhaps three seniors as opposed to two, this stronger tendency towards interaction with others of the same age supports my earlier hypothesis that a lack of access to seniors who can act as gatekeepers and patrons to students is strongly related to academic underachievement. As students such as Neil and Owen described in the last chapter, having just one senior (be that a junior house officer or a consultant) who could open up opportunities for participation was crucial to their learning, therefore having an additional, more competent person to turn to for support could make a huge difference. This is further supported by the fact that fewer students who failed an exam named a tutor or clinician in their network when compared with students who had never failed (22% compared to 34% students that had never failed). Across all measures of academic achievement measured in this study, there is a significant relationship between having fewer seniors within a students' academic support network and lower achievement.

Having considered the impact of seniors, age and role homophily on achievement, I would now like to turn to examine the factors that appear to shape networks in these ways. In the next section, I will address the question of how ethnicity, religion, gender and type of school modulate interaction with seniors.

7.7 Demographic factors related to interaction with seniors

The following section outlines the demographic factors that related to interactions with seniors, focusing on ethnicity, religion, gender and other background data elicited from the survey.

7.7.1 Ethnicity

Relating specifically to tutors and clinicians, fewer non-white students named at least one teacher in their network (24% compared to 37% white students). With regard to students' personal academic support networks, homophily according to age and was also related to a participant's ethnic group.

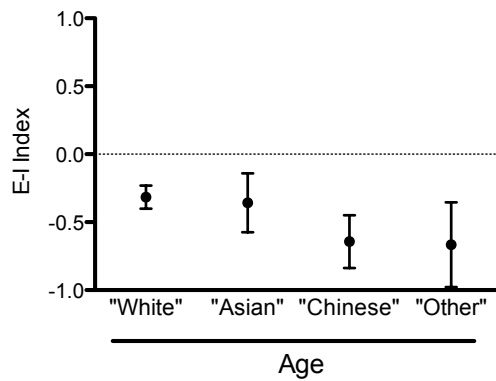


Figure 7.26: Age homophily by ethnic group.

E-I index scores were ascertained and participants were grouped according to religious beliefs. Data are means with 95% confidence interval.

With regard to the homophily of students' personal academic support networks by age, white and 'Asian' had similar mean scores, with 'Chinese' and 'Other' students having lower scores. In the case of 'Other' students, this was a statistically significant difference compared to white and 'Asian' students. In real terms, this suggests that whilst white and 'Asian' students could have around 3 or 4 seniors in their network of 10, students from an 'Other' ethnic background have only one. This has serious implications for students from backgrounds other than white or 'Asian', who may be missing out on the support and resources seniors offer, making it more difficult for them to access moments of participation that facilitate an inbound trajectory and achievement. These findings may be reflecting the difficulties that international students, such as Luan, and students first in their family to attend University, such as Nasreen, have in communicating with family members or other seniors in their social network either due to time differences (as in Luan's case) or a lack of shared understanding.

Below are three examples of students' personal academic support networks which closely match the mean E-I scores above. These demonstrate the difference in both age (colour) and role (shape). In her interview, Kate described benefitting from the fact that her dad was a GP, and it is likely he is reflected in her network below. Luqman on the other hand described finding communicating with senior colleagues difficult, something also reflected in his network, which is comprised solely of other students.

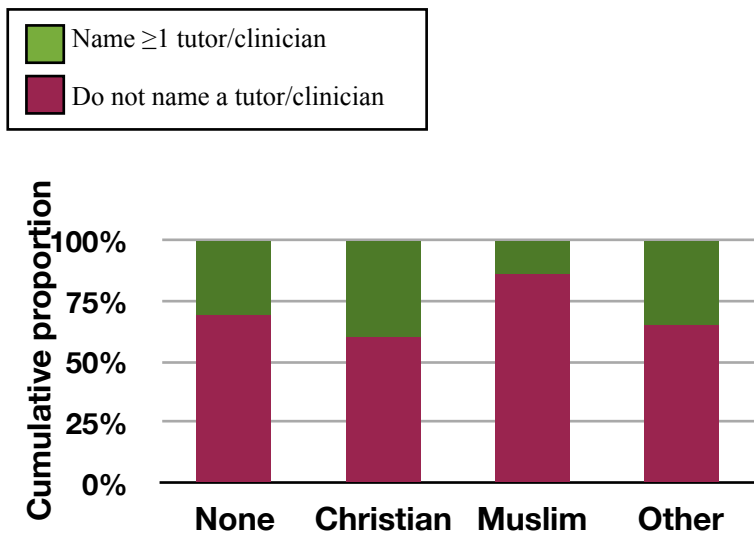


Figure 7.28: Proportion of students in each religious group naming at least one tutor or clinician (%).

No other trends or statistically significant findings were observed with regard to ethnicity and interaction with seniors (although it is important to note that all these factors do intersect); I now examine how gender impacts on these relationships.

7.7.3 Gender

Gender was significantly related to students' interaction with seniors. Male students were significantly less likely to have seniors and non-students in their network, with female students having, on average, the equivalent of one more senior to draw upon in a personal academic support network of ten people (Figure 7.29). As before, this extra person may be vital in helping students grasp the overt and hidden curricula of this medical school, in turn supporting academic achievement.



Figure 7.29: Age and role homophily by gender.

E-I scores were ascertained and participants were grouped according to gender (Male, M; Female, F). Data are mean \pm 95% confidence interval.

A final, and important note on gender and interaction with seniors is that tutors or clinicians mentioned by students were significantly more likely to be male ($p < 0.01$). This is perhaps not a surprising finding, as the medical profession at senior levelling continues to be male dominated (Babaria *et al.* 2011). This may have implications for role modelling, particularly for women (Bickel 1991; Rose *et al.* 2005; Lempp and Seale 2006), who may be achieve well in medical student exams, but may face later difficulties in the workplace.

7.7.4 Schooling, extra-curricular activities and other commitments

The survey phase also elicited data on students' previous schooling (private or state), extra curricular activities and commitments (such as caring or working). None of these demographic factors had any significant links with homophily by age or role. In contrast with work on cultural capital that suggests learners from disadvantaged areas may struggle to form relationships with staff in higher education (Noble and Davies 2009), students from deprived wards were as likely to name a clinician in their academic support network as other students.

7.8 Summary

In this chapter I have shown that ethnicity, culture and other demographic factors are linked to different network structures, considering how this helps to explain patterns of underachievement amongst ethnic minority students. I described students' *PBL peers and achievement*, showing that differences in interaction were evident by ethnicity, but that differences in achievement were better predicted by looking at whether an individual was named by their PBL group in study-related and support-related activities. The chapter then moved on to look at students' *personal academic support networks*. Here, patterns of homophily by ethnicity and religion were evident, yet this was driven by white students and was positively related to achievement. Naming seniors and staff in personal academic support networks was also positively linked to achievement and this chapter considered the demographic factors that mediated these types of interaction.

In the course of this chapter I have built an argument based on the power of networks to shape achievement, and the ways in which belonging to a certain ethnic, gender or religious group can affect these networks. The conclusions drawn in this chapter are that students who achieve less well do not have the same network structures as those who do, often lacking the same level of interactions around study- and support related activities in their PBL groups and having fewer seniors

and non-students in their personal academic support networks. This supports the theory in the previous chapters around the importance of relationships to learning and achievement, as it is now possible to see that a lack of these relationships is significantly related to lower achievement.

This study shows that ethnic minority students are more likely to fail exams, self-rate lower and achieve less well academically compared to their white peers; however, it also shows that, in several ways, ethnic minority students are less likely to socialise with others in their PBL group. Having established the importance of establishing personal relationships in order to facilitate professional learning, the tendency for ethnic minority students to keep their 'personal' and 'professional' lives separate may be hindering their academic and clinical training. However, previous chapters have indicated that for these students, their 'home' world may be at a much greater distance, figuratively speaking, from the worlds of 'medical education' and 'medicine'; keeping these worlds separate may be the only option.

Drawing upon this and the narrative data, we can see ethnic minority students are forming relationships in a different way, and may have less understanding about the relational nature of learning and achievement. It is possible that it is these network differences that are translating into academic underachievement, and that these are linked to cultural background. The presence of alcohol at many social events, particularly in the first few weeks when many friendships are formed, leaves non-drinking students to form separate groups around alternative activities. This may be an ongoing problem however, as new PBL groups, firms and later workplaces bond in similar ways.

The next chapter will draw the three results chapters together to build a coherent story of students' trajectories through medical education, explaining how shared and differing experiences can explain underachievement amongst ethnic minority students.

Chapter 8

Discussion and conclusions

8.1 Introduction

This chapter draws together the results from the study as a whole, considering them in the context of existing literature and practical implications. The chapter begins by considering the *key findings* from each of the research questions before going on to consider the *wider meaning* of these findings, focusing on the mechanisms by which different patterns of experience and achievement are created and maintained. The theoretical implications of this thesis are then considered, followed by a critical consideration of the *strengths and limitations*, finishing with a discussion of the *practical implications* and suggestions for *further research* in this area.

8.2 Key findings

This thesis addressed two research questions: firstly, how does ethnicity impact on medical school achievement? Secondly, how do social networks affect achievement? This is the first time the achievement gap has been investigated relationally, using qualitative, quantitative and social network analysis to understand students from within their wider networks of relationships. I have shown that relationships mediate learning and achievement and that many ethnic minority students' have a different patterns of relationship formation and social interaction.

In chapter five I found that medical students' learning was best conceptualised as a trajectory, as their past and present experiences, and the ways they imagined their futures, all directed how they participated in medical school. I found that ethnic minority students mentioned fewer experiences of participation and more frequently felt like outsiders in the worlds of 'medical school' and 'clinical practice'. In chapter six I discovered that students' relationships with others provided access to support and resources that facilitated students' progression and achievement. Particularly important were having a medical family that enabled students to identify as future doctors early, senior students and qualified healthcare professionals who could pass on their own implicit and explicit learning, and peers who could help students situate themselves in their cohort. In my final results chapter, chapter seven, I demonstrated how students' positioning within a network of relationships impacted upon their achievement, finding that students who achieved less well were isolated from their PBL group and were less likely to have any seniors in their broader support network.

I have described students' experiences on an individual, micro level and linked these to the bigger picture, macro patterns of underachievement amongst ethnic minority

groups. Through social network analysis, I was able to take a mid-level approach to understanding the processes by which advantage and disadvantage are created. This is in direct contrast to some theories of low performance that state underachievement can be explained using a ‘deficit model’, either cognitive or cultural (Klingner 2007), suggesting that ethnic minority students lack the capacity to achieve. Whilst my work may not be able to offer conclusive proof against these theories, it does pose a strong challenge. I have demonstrated that the playing field continues to advantage white students’ culture and that this impacts on relationship formation which is crucial for achievement. Given that ethnic minority students achieve equally well at A-level, it is fair to assume that they have a similar ability and potential to achieve once at medical school. Whilst a small achievement gap is evident between white and ethnic minority pupils prior to medical school, this does not explain the amount of variance amongst medical students (McManus 2008), strengthening the case for a medical education effect. The theory I have built here provides an explanation for the processes by which differential achievement occurs relationally. This in turn provides clear guidance for how to address the institutional inequalities within the cultures of medical schools and clinical workplaces, something cognitive deficit models are less able to deliver. In order to understand this more fully it is necessary to use and build upon literature and theory to explain the mechanism by which this occurs. This section therefore situates my findings within the key relevant literature and describes how this work adds to the current knowledge in the field.

8.3 Wider meaning

The sociocultural perspective of learning is highly pertinent to the medical education domain, due to the highly practical, apprenticeship nature of students’ training. From this perspective, participation is a prerequisite for learning. Students must engage in activities with others in order to find out ‘what counts’ and direct their future engagement towards these behaviours. Wenger describes the importance of ‘paradigmatic trajectories’, potential journeys or career paths an individual perceives within a community. These are constructed both via community members, who offer living examples of potential journeys through a community, and by using stories or wider discourses.

Exposure to this field of paradigmatic trajectories is likely to be the most influential factor shaping the learning of newcomers. In the end, it is its

members – by their very participation – who create a set of possibilities to which newcomers are exposed as they negotiate their own trajectories. No matter what is said, taught, prescribed, recommended, or tested, newcomers are no fools; once they have actual access to the practice, they soon find out what counts. (Wenger 1998).

I have described how students learn which activities, norms and values ‘count’. They must first identify themselves as future doctors, or insiders, and must be identified by others in this way to enable them to participate in the practices of that community. In establishing a difference in how many ethnic minority students experience these processes, I have been able to go some way to explaining the achievement gap. In order to clarify the mechanisms by which these differences are created and maintained I will first discuss the link between identification and participation, then look at how participation impacts on achievement, before considering how culture and relationships mediate identification and participation.

8.3.1 Identification leads to participation

Identification is a two way process: students identify themselves and are identified by others. In this study, students who strongly identified themselves as future doctors described more instances of participation, which further strengthened their identification as a medic. This adds a depth of understanding to much of the literature on role modelling. Role models have been shown to impact on individuals’ decisions to study medicine (McHarg et al. 2007) , the ways students perceive and practice medicine (Maudsley 2001; Lempp 2005) and the career choices they make (Ravindra and Fitzgerald 2011). The process of identification I have described provides the connecting process underlying these phenomena. ‘Windows’ into the medical world are important, as they provide students with the opportunity to identify themselves as future doctors and begin to engage in appropriate activities, such as work experience. This process of participation driven by identification continues once at medical school, as students use other people, stories and resources in this process, identifying themselves as much by what they are not as by what they are (Hill and Vaughan in press). Using the different behaviours of peers and seniors, students located themselves and their practices, moving away from those with whom they dis-identified with and towards those with whom they identified.

8.3.2 Participation translates into exam success

Participation in the ‘medical school’ and ‘clinical practice’ worlds can be linked to written exam success, as both the taught curriculum and the medical knowledge, discourses and dispositions learned through clinical experience are tested in different forms of assessment. Participation in student networks, particularly those composed of a range of year groups, facilitated examination success in written, multiple-choice exams by enabling students to build and share knowledge collaboratively, learn ‘tricks’ and ‘triangulate competence’. Students in this study described how formal and informal teaching and being taught by others cemented their knowledge and translated into better academic achievement.

OSCE examinations directly examine aspects of students’ participation in the worlds of medical education and medicine. Students who do well in these exams understand they are ‘an act’, a secret passed on by senior students and friendly tutors. Rather than interacting as if the situation were real, they have an awareness that there are ‘tick boxes’ and ‘buzz words’ that examiners score more highly and are able to ensure they insert them into their performance. Students who more actively participate in the medical education game are also more likely to have information about the stations to expect, having received a list of past years stations, seen or heard of adverts for a certain type of simulated patient or received tips from staff about what to revise. These students can then more effectively and efficiently direct their energies towards revising these topics and feel and appear more prepared in the examination. Despite standardised marking criteria, it has been shown that examiners score candidates differently dependent on the level of other candidates (Yeates et al. 2012). It is therefore important that individuals interact with others in order to encounter these norms.

As well as ensuring students can demonstrate the formal knowledge that indicates competence, OSCEs also function to ensure students learn to present themselves in a certain way. In these performative exams (moments in which students are ‘doing medic-ness’) students are marked against certain criteria, but also are given a ‘global mark’ which takes into consideration the checklist marks and the examiners perception of how well the student performs. Many students I interviewed described how participating in the ‘clinical practice’ world with patients and clinicians helped them to anchor their knowledge gained through reading in reality, helping their retention and recall in exams. Having encountered more physicians and healthcare professionals, they are better equipped to interact with them as examiners and are

more likely to engage in the subtle ways of being both deferential and confident. Knowing how to talk to a patient, take a history, handle medical equipment and present information back to a senior clinician are all routine activities of 'doing medicine', therefore stations that test these skills advantage students who have participated more fully in medicine by rewarding them with higher marks.

The way a student interacts with the simulated patient is observed and examiners are directed to reward certain dispositions, including bodily dispositions such as posture and lack of fidgeting. Anxiety amongst students is extremely high during these exams, yet students must put on an act of being confident through direct eye contact, a positive and self-assured posture and avoiding nervously fidgeting. It is the apparent ease with which students can present information or examine a simulated patient that distinguishes the 'best' students from those who are 'satisfactory' (who can display the correct knowledge). Bourdieu suggested that different groups come to embody ways of speaking and acting through 'bodily and linguistic disciplines and censorships' (Bourdieu and Thompson 1991:86), a process of cultural selection that shapes an individual. Amongst a highly motivated and highly achieving peer group, these added advantages can explain the difference in achievement. Embodied knowledge can only be gained through participation in the worlds of 'medical school', 'clinical practice', or those that value similar dispositions. I do not want to suggest that these dispositions are completely arbitrary; as a patient I understand the need for a doctor to be able to appear knowledgeable and calm in tense situations, yet these qualities are much more difficult for students who have not previously participated in worlds that create these dispositions.

8.3.3 How does culture mediate exam success?

Rather than ethnicity, I suggest cultural practices mediate exam success. The cultural norms and behaviours associated with some ethnic minority groups, particularly those more traditional in terms of gender and generational norms, make identification and participation more difficult. As highlighted by Helmich and Dornan (2012):

Learning to be a doctor includes internalising professional attitudes and behaviours, sometimes at the expense of personal values or at the risk of becoming socially isolated.

This is more problematic for many ethnic minority students, as they must often sacrifice more of their identity in order to internalise these attitudes and behaviours.

The moral distress described as a feature of medical students' learning (Benbassat 2012), occurring as students' experiences challenge their ethical values, is further deepened as cultural as well as ethical norms conflict. 'Fitting in' in order to become a doctor is difficult as minority students felt the need to change or hide practices that identified them as 'other' (Beagan 2000). Colour of skin, and other markers such as wearing a headdress were visible signs that could not be hidden. However, and so students were forced to engage in behaviours that compensated for these. Lempp and Seale (2006) similarly reported students attempting to alter their appearance in order to 'fit in' to the medic stereotype.

Artino *et al.* (2012) describes the psychological theory linking achievement to emotion. Of relevance to this study, the authors suggest that negative emotion (such as anxiety or anger) restrict the deeper level of processing, increase cognitive load thereby reducing working memory space and cognitive resources available for processing, and decrease motivation or interest in the task. As students in this study described moments of exclusion, marginalisation and non-participation, they also described feelings of sadness, anger and anxiety. These feelings of not belonging therefore have an impact on students' achievement. Furthermore Artino *et al.* make the link between negative appraisal and negative emotion explicit. This exacerbates the difficulties of ethnic minority students who are both identified as 'other' and identified as failing. Emotion therefore may provide the missing link between theories of socialisation and cognition in explaining achievement.

8.3.4 Difficult dispositions

I identified a widespread discourse around proactivity, with this disposition linked to being a good student. Being able to enact the behaviours that formed this disposition however were highly culturally specific. Similar to the performance of confidence necessary in exams described earlier, proactivity required students to be pushy, sidestep hierarchy, ask questions of seniors, work to be seen and heard and not to take no for an answer. For several non-white cultures, these behaviours are completely undesirable and individuals are socialised to avoid them. Previous socialisation shapes the way students think and act in the future, creating what Bourdieu refers to as a habitus (Luke 2003) and when students encounter a field of practices that is foreign to them, they become like a 'fish out of water' (Butcher 2009). Ethnic minority students have a double disadvantage here, as not only are many encountering the foreign terrain of 'medical school' and 'clinical practice', but also the potentially conflicting practices of the traditional white, middle-class

culture of medicine. This directly impacted on students' interactions, both with peers and seniors as many ethnic minority students chose to keep their professional and personal lives separate. For students who come from home communities very different from medicine, there may simply be a lack of awareness of what behaviours are desirable and possible. Negotiating such tensions has been described outside the medical education literature, as authors such as (Nasir and Saxe 2003; Solomon 2008) have illustrated the 'identity work' students from minority backgrounds must do in order to reconcile the conflicting discourses of their home culture and academic worlds. Understanding the effect of the added cognitive complexity in managing identity and self-presentation is an important focus for future work.

8.3.5 Motivation

I have shown motivation to study medicine to be culturally mediated. Whilst many students of both majority and minority cultures experienced some form of encouragement to enter medicine, ethnic minority students from South Asian, African, Middle Eastern and South-East Asian backgrounds described a much greater pressure from family members and their community to choose medicine over other careers. Medicine was described as a moral career that provided a secure and well-paid job. This finding demonstrates that there was an element of truth in the stereotype described by Woolf et al. (2008) of the 'typical Asian student... pushed into studying medicine by ambitious parents'. However, I have shown that many parents very actively ensured their child studied medicine regardless of ethnicity or culture, the difference being that 'White (middle-class) British' culture highly values the discourse of autonomy and so activities are much more subtle (such as teachers who identify pupils as future doctors through their achievement or dispositions, parents that seek out experiences and role models to inspire their children). Furthermore, the stereotype suggested that the stereotypical 'Asian' student was unmotivated, whereas this study has provided clear evidence to the contrary, describing highly motivated individuals who are simply engaging in different practices that are largely unrecognised by the institution. My data suggests that what medical educators and fellow students may interpret as reticence to engage is in fact cultural practices, which many ethnic minority students equate with professionalism, respect and hierarchy.

8.3.6 Interactions

Students in the 4th quartile and those who had previously failed an exam were less well integrated into their PBL groups, whereas female students, the highest achieving

gender group, were much better connected to their PBL peers. Students who fail exams may exclude themselves from social interaction in order to avoid questions about their achievement, but may also be overlooked by others (Oates 2012; Vaughan 2012).

Culture very clearly mediated students' activities with everyone they interacted with. Whilst this is true of all human interaction, cultural practices, particularly around drinking alcohol, identified non-drinkers such as Muslim students as outsiders. Muslim students in this study were named less frequently in social interactions and were also most likely to achieve in the lowest quartile, suggesting that social interaction is linked to socialisation into medicine, potentially creating a measurable effect on achievement in this group. Friendships were formed early in the course, and this also coincided with many fresher's activities that involved drinking excessive amounts of alcohol and engaging in other behaviours that conflict with more modest cultural practices, such as mixed-sex friendship groups, fancy dress events and romantic or sexual relationships. These white, Western, liberal practices were (perhaps unwittingly) normalised by the medical school, as the institution supported peer mentoring schemes that frequently involved alcohol-based social events, allowed events such as pub-crawls to be openly advertised and financially supported the medical society in organising events such as the graduation ball. This further reinforced the outsider status of any students who did not participate.

Drinking alcohol can have serious consequences on a student's ability to participate in the worlds of 'medical school' and 'clinical practice', as in the case of the student who was 'hungover' whilst participating in a hand surgery. However, engaging in drinking practices also facilitated friendship formation and another student was able to describe moments when things they had learned 'down the pub on a Friday night' had actually helped them in exams. Whilst there are several descriptive studies of the use and abuse of alcohol amongst medical students, I could find very little literature pertaining to the impact of an alcohol culture on medical students' experiences and learning; this is perhaps suggestive of its normalisation within the profession (as the majority of medical education research continues to be done by 'insiders'). One paper from the nursing literature did touch upon the prohibitive role of alcohol for minority students, stating that 'activities common to white students, such as partying, eating out, or drinking alcohol, were either culturally prohibited or too expensive' (Gardner 2005). Drinking alcohol is well-entrenched within both the broader UK culture and the culture of medicine, meaning that students find it hard

to challenge or discuss for fear of offending, yet repetitive moments of exclusion from activities in which networks are formed severs potential ties between many ethnic minority students and their peers and senior students.

A major finding with regard to relationships is that white students were in fact more homophilous than their ethnic minority peers. In popular discourse, some literature and student and staff narratives, 'integration' is often used to indicate a greater need for minority groups to assimilate into the majority group by adopting the latter's activities, norms and values (Beagan 2003). This work challenges these ideas around integration in this setting, as white students do not appear to be receptive to interacting with non-white peers and seniors. As members of the dominant culture of medicine, white students' homophily disadvantages non-white students by excluding them from the networks through which resources can be shared and discourses entered into. Despite this, peers (who made up the majority of students' personal academic support networks) did not appear to have a significant impact on students' achievement, nor did the homophily of these groups by ethnicity or gender. Instead, a clear pattern emerged demonstrating a link between interaction with seniors and success.

Students who had access to older individuals, family members, tutors and clinicians achieved significantly higher grades. These students were able to draw upon a wide range of people and activities with which to identify. In this way, medical students interactions very clearly drove their identification and participation. Many ethnic minority students had fewer such resources, as their family histories (past interactions) and interactions during medical school with peers and seniors differed. Across all measures of academic achievement measured in this study, there was a relationship between having fewer seniors within a students' academic support network and lower achievement. Students from 'Other' ethnic backgrounds, Muslim students and male students all named fewer seniors in their network, further strengthening the case for the link between seniors and achievement.

8.3.7 Paradigmatic trajectories

In a 2009 report, Sandhu *et al.* described a gendered 'hidden curriculum' that perpetuated gender stereotypes linked to certain career pathways. Not only do my data support this, but they also suggests an ethnic and cultural component to the hidden curriculum. Many ethnic minority students felt they had to work harder than their white counterparts to succeed, describing how prejudice and stereotyping

meant they did not start on a level playing field with their white peers. I have shown how students perceive a different range of experiences and distinct mindset associated with being 'Western' and white that placed others at an academic disadvantage. Returning to the concept of 'paradigmatic trajectories', visible career paths provided by different communities within medicine, students' came to understand that being ethnic minority made it harder to be recognised as legitimate within medicine; using stories and experiences of racism, prejudice, invisibility and failure, students imagined their own paths would be less successful or would require the sacrificing of family and social ties in order to succeed. Ethnic minority students may be less willing or able to do this (Lempp and Seale 2006).

8.4 Building on theory

The processes by which the ethnic achievement gap is established and maintained in medical education is complex and multifactorial. Whilst early socialisation and access to tangible resources are important, once at medical school marginalisation or exclusion from informal PBL networks and a lack of interaction with seniors (tutors, clinicians and medical family members) result in lower examination achievement. Ethnic minority students are more likely to be marginalised and less likely to have access to medical seniors in their social networks.

8.5 Strengths and limitations

This section discusses the factors strengthening this work, as well as the limitations that must be taken into consideration when assessing the findings presented in this thesis.

8.5.1 Strengths

This research is strengthened by a triangulation of methods and theory. Using different methodological approaches to answer one overarching research question enabled me to gather a broader range of data which could be compared and contrasted, looking for shared and unique patterns and meanings within each type.

The iterative design of the study enabled my research to be flexible and responsive to emerging findings. As each phase informed the other, unanswered questions could be examined using different techniques and approaches and resultant data used to interrogate data previously gathered. Iterative sampling and an open interview technique also facilitated this process, strengthening the study by providing the opportunity to test emerging themes and hypotheses, facilitating the cross-

fertilisation of ideas across methods and participants.

Through my purposive sampling strategy I have included voices not frequently heard in the medical education literature. As described by Turbes *et al.* (2002), culture and ethnicity are almost exclusively discussed in the formal curriculum with regard to illness, disorder or genetics. A reluctance amongst students to discuss ethnicity has been shown by Roberts *et al.* (2008). This silence is also present in the literature, as studies that present discourses of ethnicity and culture from those within the medical education domain are rare, and discussion tends to be in terms of demographic labels gathered in survey data. Through presenting a wide range of students' voices, and engaging with their views on their own culture and the culture of medicine, I have shown that students share many common difficulties but that conflicting cultural practices can exacerbate these difficulties.

8.5.2 Theory

My work has a strong theoretical underpinning, as both the design and analysis employed theory and concepts from social theories of learning, specifically Communities of Practice. This strengthened my work by effectively plugging it in to a much wider and more established field of work. I used theory to guide and test my work, but also used my data to question and challenge theory. Where I felt the communities of practice framework I used was lacking, I drew in concepts from other theorists, and my work greatly benefits from this theoretical triangulation. Rooting my work in theory in this way has provided rich and robust data that are both specific to medical education and more widely applicable, specifically how power, support and resources impact on an apprenticeship-model of learning.

8.5.3 Collaboration

My own social connections greatly strengthened this study. Being situated within a formal supervisory team comprised of experts across the diverse domains of sociology, medicine, medical education and health research meant that theories, concepts and data from each of these domains were brought in to interrogate the findings presented in this study. The study also benefitted from informal guidance from experts in education, healthcare and medical education. My journey across these different worlds led to an experience of multimembership that created a productive tension in my work. As I moved across the boundaries between these worlds, I was afforded new interpretive tools and perspectives. My discovery of social media, particularly Twitter during my research was of great benefit. This

situated me within an international conversation with others from medical education, sociology and beyond. Discussing findings, sharing thoughts and being inspired by this community has undoubtedly strengthened my findings; twitter provided an informal research team and access to a much wider range of 'data'.

Through undertaking this research I began speaking at events organized by Fastbleep, a student-led organization enabled me to present findings back to the subjects this thesis aimed to investigate. I was also able to present to medical students from other institutions and gained valuable insight into the shared and institution-specific elements of my data. This feedback was very important in strengthening my work as discussions were facilitated with (minority and majority) students who felt my findings resonated strongly with their experience. These opportunities also enabled me to debate my findings with those who felt threatened or challenged by what they perceived as a challenge to the meritocracy of medical education.

8.5.4 Limitations

Combining datasets has limitations, as the research questions were not the same and the methods used somewhat different. However, this again created a productive tension important for learning and enabled the processes of triangulation described above.

Although the literature around learner identities and achievement highlights the importance of the intersection between ethnicity and class, I was unable to make any contribution in this area. Due to the nature of my population, the majority of students come from high SES backgrounds and therefore the number of participants I included from deprived backgrounds was very low (n=9, 6%). Further work must be done on a wider scale to understand how the theory developed in this thesis applies to ethnic minority students of different class backgrounds.

This data has emerged from one UK medical school with a specific institutional culture therefore findings may not be applicable to other medical schools. However, the fact that my data supports and is supported by much of the existing literature across multiple disciplines suggests these findings are applicable beyond. Although it is common in the UK to accept undergraduate students, many institutions in North America enroll only postgraduate students onto a medical degree. This is an important point, as although the literature I will refer to in setting up the research questions and discussing my data, the extra years in age, experience and learning may make some of my findings less applicable to postgraduate courses. This said, it is

likely that many of the issues such as confidence and entitlement that are unequally distributed by culture continue to be so amongst postgraduate students.

8.6 Practical implications

This study describes the importance of identification in students' achievement. Medical schools need to provide opportunities for students to identify themselves as future doctors, starting as early as possible. This means that widening participation schemes must focus on younger school children, providing people and practices for children to identify with that drive their participation in practices linked to achievement, effectively giving them the encouragement, or pull, to put in the effort at school. Once at medical school students should be provided with a diverse range of positive role models with whom to identify. This requires staff in medical schools and teaching hospitals to first have an awareness of their potential as role models for medical students and understand their role in the wider paradigmatic trajectories students create as they encounter the world of medicine and the specialties within it. Ensuring doctors from ethnic minority and other minority backgrounds give lectures and act as firm leads will enable minority students to identify alternative, successful paradigmatic trajectories.

With regard to achievement, medical schools must maintain an awareness of the ways in which labelling students according to exam results can encourage identities of failure, with the potential to create self-fulfilling prophecies in which students who are labelled as failing continue to fail. The stigma attached to being a low achiever must not be underestimated (Oates 2012). As my research shows, students have an awareness of who does well, and strategically interact with these individuals. As a result, low achievers are socially isolated, missing out on the social resources and support implicated in success. This creates a cycle of disadvantage. To address this, medical schools should ensure students are able to identify in alternative ways, supporting students to see their strengths. A system of placing low achievers in higher achieving PBL groups and targeted peer mentoring may also help support low achievers, by linking them with successful students with whom to identify and participate.

My work highlights the importance of participation with others in achievement. Any medical school wishing to address the achievement gap needs to pay attention to processes that facilitate social and personal relationships in order to develop the discourse and networks needed for professional socialisation. Alternatives to the

drinking culture must be a priority, and medical schools and teaching hospitals must challenge the normalisation of alcohol in social events by removing funding from student events that include it. Providing informal events, particularly at the beginning of medical school when relationships are formed, is necessary. There are, however, a multitude of student-led activities that are centred around real mutual engagement, as students self-organise to provide peer teaching, mentoring, widening participation and many other services; medical schools could promote, support and fund these activities which are less culturally exclusive (not bound up with culture-related activities, such as many sports, music or social societies).

The tension between competition and collaboration was very clear in this medical school. Students were graded against each other, promoting covert, competitive behaviours and restricting the sharing of resources, yet were asked to collaborate in PBL groups. Medical schools must be more aware of how students read different messages from the institution, effectively how they interpret the hidden curriculum of the institution. A more open discourse about the hidden curricula of medical school and the medical world must be facilitated, particularly around the importance of certain dispositions and social connections. This is not an easy task, and may face resistance as the very recent experience of Dr Una Coles suggests, currently under investigation by the Royal College of General Practitioners for advising trainees on aspects of the College's hidden curriculum with regard to indicators of sexuality and culture such as posture, voice and clothing (Strudwick 2012).

Medical schools contribute a large proportion of the discourse around medical education and therefore have a transformative capacity in this area. Students and staff must be provided with an alternative language to talk about their worlds in more depth; to do so, medical schools should be explicit about the different learning paradigms they ascribe to and give students the linguistic and conceptual tools to think, talk about and challenge their experiences. Encouraging students to consider their own learning trajectory, including their multimembership of different worlds and conflict between them, could be done in portfolio sessions, where students could also be supported to consider their social network and any potential connections that are missing. Suchman (2004) described an intervention in which, through positive inquiry, students and staff were asked to be mindful of relationship formation throughout one medical school. The authors described how this led to positive changes in perceptions and behaviour. I would recommend a similar approach in MMS and other medical schools, as negative stories were very common amongst

participants. However, there is huge potential for more positive stories to be heard and shared, in effect rewriting the institutional discourse.

8.7 Further research

Three research streams are evident following the findings of this study; firstly to consider the broader applicability of these findings, secondly to investigate the cultural and ethnic component of the hidden curriculum described in this thesis, and thirdly to consider the interrelationship between (not) belonging, emotion, mental health and achievement.

The applicability of these findings beyond this medical school could be investigated using survey and interview tools designed in response to the data I have presented here. A more widely distributed survey across other medical schools would enable broader statistical patterns to emerge and more sophisticated statistical methods to better understand the effect and interaction of all variables. Future work should enable the testing of my hypotheses linking social networks to achievement. The tendency for medical students in this study to interact with others of similar ethnicities is an important finding when considered in the context of socialisation and learning. Whether this homophily is repeated post-qualification should be investigated, as the impact on qualified doctors' experiences, learning and patient care may be affected. As we know so little about doctors social interactions, undertaking a social networks study would provide much needed insight into their social world. How ethnicity, culture and social networks impact on achievement beyond the UK is currently unknown and future work should also consider an international perspective. Additionally, looking beyond medicine to other professions may provide insight into more commonalities and differences with regard to relationships and achievement.

This work has brought ethnic and cultural components of hidden curriculum to light. Students clearly perceive success to be linked to ethnic and cultural attributes. Whilst a robust investigation into the relationship between gender and success is still in its infancy in medical education; there appears to be no consideration of how culture is related to achievement and career progression. Future work should engage researchers in both of these fields (from within and outside the medical education domain) to examine how power and privilege are gained and maintained in these worlds, drawing upon feminist and critical theory to do so.

Finally, future work must begin to consider how being an outsider impacts on medical students' emotions and mental health, in turn impacting on their achievement. It is now well-established that medical students experience many mental health difficulties throughout their training (Benbassat 2012). A recent study by Bhui *et al.* (2012) suggested that cultural integration (friendships within and outside their own ethnic group) had a beneficial effect on secondary school pupil's mental health. More detailed work exploring the links between students' networks, mental health and achievement is needed to better understand how these may interact in medical students.

8.8 Conclusion

This thesis used a sociocultural approach to explore ethnicity and achievement. This allowed me to research the as yet unexplained ethnic achievement gap in medical education from a novel perspective. This research investigated the nature of medical students' relationships and how these related to their experiences and achievement, used SNA to explore medical students' social networks using SNA and how they impact on achievement, and sought to understand how ethnicity impacts on relationships and social networks. In doing so, it is now possible to address the research questions detailed in section 4.2.

1. How do students' relationships impact on learning and achievement?

Students' networks of relationships provide channels through which resources and support flow. These tangible, informational or social resources facilitate participation, learning and competence; certain relationships, specifically those centring on study-related activities with PBL group peers and those with seniors in a wider academic support network, are directly linked to better achievement.

2. Which, if any, social network features (such as density and homophily) impact on achievement?

Although significant patterns of ethnic and religious homophily existed, no link was found between homophily and achievement. Heterophily by age and role was significantly linked to achievement, with students in higher academic quartiles more likely to be heterophilous by age and role.

3. How does ethnicity impact on relationship formation and social network features?

Different patterns of relationship formation and social network features were observed by ethnicity. These were better explained by cultural practices, as students from certain ethnic and religious backgrounds interacted in different ways than their white counterparts. Conflicting competencies, such as the behaviours and attitudes required to be proactive, or social norms, such as drinking alcohol socially, served to maintain ethnically and religiously homophilous social groups. Importantly, however, ethnic homophily appeared to be driven by white students.

Exploration of ethnicity and the achievement gap within medical education has shown that medical students' achievement is best conceptualised as part of a wider learning trajectory toward becoming a doctor. The medical world has a tightly prescribed, yet often hidden, set of legitimate dispositions; students must learn to embody these norms, values and behaviours in order to succeed. This process relies on experiences of participation, facilitated by relationships with peers and seniors. I have demonstrated this process of socialisation to be clearly mediated by culture. Ethnic minority students, due to their differing cultural practices and identities, have fewer experiences of participation, often experience the medical domain as outsiders and find it harder to interact with tutors and clinicians. This is reflected in their social networks. These factors interact to cut ethnic minority students off from potential and actual resources that facilitate learning and achievement. If the situation is to be improved, medical schools must do more to acknowledge the extra difficulties many ethnic minority students face in becoming an insider. Processes of identification and participation must be supported as these students negotiate the extra distance and tensions between their home world and those of medical education and medicine.

Chapter 9

Appendices

Appendix 1 - Initial table of literature review from 2009

Authors	Design	Methods	Tool 1	Sample size	Response rate	Participants	Location	Aim	Outcomes	Strengths	Limitations
Aripalram et al. 2007 UK	Longitudinal - retrospective	Quantitative	Administrative data			Cohorts 1990-92 & 1998-2000		Analyse determinants of probability a student will drop out in year 1	University effects responsible for increasing drop-out rates	Justify call for selection process to look beyond academic criteria	hed
Atkinson & Pugsley 2005 UK	Review					Articles evaluating educational interventions for undergraduate MS 1966-2007		Locate the ethnographic tradition in a socio-historic context	Ethnographic tradition in medical education research is significant and cohesive research strand	Explains methodologies and uses	Not critical of research studies used as examples
Baernstein et al. 2007 USA	Review					Articles evaluating educational interventions for undergraduate MS 1966-2007		Assess trends over time in methods used to evaluate undergraduate medical education interventions and identify whether participation of med ed depts/centres is associated with more rigorous methods	Annual number of published studies demonstrating methodological rigor increasing but opportunities for improvement remain. Med ed dept participation related to recruiting more participants.	Large sample of publications, no language restrictions, supports other systematic review conclusions	Criteria used to define rigor could be expanded
Ball et al. 2002 UK	Cross-sectional	Mixed	Interviews Survey	65		minority ethnic pre-uni students parents careers teachers 6th form tutors etc.	6 educational institutions	Examine processes of student choice of university related specifically to minority students	Different types of choosers - embedded and contingent. Class differences significant (more than race).	Theoretical framework, in-depth, large sample, variety schools, includes teachers etc.	Paper relates to sub-aim, methodology not clear
Barr et al. 2008 USA	Longitudinal	Mixed	Survey Interview	362 Freshman	34-30%	3 Freshman surveyed 3 times over 2 years	Stanford University	Determine causes among under-represented groups of interest during the first years of pursuing career in medicine	Minority and female students show larger drop-out rates than their white male counterparts. Principal reason given by students = negative experience of chemistry courses and identified probs with advising system. Women more likely to stress importance of peer support.	Clear methodology, info on non-responders	One (highly selective) med school, low response rate, ambiguous questions, ? courses inst?
Beagan 2003 Canada	Cross-sectional	Mixed	Survey Interview		51-59%	3rd year MS	MS Home	Examine ways racism is understood and experienced	29% minority MS felt they did not fit in at med school. Marginalisation, segregation, responding to racist jokes. MS identified advantages of non-white (linguistic)	Consistency of processes over time, triangulation of data	Self-selecting, one med school
Beagan 2000 Canada	Cross-sectional	Mixed	Survey Interview	124 MS (survey), 25 MS, 23 faculty	56%	3rd year MS Faculty members	Medical School	Describe how medical students' professional socialisation occurs in the context of less homogeneous MS groups	Descriptions of deindividualisation, loss of social identities, coming to new accepted reality, homogenisation. Belief that gender, race etc. impact upon patients but not doctors. "Neutrality of medical knowledge"	In-depth, includes both MS and faculty theoretical underpinning, justification of using 3rd yr MS	Little critical analysis of the reported neutrality
Beagan 2005 Canada	Cross-sectional	Mixed	Survey Interview	124 MS (survey), 25 MS	59%	3rd year MS	MS Home	Explore the medical school experiences of students who self-identify as working class	Money seen as most obvious impact. Working class less likely to feel they belong, more difficult to fit in (social situations, sport, small talk), more likely to say class had negative effect on med school experience, more likely to say class had positive effect on treatment. Positive element of anti-racism.	Data on experiences rather than incidence, in-depth	One med school, not generalisable

Authors	Design	Methods	Tool 1	Sample size	Response rate	Participants	Location	Aim	Outcomes	Strengths	Limitations
Begun 2003 Canada	Longitudinal	Mixed	Survey Interview	72.61 MS	59%;51%	3rd year MS	One Canadian medical school	Investigate the effect of exposure to a new course addressing social and cultural issues	Students in time 2 did not demonstrate increased awareness of social and cultural issues	Consistency of processes over time, triangulation of data	Self-selecting, one med school
Bhatti 2006 UK	Discussion							Examine some of the issues raised by Ogbu's work in relation to the education of different minority ethnic groups	Problems in terms of ethnicity, belonging and increasingly religion are experienced.	Theoretical underpinning, highlights importance of migration & Islamophobia	Unclear methodology re qualitative data
Bickel 1991 USA	Discussion							Discuss medical students' ethical development and make recommendations for improvements	Medical educators have paid insufficient attention to students' ethical development. Improvements must be made in evaluating candidates for admission, the medical school learning environment (especially in context of cultural diversification of MS) and communication of expectations and standards	Discusses internal and external pressures & relationships	Dated, USA, very short discussion of sociocultural climate
Bickel 2001 USA	Review							Summarise recent data on and studies of women's experiences as medical students	Despite large increases in numbers of female students, harassment & gender stereotyping continue to detract from educational experience. Speciality choices (surgery) remain stable. Lack of role models.	Large review of data. Highlights lack of interventions. Proposes investigation of "gender schema" (rather than sexism)	Data now dated (1988-2000)
Blenstock et al 2000 USA	Cross-sectional	Quantitative	OSCE	353 MS		MS - obstetrics & gynaecology	Johns Hopkins University school of medicine	Determine whether standardised patients perceptions of MS' ethnicity influenced ratings on interpersonal skills section of OSCE	No statistically significant differences	Large cohort	Students ethnically assigned retrospectively, no way of knowing if English-language barriers exist, few results, short discussion
Blackley et al. 2008 UK	Discussion							Discuss the relationship between post-colonial theory and medical education	Must develop a greater understanding of the relationship between post-colonial studies and medical education to prevent new wave of imperialism	Interesting discussion of curriculum studies, conceptual frameworks and competencies. Theoretical underpinning	
Boutin-Foster et al 2008 USA	Discussion							Describe challenges encountered when teaching cultural competence; introduce professional culture of medicine as a framework for addressing these challenges; provide examples of strategies that can be incorporated	Provides description of the medical professional culture. The culture of medicine is learned through the hidden curriculum and role-modelling.	Provides suggestions to improve practice & reduce "othering"	Very brief discussion of strategies
Brown & Garlick 2007 UK	Cross-sectional	Qualitative	Ethnographic			MS entering medical school through widening participation project	King's College, London	Explore themes that are of importance to understand changes in policy needed to reverse inequalities in medical training.	Local education markets are differentiated by class and ethnicity. Choices are limited. Students mediate their identity with other aspects of their lives.	Theoretical underpinning, closely tied to literature. Sets research agenda.	No methodology (though explained)
Callins et al. 1994 USA	Cross-sectional	Quantitative	Survey	204 MS	69%	2nd year MS 4th year MS 6th year MS	University of Missouri med school	Examine whether students' perceptions of stress in med school have changed and whether these perceptions vary with gender, ethnicity and other factors	Financial problems are a new and most stressful situation. Some differences occur in ethnic minorities and women.	Supports previous study, examines variety of factors	One med school, not generalisable, little grounded analysis

Authors	Design	Methods	Tool 1	Sample size	Response rate	Participants	Location	Aim	Outcomes	Strengths	Limitations
Callahan et al. 2007 USA	Longitudinal - prospective	Quantitative	Administrative data	7415 graduated doctors		Doctors graduating from Jefferson Medical College	Jefferson Medical College	Examine demographic and performance differences between research volunteers and others	Doctors who granted permission for their data to be used in medical education research generally performed better during and after medical school. Women and ethnic minorities less likely to volunteer. Recommends that permission need not be sought in order to achieve unbiased evaluation of MS performance	Large sample size, over long period (1970-2004)	One med school, not generalisable
Chang et al. 2006 USA	Longitudinal	Quantitative	Survey	19667 MS		MS (1st and 4th)	USA (1994, 1998)	Examine student and institution level effects of racial diversity on cognitive development, openness to diversity and self-confidence	Significant, positive effect on all 3 areas. MS with more cross-racial interaction = more developed during med school	Large sample, detailed statistical testing, supports literature	Processes not examined
Cheng et al. 2008 USA	Review							Explore literature on Identity Integration, the effects of diversity on individuals and the groups in which they are embedded.	Individuals with high Identity Integration better at accessing multiple identities & identity related knowledge, have improved well-being and social outcomes. Diversity in teams can lead to miscommunication & stereotyping - can be overcome by stressing group identity but this decreases advantage of unique cultural expertise within teams.	Suggests conceptualising diversity beyond demographic categories to include social identification & integration of social identities. Links to white fear, social networks & role models.	
Cooper 2003 USA	Longitudinal	Quantitative	Administrative data					Report the trends in education, over several decades, by members of the principal racial-ethnic groups-whites, blacks, Hispanics, and Asians-traces their participation from kindergarten through college, and project the likelihood of their applying to medical school over the next two decades	Firm link between academic achievement in the earliest grades and success thereafter. Profound influence of parents' education, income, and expectations at each step. Inadequacies in either sphere erode the potential for children to reach college and to do so in ways that predict interest in and capacity for medical school. Finances outweigh potential. Worst for black and Hispanic children, particularly boys, but are prevalent among whites, as well.		
Corbie-Smith et al. 1999 USA	Cross-sectional	Quantitative	Survey	4501 Female physicians	58.50%	Female physicians	USA	Describe lifetime prevalences and correlates of ethnic harassment	Ethnic harassment is high, for white physicians harassment related to religion	Large sample size, older female physicians oversampled to account for change in women entering med school	Female only, harassment undefined, recall bias
Cribo & Bignold 1999 UK	Review							Argue that the agenda and culture of reform about teaching and learning in UK medical schools needs to be underpinned by a similar liberalisation of medical education research	Authors indicate need for fostering of interpretative and reflexive research	Theoretical underpinning	No specific recommendations
Dhalla et al. 2002 Canada	Cross-sectional	Quantitative	Internet survey, Canadian census	981 MS	80%	1st year MS	All Canadian medical schools outside Quebec	Describe demographic and socioeconomic characteristics of 1st yr Canadian medical students and compare them with those of the Canadian population to determine whether there are groups that are over- or underrepresented; and test the hypothesis that medical students often come from privileged socioeconomic backgrounds.	Although there were more people from visible minorities than in the Canadian population, certain minority groups (black and Aboriginal) were underrepresented, and others (Chinese, South Asian) were overrepresented. Less likely than the Canadian population to come from rural areas and were more likely to have higher socioeconomic status	Large sample size, statistical significance, supports literature	Uses postcode as proxy for SES

Authors	Design	Methods	Tool 1	Sample size	Response rate	Participants	Location	Aim	Outcomes	Strengths	Limitations
Dimitroff & Davis 1996 USA	Review			773 Research papers				Describe research in undergraduate medical education as reported in journal articles	The literature on undergraduate medical education reflects a lack of theory-based research and little evidence of work built on prior research	Random selection of articles over long period of time	Large proportion of articles missed out
Dogra & Kamik 2004 UK USA	Cross-sectional	Quantitative	Survey		57%-84%	1st year MS	3 med school sites	Establish whether there is a difference between UK & USA MS attitudes to cultural diversity & its teaching	Differences between UK & USA, between ethnic groups., UK more ambivalent	Comparison of issues across groups and countries	No exploration of justification, self-report
Dunn et al 2008 USA	Review										
Dyrbie et al. 2007 USA	Cross-sectional	Mixed	Survey		55%	Medical students (all)	Web-based	Explore differences in burnout, depression & QOL as well as role race/ethnicity plays in student experiences	Minority students more likely to report race had adversely affected their experience	Large sample size, diverse medical school sites, representative of US medical students by many characteristics	Low response rate, response bias, more female and younger students
Ferguson et al. 2002 UK	Review	Systematic						Examine data on the predictive validity of the eight criteria that have been studied in relation to the selection of medical students: cognitive factors (previous academic ability), non-cognitive factors (personality, learning styles, interviews, references, personal statements), and demographic factors (sex, ethnicity).	Previous academic achievement good but not perfect predictor. Ethnic minority students underpredicted, whites overpredicted.	Systematic, clear analysis, explicitly states that "No studies have examined whether differential experiences of training in medical school contribute to this difference"	Assumption that predicting success can be done (or is a good thing?)
Glicklen & Meinenstein 2007 USA	Discussion							Discuss the role of the medical educator and professionalism in the hidden curriculum	Medical educators do not have clear standards for teaching excellence. The professionalism of the teacher is key in the hidden curriculum.	Presents systems view of professionalism	Little discussion of how processes work
Gofon & Regehr 2006 USA	Discussion							Review the importance of the messages transmitted to trainees	Actions speak volumes, dissatisfaction transmitted, hidden curriculum contradicts formal	Discusses broader concepts of hidden curriculum as well as manifestations. Considers teachers and learners	No exploration of sources of stereotyping
Grant 1983 USA	Cross-sectional	Mixed	Interviews Survey		97%	4th year MS	University of Michigan	Explore peer expectations about outstanding competencies of male and female MS	Self-ratings revealed few differences between m-H, peer ratings revealed male dominance in 10 competence areas (women only in sensitivity to patients)	High response rate, almost total population	
Greenhalgh et al. 2004 UK	Cross-sectional	Qualitative	Focus groups	68		14 - 16 year olds	6 London secondary schools	Investigate what going to medical school means to academically able 14-16 year olds from different ethnic and socioeconomic backgrounds in order to understand the wide socioeconomic variation in applicants to medical school	Few differences by sex or ethnicity, but striking differences by socioeconomic status. Pupils from lower socioeconomic groups held stereotyped and superficial perceptions of doctors, saw medical school as culturally alien and geared towards "posh" students, and greatly underestimated their chances of gaining a place		In-depth, qualitative, attempts to explain processes
Guilon et al. 2007 USA	Cross-sectional	Quantitative	Survey	441		4th year MS	3 schools with differing student body diversity	Examine student body diversity and school-supported cross-cultural experiences on students attitudes about diversity	Students' attitudes influenced by medical school experiences. Informal instructional interactions most influential.	Clear discussion of analysis, 3 medical schools, supports literature	Nature of interactions unexplored

Authors	Design	Methods	Tool 1	Sample size	Response rate	Participants	Location	Aim	Outcomes	Strengths	Limitations
Heiferty 1998 USA	Discussion							Propose that changes to medical education must be done at the level of what students learn, rather than what they are taught	Hidden and informal curriculum contested and controversial	Discussion of literature, hidden curriculum and recommendations	No theoretical underpinning
Haidet & Stein 2006 USA	Review							Explore the growing body of work on the culture of the medical school using evidence from educational literature with respect to the student-teacher relationship, and the relevance these studies hold for med ed.	Relationships are a critical mediating factor in the hidden curriculum.	Defines relationship centred care and culture, suggests future research questions	Somewhat unclear how assumptions were generated
Haidet et al. 2005 USA	Cross-sectional	Quantitative	Survey	890 MS		3rd & 4th year MS	10 US medical schools	Develop and test a tool to examine the hidden curriculum in relation to patient centred care	Tool reliable way to characterise hidden curriculum	Development of quick, quantitative tool	No gold standards, hard to determine significance without outcome data
Hao et al. 2005 UK	Cross-sectional	Quantitative	Administrative data Survey	1216	50% (survey)	3rd year MS	2 London Medical Schools	Assess the effect of ethnicity and gender on medical student examination performance	While females performed best, Asian students educated in UK using English as first language perform less well on written tests though size of effect relatively small	Supports literature, high inter-rater agreement	Quantitative only, London medical schools
Hawthorne et al. 2004 Australia	Review						University of Melbourne	1. Identify problems delivering Western-style med ed to culturally & linguistically disparate groups. 2. Describe model of international student support at University of Melbourne	Overseas-born MS in Australia face linguistic and methodological (eg. PBL) difficulties. Description of first ISSP programme, improvements of 10-25% in clinical examinations	Description of first intervention	Descriptive, little information on effectiveness
Howe et al. 2002 UK	Cross-sectional	Qualitative	Focus groups	47		GP tutors Primary tutors NHS service users 5th year Medical students	North Trent region	Consider whether different participants agreed on the desired outcomes of basic medical training	Professional identity of the future doctor is contested, its goals reflective of the worldview of the stakeholder	Discussion of medical discourse & implications for education	Sampling could have been extended theoretically
Hung et al. 2007 USA	Cross-sectional	Quantitative	Survey	388 MS	54% (n=216)	Medical students (all)	A single US medical school (2003)	Obtain perspectives of MS at one school on racial/ethnic/campus diversity, cultural competence, institutional cultural climate and reasons for underrepresentation	Students endorse value of campus diversity and cultural competence. URM students more likely to have experienced or witnessed discrimination. Lack of diversity seen as barrier to recruiting and retaining minority MS.	Discussion of findings, clear research design, ethics.	Possible response bias, single medical school, small proportion of URM students
Jolly 2005 USA	Longitudinal	Quantitative	Administrative data					Report the facts about tuition and indebtedness and to assess the burdens on medical students, residents and physicians	A medical education is less affordable now that it has ever been. Indebtedness varies slightly by ethnicity	Presents longitudinal data, links with choice, ethnicity and class(?)	No methodology (though full report available), USA
Klimber et al. 2007 UK	Review							Explore evidence, issues and explanations to understand effects of changing composition of medical profession	Evidence is mixed and problematic due to methodological issues	Suggests areas for further research	
Klink et al. 2008 USA	Cross-sectional	Mixed	Survey		approx 57%	Premedical	University of Wisconsin	Investigate the relationship between perceived family support and coping efficacy	Positive relationships between family support and perceived ability to cope with academic pressures, BME MS & having Dr mother higher coping efficacy (not Dr father)		Other dimensions (of family support) not collected

Authors	Design	Methods	Tool 1	Sample size	Response rate	Participants	Location	Aim	Outcomes	Strengths	Limitations
Kumaa-Tan et al. 2003 2007 USA	Review	Systematic				10 (of 54) instruments		Critically examine quantitative measures of cultural competence most commonly used in medicine	54 instruments identified, 10 most widely used, 6 prominent assumptions: culture equated with ethnicity and race & is an attribute possessed by Other. Cultural incompetence presumed to arise from lack of exposure/knowledge of Other, practitioner are white Western	Systematic	
Larsson et al. 2003 Sweden	Cross-sectional	Quantitative	Survey	840 MS	62%	Medical students (all)	Göteborg University	Establish extent of sexual harassment at Gothenburg Med School	Sexual harassment occurs more for women than men. Negative effect on studies and health.	First survey of its type.	No non-response analysis. No discussion of power.
Lemp & Seale 2005 UK	Review							Argue that current changes the manifest (overt) curriculum in the UK need to be fully consonant with parallel changes in hidden curriculum	Medical education occurs in private domain, hidden curriculum and effects on students is debated. Qualitative research must be improved, methodologically & theoretically to yield further data.	Supports specific qualitative research, points out lack of research involving teachers	Unclear link with initial argument
Lemp & Seale 2006 UK	Cross-sectional	Qualitative	Interviews	36		Medical students (all)	Medical School	Study MS' views about the quality of teaching they receive, especially in terms of the hidden curriculum	Students reported positive role models (gendered & racially stereotyped), hierarchical & competitive atmosphere, haphazard teaching & humiliation	In-depth, includes clinical, deliberate sampling	Self-report, one setting, little breakdown by gender/race etc.
Lemp & Seale 2006 UK	Cross-sectional	Qualitative	Interviews	36		Medical students (all)	1 medical school	Investigate medical students' views about their experience in relation to ethnicity and gender	Students provided information about variations patterned by gender (motivation & influences), ethnicity (independence from parents, perceived limitations to career prospects, incompatibility with religious beliefs, acquired open-mindedness). No experience of gender difference but expressed gender stereotypes. Harsh choice between responsibilities and career.	Supported by literature, in-depth	One med school, not generalisable
Lirio & Koritsas 2004 Australia	Cross-sectional	Quantitative	Administrative data Survey	310 MS	95%	Final (6th year) MS	Monash University	Examine relationship between final year MS ethnicity and attitudes towards consultation skills ii) final year performance	Non-Western born students place significantly greater importance on communication skills and traditional diagnostic method (due to non-verbal nature?)	High response rate, questionnaire included, theoretical discussion	Relies on questionnaire data, self-report, one med school, amalgamation of ethnic groups
Louden et al. 1999 UK	Review							Systematically identify educational programmes for MS on cultural diversity (racial and ethnic)	Limited info available, further research needed	Systematic	
McLean 2004 South Africa	Cross-sectional	Mixed	Survey	794 MS		Medical students (all)	Nelson R. Mandela School of Medicine	Investigate the importance students ascribe to culture in their choice of role models	Culture an important consideration for students when choosing a role model. Less so for pre-clinical.	Large sample size, defines culture, detailed discussion of implications for teaching and practice	One medical school, unknown response rate, no thematic analysis of comments, ethics?
McManus et al. 1998 UK	Longitudinal prospective	Quantitative	Survey	Two cohorts (1980, n=1478) (1985, n=2389)	50%-92%	Applicants to one London medical school, then in final year	St Mary's Hospital medical school, London	Assess whether clinical experience or learning style of MS relates to their final year exam performance	Success in exams not related to clinical experience however amount of knowledge gained from clinical experience relates to strategic and deep learning styles	Large sample, provides predictor of success and testable hypothesis	One medical school, possible response bias

Authors	Design	Methods	Tool 1	Sample size	Response rate	Participants	Location	Aim	Outcomes	Strengths	Limitations	
McNay 1999 UK	Discussion							Argue that the failure of certain theories of reflexive identity transformation to consider more fully issues related to gender identity leads to an overemphasis on the expressive possibilities thrown up by processes of detraditionalisation.	Bourdieu's work provides a corrective to certain theories of a reflexive transformation which overstate the extent to which individuals living in the post-traditional order are able to reshape their identity	Comprehensive discussion of theoretical standpoints regarding identity transformation	Focuses solely on gender	
Mizrahi 1985 USA	Cross-sectional & Longitudinal	Mixed	Observation Interviews			Interns Residents	3 placement institutions	Examine the impact of professional socialisation of internists on doctor-patient relationship	House staff world defined by GRDP perspective, peers = most important socialisers, coping strategies identified	Large sample, varied sites, triangulation of data	Gender/race element missing	
Murray-Garcia & Garcia 2008 USA	Discussion						Discuss the educational impact of one's institutional learning environment-the institution's ethos, teachers, modelling, policies, and processes-on the multicultural education of physician trainees	Few authors take critical perspective on how learners should change and sustain behaviour	Suggests usable conceptual model. Links hidden curriculum to professionalism			
Mutch 2003 UK	Discussion						Explore the tension present in the concept of habitus as used by Bourdieu and other authors.	Bourdieu emphasises habitus as a generative structure, whereas other authors use the concept in a much looser way. The work of Basil Bernstein can be used to indicate the value of a concept that emphasises a durable disposition to act but is embedded in a relational conception of the agency-structure divide.	Considers theoretical positions of various authors including Wenger's communities of practice		No clear, exactly how communities of practice relates.	
Odom et al. 2007 USA	Cross-sectional	Qualitative	Focus groups	43 MS		Medical students (all)	Various USA	Explore the barriers and facilitators experienced by ethnic minority medical students in achieving personal and professional success	Lack of financial and social support, challenges with standardized tests, experiences with racial stereotyping and discrimination, and self-imposed barriers were among inhibitors to success	First study to examine these factors	Selection bias, focus group, theoretical underpinning	
Omeri et al. 2003 Australia	Review	Systematic		34 Research studies			Examine a broad range of research studies to identify educational strategies to improve learning in culturally diverse classes	Educational, social & personal issues identified for culturally & linguistically diverse (CLD) students including problems with communication, academic culture & learning styles, isolation & family pressures. Identifies methodological weakness in area	Systematic, covers broad range of studies, makes recommendations, includes tutor views		Not based on medical students, short time limit for articles (1990-2001)	
Online et al. 2008 Australia	Cross-sectional	Qualitative	Focus groups	12		PG entry MS (all)	University of Queensland	Explore student views of the informal and hidden curriculum	Students recognised informal curriculum provided greater extension in to 1st degree & focused on being a doctor, focus on knowledge/exams	Student views on hidden curriculum, clear methods & ethics, defines hidden curriculum		1 medical school, small sample, generalisable to non graduate-entry?
Pololi et al. 2009 USA	Cross-sectional	Qualitative	Interviews	96 Faculty		Faculty	5 Med schools across USA	Investigate how the existing culture of academic medical institutions support all faculty members' ability to function at their highest potential	Relational aspects of the culture emerged as a central theme for all staff	Examines staff and culture. Suggests staff may pass on their experiences of latent culture to students.	Culture' not defined. Doesn't involve students	
Roberts et al. 2007 UK	Cross-sectional	Qualitative	Focus groups	49 MS		2nd year MS	2 North UK medical schools	Explore year 2 medical students' understanding of the concepts of race, ethnicity and culture	Themes emerging were 'white fears' at discussing race, ethnic minority discomfort at being viewed as different, difficulties relating to professional boundaries & barriers talking about race beyond legitimate disease related discourse.	First study to explore medical students' understandings of race, ethnicity and culture.	Narrow definition of culture used. Mixed focus groups.	

Authors	Design	Methods	Tool 1	Sample size	Response rate	Participants	Location	Aim	Outcomes	Strengths	Limitations
Robins et al 1997 USA	Cross-sectional	Quantitative	Survey	430 MS	81%	1st year MS (1992-3, 1994-5)	University of Michigan medical school	Examine differences in attitude toward the medical school learning environment (race, gender)	Women and BME MS less satisfied with learning environment, all students' education positively influenced rating of overall learning environment	Predictor models, results well described, discussion of student-teacher interaction	Survey data, quantitative, not very explanatory, no theoretical underpinning
Rogers 2005 USA	Review							Explore thesis that medical education is cultural transmission to learners	Supports thesis, education is transmission and compression, with assessment influencing student behaviours	Describes competency development process at one school	Developing competencies could be seen to fit into previous framework of meeting minimum standards
Rose et al 2005 USA	Review							Describe the development of optimal mentoring relationships	Experience and flexibility important for working with diverse students	Discusses gender and race preferences	Work drawn from other fields without acknowledgement
Seabrook 2003 UK	Longitudinal	Qualitative	Interviews Participant Observation & Informal discussions	22 teachers		Teachers (doctors)	Large UK urban med school	Elicit teachers' perceptions of the teaching environment at a single medical school during a time of curriculum change	Teachers concerned about students, the infrastructure for teaching and their relationship with the medical school.	Investigates tutor views. Longitudinal	One medical school, unclear methodology and ethics
Smith et al 2007 USA	Cross-sectional	Quantitative	Survey		94%	1st year MS	Medical School	Investigate depression, anxiety and perceived hassles among entering medical students	MS resemble general population on entry. Perceived hassles vary by gender and ethnicity	Large sample, carried out over 3 years	Self-selecting, one med school
Suchman et al 2004 USA	Longitudinal ?	Qualitative	Interviews			All members of medical school	Medical School	Describe initial experience with university-wide initiative to improve social environment (& hidden curriculum) of medical school	Appreciative inquiry identified 4 major themes; believing in the capacity of all people to learn and grow; the importance of connectedness; the importance of passion; the wonderment of medicine	Model identifies particular teaching issues including non-cognitive, role-modelling, experiential learning, reflection, learning climate & practitioner-patient/preceptor-learner	Lack of detailed methodology, empirical evidence, analysis
Turbes et al 2002 USA	Cross-sectional	Mixed	Case analysis Content analysis	983 cases		cases presented 1996-8 year 1 & 2	University of Minnesota medical school	Determine ways in which cases presented may embody elements of hidden curriculum, i.e. how they either support or undermine explicit messages about diverse populations	Messages are inconsistent with, and may undermine, formal multicultural medical curriculum.	Discussion of demographic assumptions made by students, mixed methods, interesting attempt to make hidden curriculum visible	One element of hidden curriculum, one medical school, student coders
Wachtler & Troen 2003 Sweden	Cross-sectional	Mixed	Learning objectives lists Interviews & focus groups	5 focus groups		Course directors Course tutors Medical students (all)	A Swedish medical school	Evaluate the current status of cultural competence training	Cultural competence is present but a mostly hidden part of the curriculum	Triangulated methods	No of interviews?
Wass et al 2003 UK	Cross-sectional	Mixed	Observation Examination	82 BME 97 W		4th year MS	Guys & St Thomas	Assess the effect of ethnicity on student performance in stations assessing communication skills within an OSCE	Mean performance of students from ethnic minorities was significantly lower	Mixed methods, suggests further research	1 medical school, small sample, generalisable to non graduate-entry?
Wear 2003 USA	Discussion							Propose insurgent Multiculturalism as a theoretical orientation for cultural competency and the study of culture in medical education	Suggests linking insurgent multiculturalism to professional development	Theoretical underpinning	
Wear et al 2007 USA	Cross-sectional	Qualitative	Focus groups Email survey	30 MS		3rd & 4th year female MS	3 US medical schools	Examine the stories women medical students tell about sexual harassment, including what they count as sexual harassment, for clues about non-reporting	Most students had experienced or witnessed sexual harassment.	Theoretical underpinning, detailed methodology and ethics process, definition provided	Possible response bias?

Authors	Design	Methods	Tool 1	Sample size	Response rate	Participants	Location	Aim	Outcomes	Strengths	Limitations
Whita et al. 2003 USA	Cross-sectional	Quantitative	Telephone interviews	639 MS	55% located (97% response rate)	Medical students (all)	Harvard medical school & University of California med school	Examine students' perceptions of the educational merits of a diverse student body	Significantly more interaction with other race/ethnicity at MS than prior. Strongly support affirmative action, report contact with diverse peers strongly enhanced educational experience.	Consistent with other reports, large sample size, ethics process discussed	Self-report, possible emotional loading of questions, little discussion of other types of diversity
Wise et al. 2005 USA	Cross-sectional	Quantitative	Survey	375 MS	61.4%-14.7%	Medical students (all)	5 traditionally white & 3 historically black med schools	Expand on existing research on social integration, going beyond sense of belonging work focussing on high school/college students	White students = higher GPA than black women = higher than male, women higher rates of participation in extra-curricular activities, race/sex/family prestige not related to recognition in form of awards, whites = fewer MCAT attempts, MS from higher prestige family = more attempts, the more choices a student has for med school choice the stronger their sense of belonging	Applies cultural capital theory, large sample over 5 years, multi-site, employs models, statistically significant	Little analysis, self-report, dichotomises choices
Wise et al. 2004 USA	Cross-sectional	Quantitative	Survey	375 MS	61.4%-14.7%	Medical students (all)	5 traditionally white & 3 historically black med schools	Specify variables that influence MS sense of belonging & impact that has on perceptions of academic success with particular focus on detecting differences between Afro-Am and white MS	Perception of academic success significantly related to MCAT attempts, type school choices & race, belonging to school choices & race. White students said these with fathers high education = more likely to feel academically successful. Differences between black/white, male/female students	Applies cultural capital theory, large sample over 5 years, multi-site, employs models, statistically significant	Sampling not systematic
Woolf et al. 2006 UK	Cross-sectional	Qualitative	Interviews Focus Groups	594 MS	65%T 43%MS	3rd year MS Clinical teachers	A London medical school	Explore ethnic stereotypes of UK MS in context of underachievement	Stereotypes of "typical" Asian student well developed and shared, direct discrimination not reported, student-teacher relationship perceived as vital	Includes tutors, purposive sample, makes recommendations for practice, theoretical underpinnings, triangulation	Self-report, WB female interviewer
Yates & James 2007 UK	Longitudinal	Quantitative	Administrative data	594 MS		1st year MS	Nottingham University	Determine the risk factors for poor performance at different stages of the undergraduate medical course	Students with lower A levels were at increased risk, but primarily in the pre-clinical course. Non-white ethnicity was also a risk factor (UK & overseas), but this was associated more strongly with lower marks on the clinical course. Males and those who received a later offer of a place were at some risk throughout the course.	Large sample, longitudinal cohort study	Many factors not investigated, eg. Personality, language etc.

Appendix 2 - Phase one interview discussion schedule

Topic Guide (Interviews)

Peer groups and participation at medical school

What peer groups are you a part of? Are these formed around ethnic background?

What do you understand by participation in medical school culture?

Are certain groups 'excluded' from full 'participation'? Why/how?

How do peer groups affect learning at medical school? Does this differ in different years?

Social and friendship networks

Are social networks important in establishing participation in medical school life?

How do social networks affect your experiences at medical school?

How frequently do you contact students and others in your social network? How useful is this for your learning or exam success?

Learning styles and approaches

How do you learn?

What do you envisage are the most effective learning styles/practices?

Are there ethnic differences in learning practice? What are they? How significant are they?

How important is problem-based learning (PBL) to your learning success?

Role of ethnicity at medical school

How would you describe your experience at medical school?

Do students from ethnic minorities have a different experience to white or non ethnic minorities?

Do students from Ethnic Minorities have additional responsibilities that affect their approaches to learning?

Where do you live? Does this have an effect on learning habits?

Do students feel their experiences are affected by their culture or ethnicity, in their interactions with colleagues, teachers and patients?

Perceptions of achievement and performance

How do you think you are performing at medical school?

What factors do you believe affect your performance and achievement at medical school?

Do you learn in groups outside of the medical school? Is this helpful?

How do your friends and peers learn?

What factors do you think may prevent successful learning at medical school?

What is the role of tutors (both clinical and non-clinical) in enabling successful learning?

Appendix 3 - Phase two Social Networks survey

Medical student survey – relationships, experiences and achievement

Your success at medical school is our priority and we would like to ensure you achieve to the best of your ability. The purpose of this research is to find out more about students' achievement and the factors that may mediate this to enable us to feed this back to students and improve the course, particularly around support. Your anonymity is guaranteed and any information you provide will be seen only by the researcher before any identifiable information is removed. If you have any questions please feel free to ask them at any time.

We are interested in the social networks you have established at medical school, particularly those that are beneficial for your achievement and learning. The following survey will ask you to indicate the types of relationships you may have with other students in your PBL group and with others outside of this setting.

1: Please tell us about your relationships *outside PBL sessions* with those in your current PBL group (tick all that apply)

I interact with this person...	Not at all outside of PBL sessions	In my clinical firm	In activities important for my academic success (ie. Study)	In activities unrelated to academic work (ie. Social)	For emotional or moral support
1. Student					
2. Student					
3. Student					
4. Student					
5. Student					
6. Student					
7. Student					
8. Student					
9. Student					
10. Student					
11. Student					
12. Student					
13. Tutor					

Please turn over

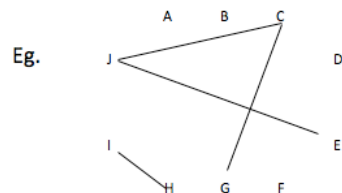
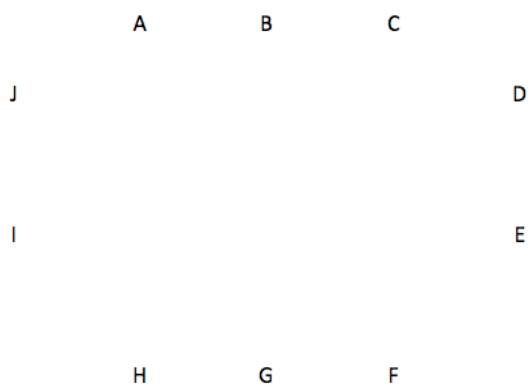
This section relates to people you interact with outside PBL sessions. These do not necessarily have to be other students, but they must be people you interact with in ways that support your achievement at medical school.

2: Please tell us about up to 10 of the main people that you interact with during term time in activities important for your academic success at medical school (ie. Study, revision, information or advice seeking).

Put their initials here to help you answer the following questions about them

	Age 1= <25 2= 25-35 3= 36-55 4= >55	Sex	Role 1=student 2=tutor/ clinician 3=family 4=other	Time known (years)	We interact... 1= daily 2= weekly 3= monthly 4= less often	Ethnic group	Religion
<i>Eg. HA</i>	1	F	1	3	2	Black African	Christian
A.							
B.							
C.							
D.							
E.							
F.							
G.							
H.							
I.							
J.							

3: Please indicate if the people you have told us about above also interact with each other in activities important for either individual's academic or work-related success. (eg. Does person A interact with person B in a study related activity?) Where there is such a relationship, draw a line between the letters representing the individuals above.



<p>C interacts with J & G H interacts with I J interacts with E No one else interacts</p>

4: We are interested in how your social networks may relate to your achievement at medical school. Please tell us which category you would place yourself in according to your academic (exam) performance.

	(tick)
Mostly Honours or Distinctions	
Mostly Satisfactory with some Honours or Distinctions	
Mostly Satisfactory	
Mostly Low Passes	

If you have ever failed any exam whilst at medical school, please tick this box

It would be very helpful if we could use your actual exam data as a measure of your achievement. This data will remain completely anonymous and will be used only by the researcher on this project. Please provide your student ID number if you agree to this.

Student ID number

5: Finally, we would be grateful if you could answer a few questions about yourself

Name	
Age	
Sex	
Ethnicity	
Religious beliefs	
Hospital site	
Parental/home postcode (non-UK students please indicate country of origin)	

(Please tick appropriate response)

Where do you live in term time?	At home with parents or family	On campus/ in rented accommodation	
What type of school did you attend?	State	Private	
Are you involved in any extra-curricular societies or regular activities?	Yes	No	
Do you have other responsibilities (ie. Parenting, caring, working during term-time)	Yes	No	

Thank you for taking part in this survey. We may ask you to take part in a follow up interview; you do not have to decide now, but if you would be happy to be contacted about this please provide the following information.

Email address	
Mobile telephone	

Thank You!

Appendix 4 - Phase three interview discussion schedules

Social networks

Aim: To add qualitative data to the social networks survey data

- Definitions/understanding of support
- Support networks

Initial open question:

Can you tell me about your experiences of becoming a doctor?

Use the survey as a prompt

*ask about tutors/clinicians/role models

Could you tell me about the people in your social network?

- people who you would regularly discuss important matters with
- there for you when you need help
- what do you share in common/what's different?
 - Ethnicity/culture/background
 - Overt – visual/language/accent & hidden –values/dreams

What activities do you participate in with these people?

- do you share common goals? What are these?
- In which areas of your life?

In what ways do these people support your achievement?

- define support

Are there any people who make things more difficult for you?

- how do you deal with these people?

Family, teachers, role models, mentors

Participation and identity

Aim: Understand how students' participation affects their understanding of the world

- Windows into worlds
- Competence
- Boundaries/exclusion

What types of things do you participate in at medical school?

- Curricular/extra

Experience

- What parts of your experience have you enjoyed?
 - Curriculum, practice, outside
- Has there been anything you have struggled with?
 - Curriculum, practice, outside

What made you decide to become a doctor?

- experiences/people
 - **How do you know how you are doing?**
 - Any particularly good feedback you can remember?
 - Any negative or feedback you didn't understand

- Place of exams as feedback
- **Can you describe any events that have shaped your identity as a doctor (or the doctor you'd like to be)?**
- **Tell me about a time when you felt particularly competent** (or perhaps simply like you belonged)
 - a moment when the penny dropped
- **Have there been any times when you have felt like you don't belong/excluded** (by others or self)
 - What effect have these sorts of situation had on your identity as a doctor? What about as a human being?
- **Are there any parts of your identity you feel the need to suppress at medical school?**
 - Ethnicity/culture/background
 - Overt – visual/language/accent & hidden –values/dreams

Achievement

Chapter 10

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