

## **Aspirations, subject choice and drop out: decision-making amongst AS Level mathematics students.**

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*Opening doors to mathematically-demanding programmes in further and higher education (FHE): Working Paper Series.*  
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### **Purpose of this working paper**

This working paper provides a summary description of the survey results with regard to students' aspirations for university and degree subject choice. It examines the patterns of aspirations and degree subject choice for various minority ethnic groups, for male and female students (and for groups of students based on proxies of social class). In particular, the nature of our survey sample allows us to explore this for Indian, Pakistani, Bangladeshi, Black African and White British students, who had all opted for AS mathematics. Explanations for the subject choice distributions are sought in accompanying interview data for over 40 students. In particular, we can show how degree subject choice (for our sample of AS mathematics students) is culturally mediated. Narratives of the educational decision making of the minority ethnic students and the White British students are compared in order to explore the cultural mediation of degree subject or career choice. Especially, we illustrate this in contrasting narratives of Pakistani, Black African and White British students.

*Abstract Full Paper p.d.f. [hyperlinks](#)*

### **Abstract**

*This paper draws on surveys of up to 1700 students and interviews with 31 students collected during the ESRC- TLRP funded project, "Opening doors to mathematically-demanding programmes in further and higher education (FHE)". The students were taking Level 3 (pre-university qualifications, usually, over a period of two years), and as part of their general education A Level programme had opted to take an AS Mathematics or Use of Mathematics course.*

*The paper begins with a summary description of trends in university degree subject choices and considers how these are influenced by gender, ethnicity and social class (using the survey data). This analysis motivates an exploration of ideological values that mediate social identities, such as those shaped by gender, ethnicity and class. Specifically, we analyse students' cultural models and situated identities (Gee, 1999) regarding university and career choices in terms of the ways they challenge and/or reinforce ideologies that maintain the status quo across particular social group identifications. We draw on van Dijk's (1998) notion of social identity and ideology to link our analysis of cultural models to the investigation of social phenomena from a critical theoretical perspective.*

*We find that students taking AS maths and other A level or equivalent level three qualifications indicated high expectations of university entry, and we describe trends in University subject choice, which are broadly in line with the literature and government statistics. We found that most students had already decided upon a degree subject area and sometimes also a career by the beginning of their AS Level courses, but that early intentions were subject to change.*

*We found that in articulating their intentions about degree and career choices that students draw on a number of ideological values and cultural models, e.g. as a son, a daughter, a wife, a future worker and/or a successful person, and that these were used in the construction of nuanced gendered, ethnic and classed narratives. We found that students drew on values and other cultural models to do with performance, but that while White British students tended to narrate themselves as individuals in a 'system', minority ethnic heritage students tended to emphasise their families and communities.*

*We found a difference in the articulation of White and Asian students with regard to university subject choice; while Asian students tended to draw on identifications to do with the family, and to articulate family cultural social rules that they often recognised as mediating their decisions, White British students tended to present themselves as in the position of power, with regard to their university subject choice. We found White British students tended say little about the cultural social rules mediating their decision-making. We suggested this "absence" of talk occurred precisely because they position themselves as agentic decision-makers, and that this then closes or reduces a discursive space, rendering discussion of family or community social rules as contradictory or unnecessary. We suggest that this can sometimes act to mask social differences, as might exist, within the White British category, for instance different sets of social rules that might be situated in different classed "White communities. This suggests we may need to find ways to probe more deeply to learn about less visible social rules.*

## **Background**

This is a sister paper to Davis et al., working paper b (Davis et al., 2008b) and we suggest that they be read together. In working paper b, *ibid*, we concluded that, in the face of troubles, students' (re) negotiation of their trajectories was mediated by (i) cultural models about making one's way in the world into adulthood and (ii) the quality of their identification with an intended career goal. Students who articulated a view of their aspirations and projected professional selves through the intrinsic value of their "chosen" professions tended to fall in the category of narratives of *persistence*, whereas students who emphasised a view of performativity and status fell in the category of narratives of *adjustment*.

However, although we illustrated how students' narratives can be nuanced by socio-cultural and historical situations, we did not explore the impact of ethnicity, gender and social class on students' figured worlds (Holland, Lachicotte, Skinner, & Cain, 1998) and how these influenced university degree course and career choices. In one sense, this paper picks up where Davis et al., b ends, with an exploration of education and career choice making. However, analysis of students' constructed identities as young adults aspiring to university (or not) from a critical perspective provides a more nuanced understanding of their decision making, particularly with regards to the intersectionality (Collins, 1999) of race, class, and gendered identities within the domain of educational and career aspirations. Specifically, we analyse students' cultural models and situated identities (Gee, 1999) regarding university and career choices in terms of the ways they challenge and/or reinforce ideologies that maintain the status quo across particular social group identifications.

We draw on van Dijk's (1998) notion of social identity and ideology to link our analysis of cultural models to the investigation of social phenomena from a critical theoretical perspective. That is, we argue that cultural models often entail ideological values that serve to construct social groups and social identities, such as those defined by aspects of gender, ethnicity and class.<sup>1</sup> Arguably students' positions are maintained through various ideologies, which are understood to

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<sup>1</sup> This approach is informed by that taken in Farnsworth and Davis (2008)

be sets of factual and evaluative beliefs (socially shared belief systems) which people acquire through accumulated experience and draw upon to help make sense of the world, and to engage in patterned social practices (van Dijk, 1998). Importantly, these ideologies are used to construct and maintain social groups by setting boundaries between “us” and “them” (Farnsworth & Davis, 2008).

Thus, on the one hand, we recognise that this more finely detailed discourse analysis that seeks to recognise and value ethnicised, gendered, and classed voices provides a way to learn how historically rooted social differences come to be decisive. On the other hand, we also recognise that we need to know the ethnicised, gendered and classed trends in university degree subject choice in order to recognise differences in the social constructions and values held by different “subject oriented” social groups of university students. Both perspectives are revealing.

We begin our story of social differences in university subject preferences by describing the picture of our survey data (from around 1700 students)<sup>2</sup>. This analysis is based on proportional reasoning and is descriptive - it is not a probabilistic quantitative analysis, (for that, see Hutcheson et al, working paper b). This overview is presented in the following section as a short vignette called “Aiming Higher”. This section, considers trends in students’ intended university degree subject and careers, and how these trends are influenced by ethnicity, gender and/or other social differences such as social class<sup>3</sup>. Its function is to pin-point trends in the survey, which provide the motive for the comparative qualitative analysis of more fine-grain stories, which follows on. In a sense this provides the background to our focus on the questions:

➤ *How are decisions about university subject choice mediated by ideological values? And,*

➤ *How are values/cultural models used in students’ discourses to challenge or reinforce ideologies, which maintain the status quo across particular social groups (especially with regard to Asian versus White British social groupings)?*

### **Aiming higher**

The vast majority<sup>4</sup> of our sample of 1700 level three students taking a course in mathematics aspired to go on to a university degree and they stated that their interests were in a wide variety of subjects (See annex Figure A and Table A). By the end of their A2 year, *Engineering and Technology* and *Business and Administrative Studies* (each at approximately 12%) were our sample students’ most popular intended destinations. Social studies, subjects allied to medicine, “don’t know” and “not university” all followed closely (each between 7% and 9%). Biological Sciences, Mathematical Sciences, Physical Sciences, Medicine and Dentistry then came close behind (each with just over 5% of the sample). Students indicated a full range of degree choices with some located in each of the 19<sup>5</sup> HESA subject categories (though for many subjects categories this was for small numbers, e.g. veterinary science 3 students, and agriculture and related subjects 4 students).

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<sup>2</sup> The numbers we draw on for this paper are those related to Data Point 1 and 3 (DP1 and DP3 hereafter) with total  $N_{DP1}=1792$  and  $N_{DP3}=681$  students

<sup>3</sup> This question is addressed in the section “Aiming Higher”.

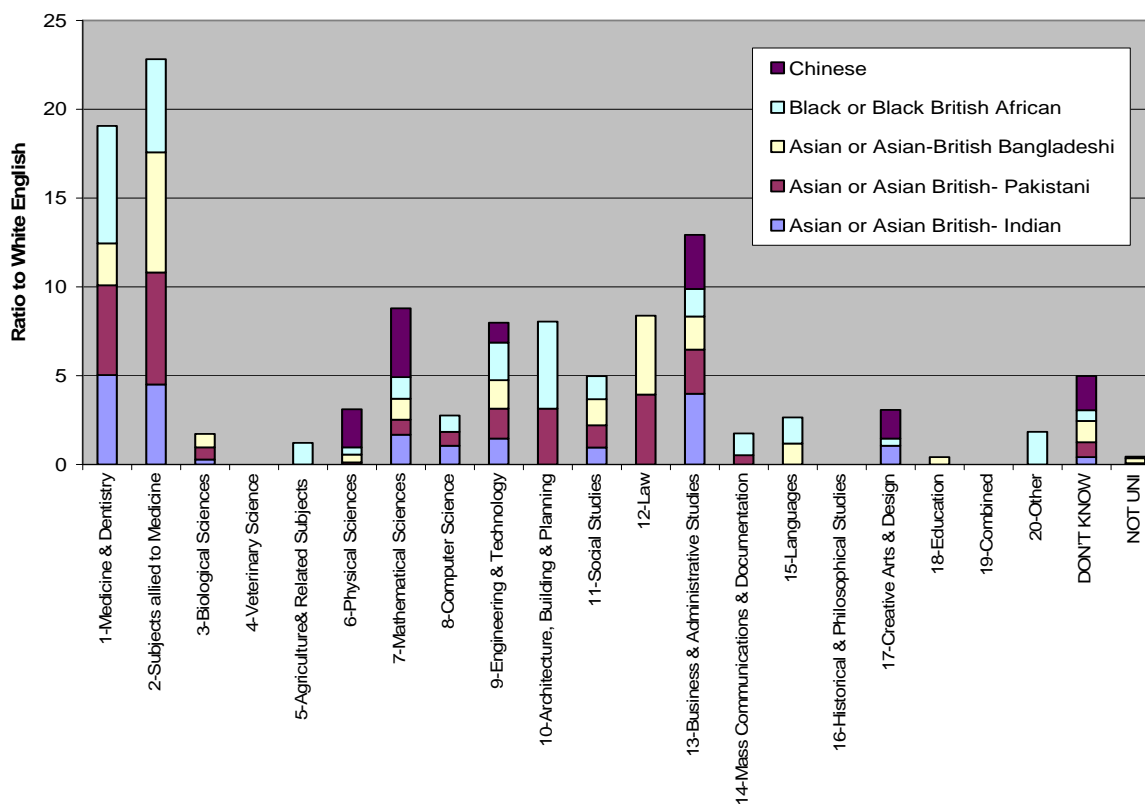
<sup>4</sup> DP3: 82% reported they will go to HE, 9% are unsure and approximately 9% are not going

DP1: Approximately 65% reported they will go to university, 30% were unsure and only 4+% said they will not go

<sup>5</sup> Category “20-other” was added by us to cover for subjects not included in HESA categories (e.g. Pilot studies)

Nearly half the sample intended a degree in a STEM subject (Science, Technology, Engineering and Medicine). About 20 to 30% <sup>6</sup> of the students who were studying mathematics at AS level (or above) were not intending to take a degree with any significant demand for mathematics, e.g. languages, arts etc. As may be anticipated there was sample bias towards the physical sciences, engineering & technology, and medicine. There was also a sample bias towards business and administrative studies and under-representation of subjects allied to medicine and education when compared with the national population (for the academic year 2006-2007). It should also be noticed that our percentages approached the national percentages progressively when observing changes between DP1 and DP3 (see Table 1). This is expected because some students adjusted their choices in the light of their AS grades.

When we looked more closely we found differences in the distribution of take up of subjects by gender and by ethnicity (see, respectively, Figures B and D in Annex, which show the likelihood of choosing a subject for gender and ethnicity, for each of the HESA subject group categories for our sample). We found some strong gendered biases in subject choice. For example the likelihood of female students intending to study a degree in languages or history was much greater than for male students, while the likelihood of male students intending to study a degree in engineering, physical sciences or computer science was much higher than for their female peers. Figure 1 shows how some subject areas are preferred by certain ethnic groups.



**Figure 1: Ratio of the likelihood of a Minority Ethnic student intending on University Degree subjects in relation to White British students**

For example, Figure 1 shows that Asian or Asian British Indian heritage students were four times as likely as White British students to indicate a preference for “Business and Administrative Studies”. Alternatively, Black African students were about six times as likely as White British

<sup>6</sup> Depending on whether the NA category (i.e. missing data in DP3) was considered or not

students to express a preference for “medicine or dentistry”, while Indian and Pakistani heritage students were five times as likely as White British students to express a preference for this same subject. However, the Bangladeshi heritage students were only two and half times as likely as White British students to express a preference for medicine and dentistry for this sample. We also considered whether these trends were gendered and classed, but while there were some ethnic gender differences, e.g. Asian females were a little more likely to choose medicine or dentistry than Asian male students in our sample (also see Figure C, annex) these differences were not particularly large.

Figure 1 also shows a greater likelihood for White British students to intend NOT going on to university. We were not unduly surprised by these sample trends, because they align with earlier literature (Ashworth & Evans, 2001; Bhattacharyya, Ison, & Blair, 2003; Siann & Gallagher, 2001; Simpson, 2001).

When we look a little closer still, we see that the tapestry is detailed. If we compare survey responses to the question about family expectations<sup>7</sup> we see an ethnicity effect, whereby White British heritage students behave differently to the other categories, who broadly speaking followed the same trends (Figure 2). In particular, we see that those other than “White British” students indicate strong parental expectation for university, whereas for White heritage students this is more variable, with parents of “White British” students reported (by the students, that is) to be particularly more likely to have ‘no expectations’ of them going to university.

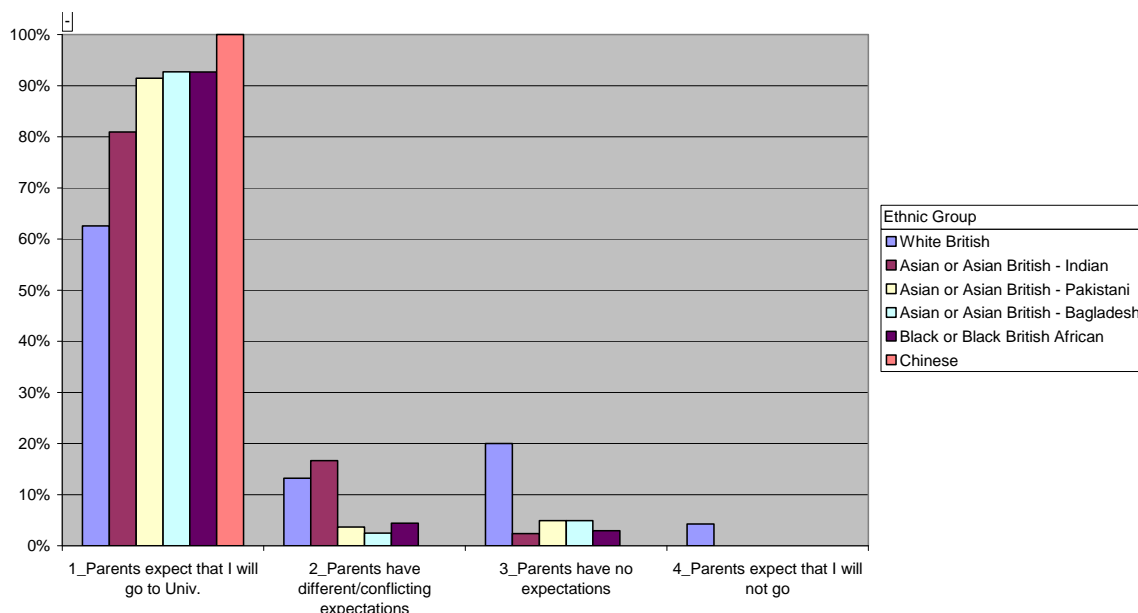


Figure 2: A bar graph of parental expectations split by ethnicity.

<sup>7</sup> This item was presented as a set of statements with the following instruction (also applicable for two similar items): “For the following statements, tick the statement that best describes you. Tick only one box for each set of statements”. It was then presented as follows: About my family expectations:

- My family generally expect that I **will** go to university
- Members of my family have different or conflicting expectations of me about going to university
- My family have no expectations about whether I will go to university or not
- My family generally expect that I **will not** go to university
- Don't know

We see that for some subjects, e.g. for medicine and dentistry, that almost all students indicated parental expectations for university, regardless of their heritage (thus, White British students who want to read medicine or dentistry also indicate parental expectations of university). But, when we look at those who do not intend to go on to university, we see the reverse, with students' not intending on university, going alongside "no parental expectations" or "expect I will not go". Only one student who responded they did not intend to go to university also indicated that their parent's expectations were 'for' university. We looked then to see if these patterns of perceived parental expectation for university were particularly classed or gendered but did not find this to be the case. However, we note that our proxies for class are likely to be unsatisfactory in their power to detect real class differences that might exist<sup>8</sup>. Indeed, it may be that parental expectations provides a better differentiation of cultural differences with regard to educational decision-making amongst the group.

We also examined changes in students intended degree subject choice over the period of their A Level (or equivalent) studies. We found that most students (62.6%) were able to express a preferential degree option, at the start of their AS year, but that, on average, the proportion of "undecideds" decreased over the data points (27%, 20%, 10%, respectively). We also found a considerable amount of jumping between subjects over the course of the study (57% changed their minds between DP1 and DP3, see Figure E in Annex). We note that of the 82 students who indicated "medicine or dentistry" at Data Point 1, 16 changed their minds. 8 of these changed at DP3 to either "Subjects allied to medicine" or to biological sciences. We also note that of the 21 students who indicated mathematical sciences and changed their minds, 7 changed to "Business or related", and that in particular accountancy became the new subject of choice for this group of changers (Table B).

In general then we have presented a picture of students aiming higher. Students taking AS mathematics and other A level or equivalent level three qualifications showed high expectations of going on to university<sup>9</sup> (Williams et al., 2007), and we have described trends in University subject choice, which are broadly in line with the literature and government statistics. We have also shown that university subject choice is gendered and subject to strong ethnic trends.

The survey motivates an exploration of cultural influences on university subject choice because there were trends in the data when using categories of ethnicity, gender and social class. Especially, the likelihood ratios of subject choice, for gender and ethnicity provided significant trends worthy of explanation. By way of explanation of these, we turned to the interview data (serial interviews from 44 students). These data include students who intend to go into a wide range of subject studies, (including business and administrative studies, engineering & technology, medicine & dentistry), and a high proportion of students with minority ethnic heritages, including some recent immigrants to Britain<sup>10</sup>. We were therefore in a position to

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<sup>8</sup> This being a problem of classification and measurement of social class in general, and not a problem specific to our data.

<sup>9</sup> During a pilot survey stage (with N=300+ students) we managed to validate with the aid of Rasch (Partial Credit) Model two disposition measures: (a) The 'disposition to enter HE' (HEdisp) measure is made up of 6 items that elicit students' perceptions about going to university and the expectations of others about this possibility (family, friends, teachers). (b) The MHEdisp measure resulted from the calibration of 6 items aiming to capture students' dispositions towards studying mathematically demanding subjects in HE. Students were measured on these scales on three occasions (See Figure F in Annex for their distribution on DP3).

<sup>10</sup> The forty-four students were on Level 3 programmes (pre-university qualifications, usually taken over a period of two years), and as part of their programme had opted to take an AS Mathematics or Use of Mathematics course. Most of the participants were on a general education A Level programme and twelve

investigate a diversity of students' constructions of their university degree subject decision-making and ways in which these may be culturally influenced.

The remainder of this paper focuses on how decisions about university subject choice are mediated by cultural, ideological values. This involves an exploration of how values are used by students in their talk to challenge or reinforce ideologies that maintain the status quo (with respect to preferred degree choice) across particular social groups, (especially with regard to Asian versus White British social groupings). This classification by ethnic group was chosen because our preliminary analysis of the interview texts revealed that students with different ethnic backgrounds had qualitatively different ways of expressing themselves that seemed potentially fruitful as a source for exploration. These ethnicised voices seemed to subsume gender and also social class with respect to the discourses they drew upon in relation to university subject decision-making processes. This tentative observation further focused the analytical approach and so focus of this paper.

Incidentally, Figure G shows a greater proportion of take up of A2 mathematics by Asian and Black students and a greater drop out from maths (after AS level) by White British students. We suggest that this distribution is also culturally influenced in complex ways. However, exploration of this goes beyond the bounds of this working paper, but will be addressed elsewhere in an additional project working paper to come. Reasons for the 20-30% drop out from mathematics, after completion of AS level, is taken up in Davis et al. (2008b).

## Methodology

For this analysis, we decided to focus on the subset of students who were on a general education "AS Level" programme. The reason for this was that the students on vocational programmes had often already taken the key career decisions that implicate particular (designated) views of their future professional selves (hence 'vocational'!) They had already chosen certain educational tracks (12 students engineering and one health and social care) before we met them, and we have described in Davis et al (2008b) how almost all these students' narratives could be described as "steady as they go"<sup>11</sup>, involving few changes of significance during the study. We found that

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were taking a BTEC National in engineering .With the exception of one mature student, participants were between the ages of 16 and 19. 34 were from 1<sup>st</sup> generation to HE families (combining 1<sup>st</sup> generation and 1<sup>st</sup> generation "siblings at university" categories). 15 participants were female and there were no females on the BTEC Engineering programme. 25 of the students are non-white, and these have a range of heritages: African, North American, Bangladeshi, Borneo, Brazilian, Bulgarian, Caribbean, Chinese, Columbian, East Asian, Ghanaian, Nigerian, Pakistani, Somali, Ugandan and White. Participants were each interviewed on up to three occasions in order to capture their trajectories. The interviews focused on students past and present experiences of learning maths, how they choose their A level and degree subjects, their educational and career aspirations and the role of maths in their imagined futures. [See Figure 11, which shows the intended university subjects for the interview sample, split by gender and ethnicity.]

<sup>11</sup> "Analysis of the storylines led to the construction of three categories of narrative "steady as they go", "when troubles come aspirations adjust", and "when troubles come I persist". Of the 44 interviewees, eight narratives were classified as "when troubles come ambitions adjust" and five were classified as "when troubles come I persist". These categories were constructed by pin-pointing troubles and subsequent changes in students' trajectories, which could be connected with their troubles. Outline trajectories could then be compared and grouped, e.g. aspiration a, trouble, aspiration b, or aspiration a, trouble, aspiration a. These canonical outline narratives formed the categories, which were then described in concrete terms. The main classification of students' accounts was one of "steady as they

university subject decision-making was usually referred to post-hoc amongst this group. Therefore, we decided to focus our analysis of the ways students' challenge and/or reinforce ideologies that maintain the status quo on the group of general education students.

The first stage of the analysis was to return to the classification of the synoptic accounts (discussed in Davis et al, b), which were used to aide the synthesis of the data set (for well over one hundred transcribed interviews). In this paper we take the same "adjuster" and "persister" narrative categorisations (as in Davis et al, 2008b), but also separate these by ethnicity (either White British heritage or "Other than White British heritage") and gender.

Particularly motivated by our exploration of the survey data on students' university subject choice, we were interested to examine cultural differences in values that might differentiate subject choice. We wanted to see, for example, whether we could find an explanation for the group of white British students who indicated that they did not intend to go to university. We also wanted to explore the process of decision-making that might afford some explanation for the trends encountered, for example the over-representation of Asian and Black students in "medicine & dentistry and the over-representation of Asian students in "business and related studies".

In Davis et al (b), we identified a number of cultural models (e.g. ideological values), which students had drawn upon repeatedly, either in conformity or in resistance, and used to present themselves in certain ways e.g. as a dutiful son. These included: "*a woman's role is still to serve a man/family*", "*you have to play the game to get ahead*", "*its in my bones/culture to become a....*". We were careful to point out that this should not be seen as a definitive set of models that mediate decision-making. Other ideological values were also used by the students e.g. deference for the family, respect for parents/elders, aspirational values.

Following on from this initial analysis, we consider how students used these ideological values to present themselves as certain kinds of people, e.g. as a dutiful son and/or as an ambitious young person, in order to justify their decision-making. We consider how use of, and even allegiance towards, certain ideological values is culturally influenced and demonstrate this by grounding analysis in the texts to show how students position themselves so as to sometimes challenge and/or reinforce ideologies that maintain the status quo in certain social groups (particularly for this paper the groups of Asian and White British).

### **Troubling values and situated identification**

Table 1 lists the troubling values<sup>12</sup> (cultural models) that students articulated to us as they described their professional futures (Davis et al., 2008b): students' narrative trajectories are split into 'adjuster' and 'persister' categories, and by gender and ethnicity. We note that "White British Heritage" and "Other Heritage"<sup>13</sup> students (male and female) negotiate similar ideological values, (those to do with the family, their learning and getting on in the world predominated), and that sometimes these values are experienced by students as troubles. We also note that, although all students drew on discourses of performativity, these ideological values

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*go". This reflects how students had often already a firm idea in mind about their imagined futures at the point we entered their lives." (Davis et al, b, p.7)*

<sup>12</sup> That is values that caused the student a problem in some way which they articulated to us and motivated narrative.

<sup>13</sup> "Other heritage" students are put together because they appear to behave similarly with respect to the values and ideologies that they use when articulating the process of their decision-making.



were troubling only to students who articulated narratives of adjustment, and this was independent of ethnicity or gender.

**Table 1: A summary of troubling values experienced by students on general education programmes (including an AS Level in mathematics).**

<b>Troubling canonical narratives</b>	<b>Other than White British heritage female</b>	<b>Other than White British heritage male</b>	<b>White British female</b>	<b>White British male</b>
<b>“When troubles come aspirations adjust”</b>	Parental/cultural values for children  “to get ahead of the game”- maths grades – real or imagined  Intrinsic values- Maths difficulties	Parental/cultural values for children  Provision for a family  “ to get ahead of the game” ”- maths grades – real or imagined  Intrinsic values- Maths difficulties	A woman’s place is in the family (not university)  “ to get ahead of the game”- maths grades  Intrinsic values- Maths difficulties	Parental/cultural values for children  “ to get ahead of the game”- maths grades  Intrinsic values- Maths difficulties des
<b>“When troubles come, I persist”</b>	Parental/cultural values for children  A woman’s place is in the family  Intrinsic values- Maths difficulties – maths grade	     Intrinsic values- Maths difficulties – maths grade	Values - identification with family    Intrinsic values- Maths difficulties – maths grade	Values - identification with family    Intrinsic values- Maths difficulties – maths grade

However, although generic troubling values were experienced across the sample, we found these were experienced differently by ethnic and gender groupings; there were differences with regard to how more specific values were used in the discourse when articulating decision-making processes.

We see that minority ethnic students tend to draw on ideological values to do with the family as institution, or their “community” as a means with which to present themselves and justify decision-making, (e.g. as a dutiful son or daughter who follows parents wishes), whereas the White British students sometimes presented themselves as independent decision-makers.

For example, consider these extracts from two Pakistani heritage students: *You don’t want to go away? “No, my parents say local.”, Why is that? “Only child.”* (Pakistani male, recent immigrant to Britain, Mohamad). Alternatively, *“No, it’s ok, yeah, because Medicine is like .. one of the reasons why I chose Biology was because my Mum wanted me to go in Medicine, you know, she thought..”, Your Mum? “Yeah.”* (Pakistani female, Anupreet, recent immigrant to Britain). In the first extract the student positions himself as a dutiful son. In the second

extract the student positions herself as someone whose decisions can be influenced by her mother.

On the other hand, while both Mohamad and Anupreet choose to draw on talk about social rules of the family as culturally mediated. The following extract shows a positioning more typical amongst the White British student, when the student draws on a view of herself as an independent decision-maker:

Interviewer: *Were there any other influences? I mean you say your family, parents were encouraging you but anyone particularly pushing you for maths?*

Student: *“No. Because it was my choice, what I wanted to do, so they just encouraged me on what I wanted to do. Not what anyone else wanted me to do” (White British heritage, female, Lucy).*

White British students often told us that their parents (just) wanted them to be happy or would be supportive of their decisions what ever they were *“He [his Father] just says to me ‘Whatever you do I’m happy with’.”*

PHM: *Now, about your decision to go into Veterinary. What do your parents think about that?*  
Sarah (White Middle class female): *I think they’re happy for me, whatever I’m doing. My Mum’s very good; she’ll support me in whatever I’m doing. Unless it’s something really ludicrous or a bit silly. They’ll really support me with it.*

PHM: *What would you consider ludicrous?*

S: *Oh, I don’t know. (Indistinct). No, she said she’ll support me in whatever I’d choose to be honest.*

PHM: *And your dad?*

S: *(Indistinct) whatever happens, so.*

The use of the term “happy” suggests a resolution between parents and child and possibly suggests parental recognition that final decision about subject choice is/(or possibly should be?) in the hands of their child/the student. We did not usually find that minority ethnic students used the term happy in the same way. However, an emphasis on parents being happy with decisions made in these extracts might sometimes mask unvoiced parental influences on students’ decision-making (we return to this later). Perhaps, precisely because alignment with an ideology that centres around the individual as decision maker leaves little space for articulation of parental influences, given an obvious tension - I am my “own person” and I make my own decisions, but I also do as I’m told by my parents. Whereas being a dutiful son compliant with his Father’s wishes for accountancy, as was articulated by Mohamad (for example), was not articulated by the White British students.

For example, Jason applies for chemistry and his father is a Chemist and university educated, but he doesn’t say very much about this. Instead, he emphasises himself as decision-maker and his autonomy with out choosing to draw on a possible relation (or not) between his decision and his father’s occupation.

**IK:** *What do your parents think about your choices?*

**J:** *I am not too sure.*

**IK:** *You haven’t talked about it?*

*J: Not really. I have talked to them a bit when I wasn't sure whether to try and apply for a medicine degree or whether I shouldn't. ... They are happy with the choices I made [application for technological degrees directed towards applications in chemistry or medicine]<sup>14</sup>.*

Thus, there was often an “absence” of talk about the cultural mediation of family/community rules about decision making articulated by White British students. Their talk instead focused on themselves as agents - decision makers “independent of their environment”. For example, Lucy, White female, working class background), challenges the question that suggests the possibility of cultural mediation:

*J: Are any other people that you know well enough to talk to about it other than your brother who went to Leeds?*

*Lucy: I don't know...*

*J: There's no one in your extended... sort of family and uncles and aunts and things like that...? So you've got one example that you feel is a bit discouraging maybe from going to uni?*

*Lucy: Well yes but... I just don't see why that affects me because this is their choice and this is my choice...*

Lucy's challenge has the function of closing off this conversation in this interview. On the other hand, Mohamed is able to clearly articulate social rules or ideological values that he believes mediates subject choice decision-making. He articulates this when asked to explain his response to the question, If you were a girl would you probably do something different? To which he replied, “Probably a doctor”.

*MP: Why, do you think girls are ...?*

*M: I don't know, in a family most Asian girls like to be doctors.*

*MP: Why is that?*

*M: I don't know. It's just that the family, they want them to do good.*

*MP: And they want them to be doctors?*

*H: Boys as well, doctors.*

*MP: The same, it doesn't matter.*

*H: It's the respect, you see. If someone's a doctor in your family, everyone respects you [the family]. And that's why they [parents] want their children to be doctors.*

*MP: So any other jobs that are respectful? Just doctors?*

*H: I think, mostly I've heard about doctors in my country.*

*MP: What about your decision, I mean, Accountancy? How do they see it?*

*H: It's respect in my family.*

*MP: It's respect?*

We do not see the equivalent framing (to draw on Bernstein's concept) of discourses of socio-cultural rules governing subject choice in the talk of the White British students. The nearest we have is from Jason who says, “If my grades would have been better I would have possibly thought about getting into a medicine degree and if they were worse I wouldn't have gone for difficult subjects”, but while he thereby draws on a sense of social hierarchy in degree subjects; high A level grades give access to difficult degree subjects, but he doesn't elucidate. Mohammad's understanding of the mediation of community based cultural social rules in governing subject choice are made visible. So Jason, refers to a hierarchy of subjects, whereas Lucy explicitly denies relevance to family influences on her decisions. We can perhaps infer that such social rules if they exist are invisible to them.

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<sup>14</sup> **J:** I am applying for, all in “at home uni” and I am applying for Biomedical Science, Mechanical and Medical Engineering, Pharmaceutical Science, Chemistry with Molecular medicine and Physics with nanotechnology.

However, although White British students did not tend to articulate how cultural social rules mediate their decision making process, they did sometimes talk about family expectations, and we can see that sometimes these were mediated by socially classed norms.

For example, Lisa (White British female, 1st generation to HE, low participation neighbourhood) is set on going to University (we are left a little unsure about the support of her family in her achieving this aim). Lisa was initially firmly of a view to become an Architect, and talked about the possibility of living in Northern California to practice this. She since changed her degree subject to "Interior Design" because she says that this will be mathematically less demanding, and she sees Architecture as being demanding of maths (she got a U grade for AS Maths). Here we consider how she talks about her family's influence on her decision for university.

MP: *What about your family, what did they suggest to you, how did they, what did they..?*  
Lisa: *Um, my Mum, my Dad isn't really too bothered. He wants me to do whatever I want. My mum didn't really want me to go to university, and I don't know why, I just don't think she wants me to leave home.*  
MP: *She doesn't want you to leave home? What was she telling you?*  
Lisa: *She said wants me to try to get an apprentice, you know in what I want to do, but you can't really, it's quite difficult to find, so, I just don't think she wants me to leave home.*  
MP: *Umm, maybe yeah. So she didn't go to university I guess.*  
Lisa: *No, my Mum didn't, no.*  
MP: *Your Dad?*  
Lisa: *My Dad didn't, no. He went in the Navy after school.*  
MP: *So none of them have been, but your Mum wants you to stay here. She doesn't see any value in you doing a degree?*  
Lisa: *I don't know. I don't really think she understands it. But she knows that it pays off in the end.*  
MP: *How do you feel about it? I mean, what is your opinion about this whole university ... ?*  
Lisa: *I think it's quite scary.*  
MP: *What do you mean?*  
Lisa: *Moving away and I won't know anybody.*  
MP: *But why would you want to do it, I mean what is your reason?*  
Lisa: *I just want a degree in what I like to do, really. That's basically it. So I can get the job that I want.*

Lisa draws on a value that a degree will lead to a better job, "*she knows that it pays off in the end*" and "*that's basically it. So I can get the job that I want*". However, she says she was not steered in this direction by her family and it seems she was not encouraged to pursue this pathway. She applied to universities close to home but doesn't confirm whether, or not, this is because of family influences.

Lucy (White working class female) on the other hand, draws on the same value of delayed financial gratification of education, but does so from a position of challenge, because she does not articulate a belief in the value of delayed gratification for eventual extra financial rewards, and instead focuses on immediate concerns about likely indebtedness:

J: *"So, let's look forward a bit. If you do well in your course here what sort of future do you think you might have?"*  
Lucy: *"I don't know because I don't know if I want to go to university or not. Because you see some people get fed up with it and get in so much debt and everything and I don't want to be like that."*

Lucy tells us that she works at B&Q with her Mum, on the check out and collecting trolleys. She enjoys this, "*yeah, I love it*", and may work there full time when she finishes her A levels. She

identifies strongly with her role. When asked, “Would you be interested, for example, if you get very good grades, to leave your job and put more of your energy into college to get...”, she identifies with her current part-time job at B&Q, “I wouldn’t leave my job, no. I’ve been wanting it for about 3, 4 years. I’m not going to leave it now”. She is not inclined towards university and doesn’t really see the point of going there. She has been consistent in this respect. *Not really but it’s... I don’t know. It’s like I wasn’t happy with my GCSEs so I didn’t see the point in coming to [6th form] college but then I got talked to it...* Although Lucy contested the point of discussing possible influences on her (earlier) she does reveal here that she was “talked into going to 6<sup>th</sup> form college” by her mother who thought she should have something to do. She doesn’t talk about her mother suggesting the same reason for continuing on to university.

On the other hand, Craig (White British male, parents with professional careers) is encouraged and supported to achieve his goal (his choice) to become a vet. He indicates parental preference for this route, which he describes as being “obvious”. *They don’t mind. They think it’s brilliant, yeah. I mean, going to university, my Mum obviously wants me to do that and she thinks it’s a brilliant opportunity and stuff and she keeps saying to me stuff like, if you want to stay and extra year, you stay an extra year. ‘Cos like I said, it’s one year of the rest of my life, you know what I mean? If I spend one year getting the grades I want and then get onto the course I want, then it’s only one year for me to get everything I want.*

Alternatively: Jason (White middle class, male) mentions parental expectations of university:

*Yeah they have always encouraged me to go onto a university but they never really bothered whether I stayed home or moved away. It has always been expected that I will go to the university, and I will probably do something with has to do with science.*

Lucy, Craig and Jason align with their parents expectations. Lisa, on the other hand, does not. She justifies this by saying apprenticeships are difficult to get, implying that this is not really a serious option for her. While she aligns with a view that education offers her worthwhile delayed gratification, she is also aware that there are other points of view (she doesn’t say “my Mum obviously wants me to do that”), and that her Mother doesn’t subscribe to this, which she interprets as lack of understanding on her Mother’s part. All the above students also talked about parents as being happy with their decisions, when they described their decision making processes with respect to university subject choice, but yet, we have shown that these students reveal differences in parental expectations about their futures (even though they may not recognise these expectations, as necessarily mediating their decision making).

While, White British students indicated a wide range of parental expectations, the Asian students in our sample ALL talked about parental expectations for their going on to university. For example,

I: *Do you think your own background or your neighbourhood where you live might have an influence in your choices and decisions?*

Sabir: *If you’re talking about my background as in community-wise then yeah, because everyone’s looking forward to seeing me go to University. My sister, my twin-sister already training at University already and it’s a great responsibility and pressure on me to go to University as well, no matter what course I choose they really are looking forward to me actually going to University now. In some ways yes it is.*

I: *Your family environment is pushing you to go to University?*

Sabir: *Yes*

Or, Manjit:

*“Well it pushes me away from Pharmacy more, because I hate, I can’t do Biology or Chemistry, I’m just terrible at it. I think the only reason they want me to go into that is because*

*my little sister's very, she's very smart and we're all expecting her to be a doctor and they all want me to go into that as well ... That kind of pushes me away from it. Like maybe you need a roof one day, so I'll be there." (female Pakistani heritage student who wants to be a mechanical engineer.)*

Sabir positions himself as part of his community and appears to be accepting of his responsibility to go on to university, whereas Manjit challenges family expectations that she would be best served to become a pharmacist.

### **Challenging parental expectations.**

*While we have suggested White British and Asian students draw on different value laden discourses with regard to how they articulate their university subject decision-making' it would be overly simplistic to suggest that students' positioning in these discourses is simple and unproblematic. Especially, we see this when sometimes students challenge these values. We demonstrate here with the case of Anupreet.*

When we first met Anupreet she had decided to become a Doctor (GP), which she saw as her mother's choice, but later she decided instead to follow a different pathway and to become a Barrister. *I mean it's hard, it's really hard but it just gets me it's like .. I want to be a barrister. Then I think, the other day I was in the car with my Mum and I said to her 'Mum imagine, couple of years down the line I'll be known as Barrister Anupreet, instead of Anupreet.'*

Anupreet positions herself as agentive, someone who can challenge this traditional status quo of a woman's place being in the home, and who can challenge her Mother views.

MP: *You have support for that. Do you think the fact that you are a female student influences your decisions?*

Female Asian student (Anupreet, recent immigrant): *Well the thing is that when, say, I choose my career, my Mum tells me '... do think about it because you're going to get married.' And then Asian culture is different to the other cultures. If I get married am I going to work after I get married? Is this degree going to be worth it. And I said to Mum 'I'm working after marriage.' Unless I might take a break, chill out, you know, fulfil my dreams, go shopping, decorate my house, and then .. but no. 'Cos I don't want to rely on the guy. You know. 'Cos you never know guys. Two minutes later he could turn round and say 'There's your bus.'*

We consider further her negotiation of identity to become a "New generation" Asian female, which she sees as providing herself with some decision-making powers (unlike Mohammad who accepted that it is his parent's wish that he should study in Manchester, and in so doing positioned himself as dutiful son).

MP: *That's acceptable in your culture? Not to rely on the guys?*

A: *Well all the women, they rely on their husbands. But the new coming-up generation, my generation, me I will never.. I have decided the guy will move into our .. hopefully I'll buy a house or mortgage it or he could pay the mortgage, whatever.*

MP: *So you are going to get married?*

A: *To who? That depends on my Mum actually.*

MP: *Why?*

A: *She's not going to force me. There's no .. 'cos I, just recently I was getting engaged and I called the engagement off. So, I'm really happy and I'm really glad that I've got a Mum who's not going to force me for marriage. She said to me 'You get your degree, then*

*you get married.’ And it depends who I want to get married too. If she thinks the guy’s ok fair enough, otherwise I’ll have to choose someone else. But obviously it’s not going to be like, she’s not going to force me that, you know, get married, that’s it, go back home, Pakistan, go and get married!*

*MP: So your Mum is here now?*

*A: Yeah, my Mum .. my Mum’s been here since I was here.*

*MP: And your Dad is here as well?*

*A: No Dad’s in Pakistan. Mum and Dad don’t live together.*

*MP: So it’s just your Mum actually. So it’s whatever she says.*

*A: Yeah, I’m happy to be with her rather than my Dad. You know ‘cos I speak to my dad sometimes but (?) makes me angry so, put the phone down.*

However, although Anupreet can see herself as university educated and financially independent, and she challenged a traditional canon with regard to an arranged marriage, we see that she accepts a positioning of herself as a future wife. Indeed, Anupreet reinterprets the interviewer’s question asking whether she will get married as who she will marry, “too who?”. She also says she is prepared to defer to her mother’s wishes and choose someone else if necessary.

The interview continues:

*MP: So you are staying in Manchester?*

*A: Well I’m not allowed to leave home.*

*MP: You are not?*

*A: No, well I don’t want to leave home as well. Stick to mum.*

*MP: Why are you not allowed? Because of religion?*

*A: It’s - you know they don’t prefer girls to leave home.*

*MP: When they get married?*

*A: Well when they get married, then they get married. But for me, like, my mum she .. I’m sure she’d be ok. I mean, say, for instance, ‘cos I had Lancaster University in mind as well. And I thought ..*

*MP: It’s close as well.*

*A: It’s 45 minutes away. But if I, say, tell my mum ‘Mum, it’s out of Manchester,’ Mum’s going to go ‘Is it. So how are you going to go? What are you going to do.’ You know, all the questions that parents ask. And then, she knows it’s out of Manchester. So I told her ‘Mum, it’s out of Manchester but ..’*

We can see how Anupreet calculates how she might get around her Mum (who we see as standing for traditional social rules and values) with regard to where she might study, so she may be able to become a female Asian student who lives away from home.

Anupreet’s change from an imagined future for herself as a medic to her becoming a Barrister, can also be seen as part of a complex negotiation her own desires and those of her Mother. This change in trajectory, however, was influenced by grade troubles; Anupreet’s academic failure at the end of her AS year (U grades in mathematics and biology) provided her with a space to renegotiate her future whilst still securing her mother’s approval. She may have become a medic had she achieved good grades in these subjects.

*MP: She [Mother] doesn’t want you to go into Law now?*

*A: No, no, no, she’s live about it. ‘Cos I said to her, you know, and I told her ‘Look mum I’ve got you. I gave it a try.’ And then she goes ‘ “nickname” ..’ She calls me “nickname”, that’s my name. And she goes ‘ “nickname” what do you want to do?’ And I go, ‘Well see*

*this, I've tried doing Law ... no I've tried doing um Medicine, you know stuff for Medicine .. it didn't work out. So let's stick to Law or Psychology.' So she's ok about it.*

When considering Anupreet's shift from medic to barrister, we note how she has challenged a stereotype of female Asian medics (which was accepted by Mohammad), albeit that her substitute career also carries high status within her community. We suggest that a swap to another high status (though materially very different profession) may have been decisive in winning over her Mother's approval, and that although she found space to manoeuvre an imagined future for herself, one which she felt excited about (and in so doing begins to draw on a discourse of personal choice), she has not entirely escaped feeling a need to win the approval of her mother (which was showed earlier was not a necessity for Lisa), and so Anupreet also reinforces an ideological value that give power to elders, who may be the bastions of established cultural rules and so police behaviour.

However, we see Anupreet as a "New Generation Asian Female" who considers culturally mediating social values more liberally, who allows herself (or takes) opportunities to embark on a trajectory for a career she has decided for herself that she wants to pursue. Our interpretation of Anupreet's narrative supports the view of Ahmad, (2001) who concludes that "*various notions of 'agency' have been expressed that are characteristic of the ongoing complex assessments made by these [Muslim] women in relation to both perceived familial obligations and their own aspirations. Their articulations suggest that higher education is increasingly viewed as a necessary asset in maintaining and gaining social prestige*" (p. 137).

### **Conclusion: Ideological values and University Subject Choice**

Overall, the majority of students in our sample were intending on going on to university. We described the sample as one of "aiming higher". However, there were gendered, ethniced and classed patterns with regard to university subject choice.

Figure 1 showed the over-representation by Asian (and Black) students, in comparison with White British students with regard to the likelihood of intentions towards careers in Medicine or Dentistry (or related subjects), and the over-representation of Asian students with regard to the likelihood of intentions towards careers Law and in Business. We suggest that this example phenomenon is an example of a cultural and historical production of the self that is played out through the mediation of socially believed ideologies and identity work.

We found a difference in the articulation of White and Asian students with regard to university subject choice; while Asian students tended draw on identifications to do with the family, and to articulate family cultural social rules that they often recognised as mediating their decisions, White British students tended to present themselves as in the position of power, with regard to their university subject choice. They may present themselves as independent individuals who sometimes do not even recognise being influenced by their families or cultures. We found White British students tended say little about the cultural social rules mediating their decision-making. We suggested this "absence" of talk occurred precisely because they position themselves as agentic decision-makers, and that this then closes or reduces a discursive space, rendering discussion of family or community social rules as contradictory or unnecessary. At the same time, this may happen because the social rules within the White community are such that children of this age are expected to take such decisions themselves.

We suggested that, some students, and especially White British students sometimes 'black box' the processes of their decision-making, for example, when referring simply to parents being



“happy” with their decisions and choices, that this may be indicative of such a discursive closure (see earlier) of significant influences. We suggested that this can sometimes act to mask social differences, as might exist, within the White British category, for instance different sets of social rules that might be situated in different classed “White” communities. This suggests we may need to probe more deeply to learn about less visible social rules.

However, we have also drawn on a fairly large (in qualitative study terms) interview sample to confirm the difference in the distribution of perceptions of parental expectancy for their child to continue to university that was detected in the larger 1700+ “quantitative” survey. Thus, it appears from the interview data that there are differences in parental expectation for their children’s educational achievement between White British and parents of other nationalities or heritages. Overall, parents of our sample students usually had expectations of university. However, White British parents have a wider range of expectations, and this was borne out in both the quantitative survey and in the interviews.

We have also shown how a loosening of the classification and framing of social and cultural rules and norms can afford space for a sense of an agentive self (Anupreet) but how this might imply a negotiation of competing ideological values (those to do with the family and those to do with a sense of individuality and agency). This suggests generational changes in cultural norms.

Policies for widening participation in certain subject areas need to have the capacity to take account of ideological values, which students draw upon when articulating their decision-making processes, since students’ positioning towards or against such values is deeply bound up with their identities. We suggest that these ideologies play out in complex ways and that more research is needed in this area. We also point out that although we have a great majority of students who aspire to university, that the choice of institution and so the kind of higher education they may embark on, is known to be culturally influenced (and that this was confirmed by our data set, although not discussed here), with White British working class and Asian female students indicating preferences for staying in their local areas (This supports the findings of other researcher in this area).

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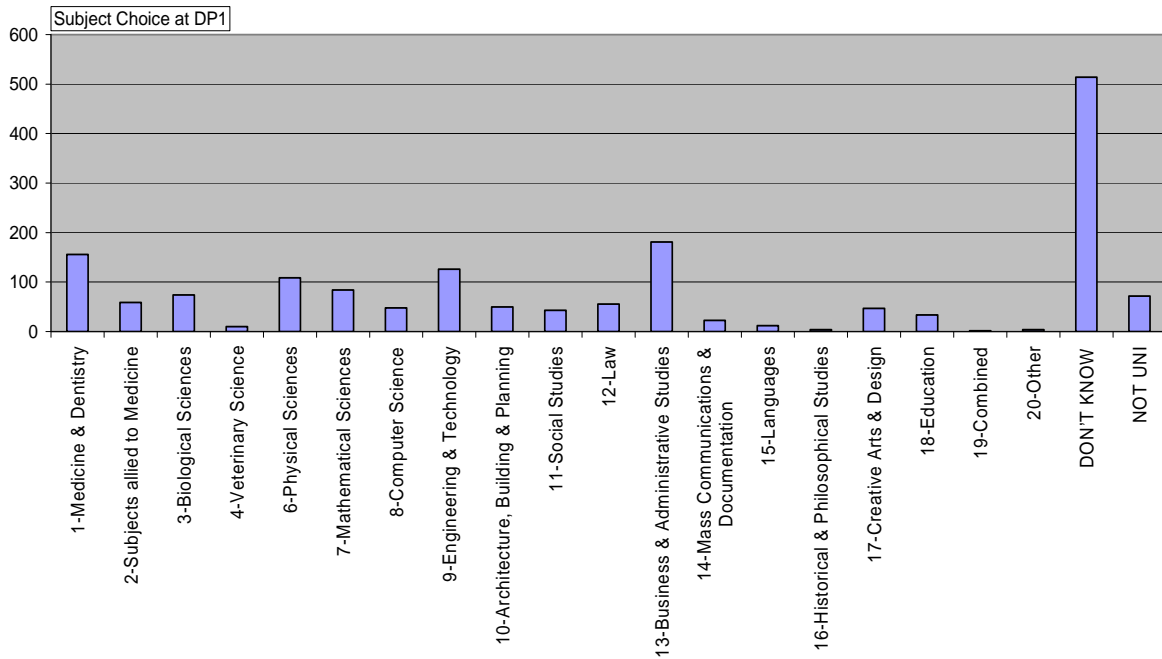
## Annex

**Table A: Subject choices of the TLRP sample at DP1 and DP3 and comparison with National statistics**

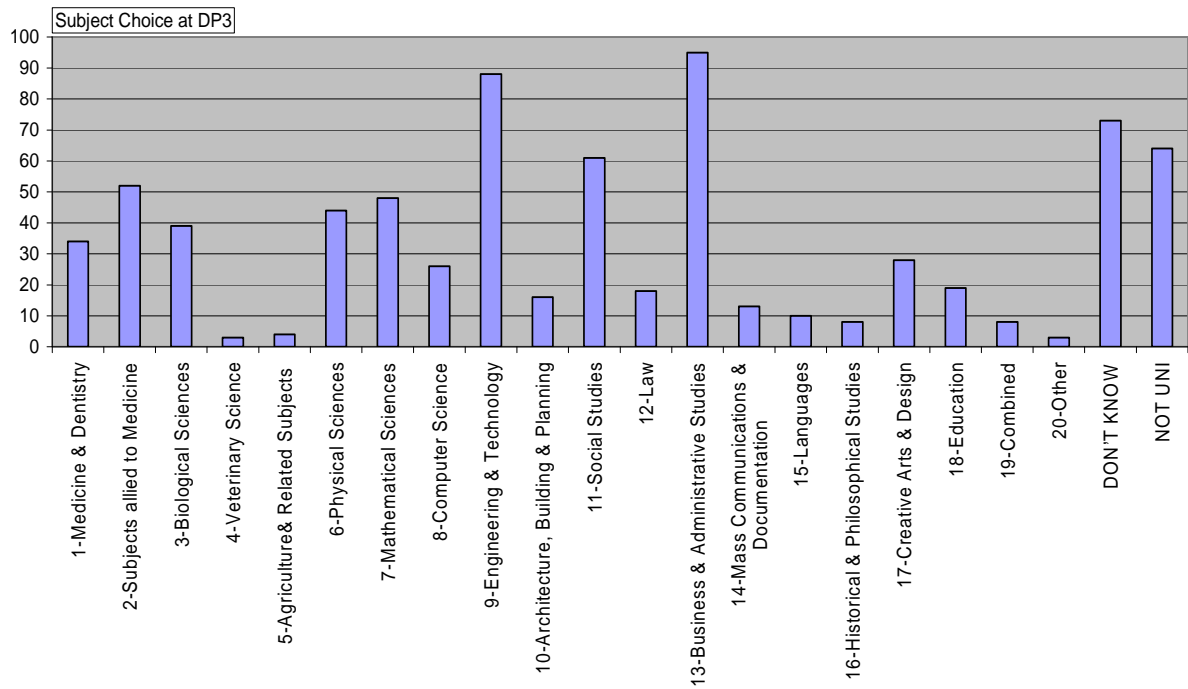
<b>Subject choices</b>	<b>TLRP DP1 Total</b>	<b>TLRP DP3 Total</b>	<b>DP1*</b>	<b>DP3*</b>	<b>HESA stats 2006-7</b>
1-Medicine & Dentistry	9.13%	4.51%	13.95%	5.54%	2.68%
2-Subjects allied to Medicine	3.45%	6.90%	5.28%	8.47%	12.73%
3-Biological Sciences	4.33%	5.17%	6.62%	6.35%	6.95%
4-Veterinary Science	0.59%	0.40%	0.89%	0.49%	0.21%
5-Agriculture& Related Subjects	-	0.53%	-	0.65%	0.68%
6-Physical Sciences	6.38%	5.84%	9.75%	7.17%	3.55%
7-Mathematical Sciences	4.92%	6.37%	7.51%	7.82%	1.43%
8-Computer Science	2.81%	3.45%	4.29%	4.23%	4.52%
9-Engineering & Technology	7.38%	11.67%	11.27%	14.33%	5.95%
10-Architecture, Building & Planning	2.93%	2.12%	4.47%	2.61%	2.56%
11-Social Studies	2.52%	8.09%	3.85%	9.93%	8.54%
12-Law	3.28%	2.39%	5.01%	2.93%	3.84%
13-Business & Administrative Studies	10.60%	12.60%	16.19%	15.47%	13.13%
14-Mass Communications & Documentation	1.35%	1.72%	2.06%	2.12%	2.03%
15-Languages	0.70%	1.33%	1.07%	1.63%	5.91%
16-Historical & Philosophical Studies	0.23%	1.06%	0.36%	1.30%	4.37%
17-Creative Arts & Design	2.75%	3.71%	4.20%	4.56%	6.79%
18-Education	1.99%	2.52%	3.04%	3.09%	9.16%
19-Combined	0.12%	1.06%	0.18%	1.30%	4.96%
20-Other	0.23%	0.40%			
DON'T KNOW	30.09%	9.68%			
NOT UNI	4.22%	8.49%			
<b>Grand Total</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>

\* These two columns include percentages of the total number of students who chose a particular subject (excluding those who are not sure and those who are not going to university) to be comparable to HESA stats

**Figure A: Subject choices at DP1 and DP3**

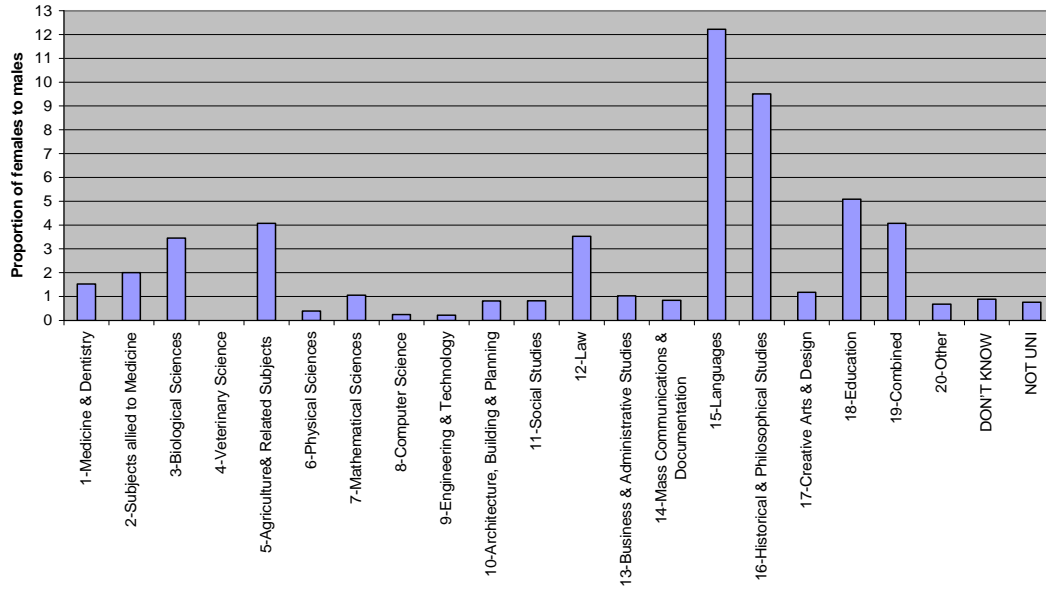


**Figure A1: Distribution of DP1 sample for degree subject choice**

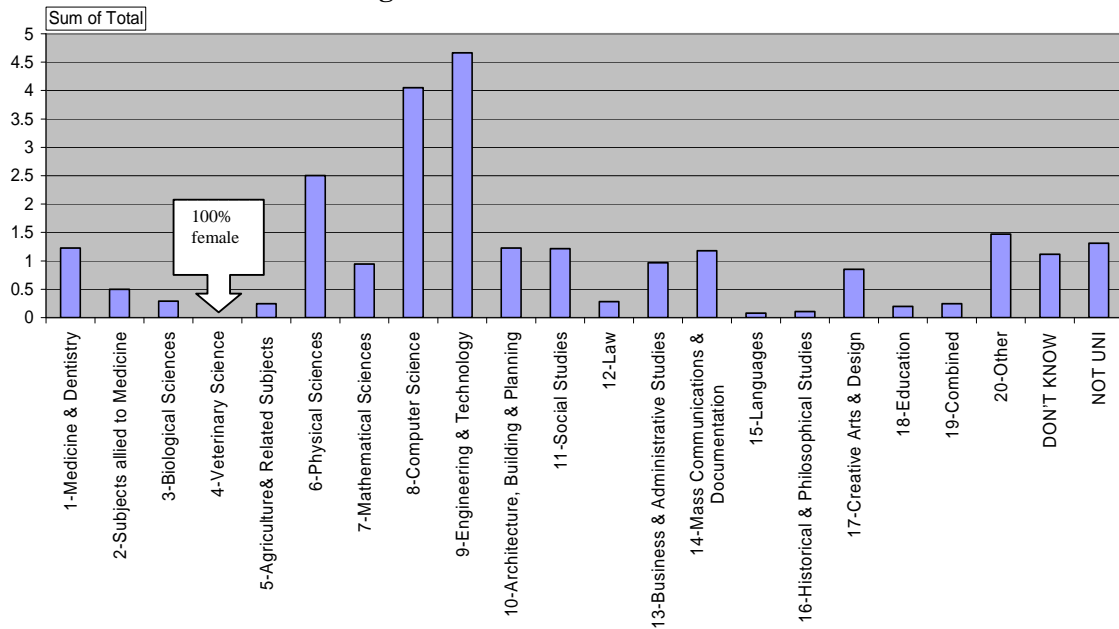


**Figure A2: Distribution of DP3 sample for degree subject choice**

**Figure B: Ratio of the gendered likelihood for University Degree subject choice.**



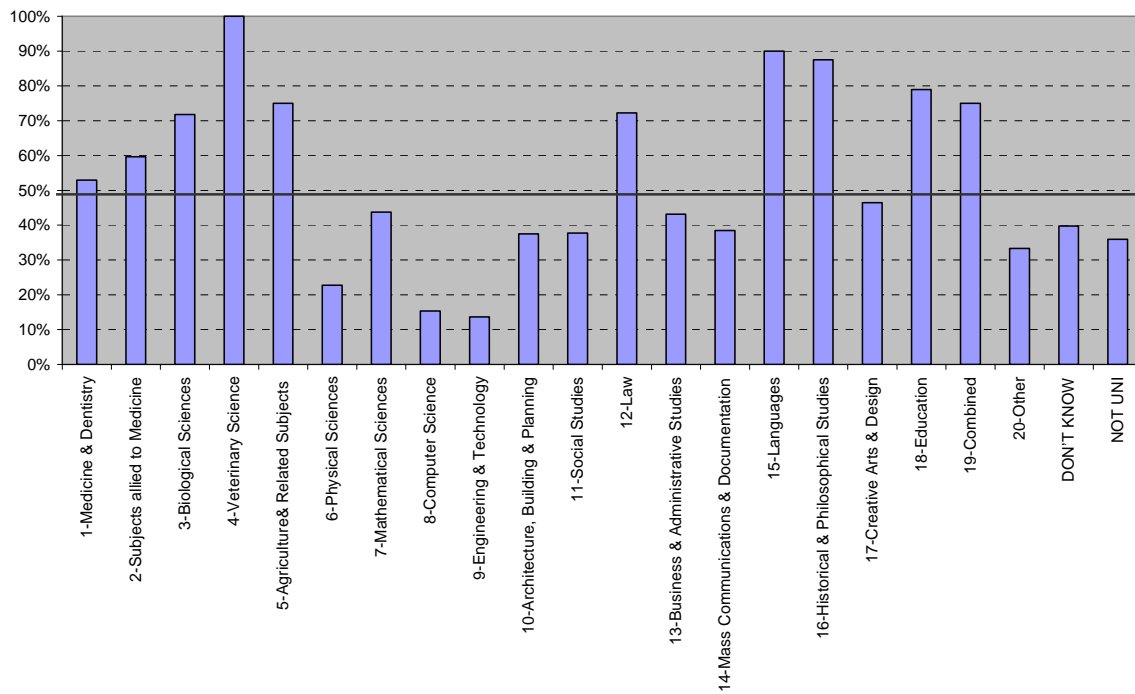
**Figure B1: Female to male ratio**



**Figure B2: Male to female ratio**

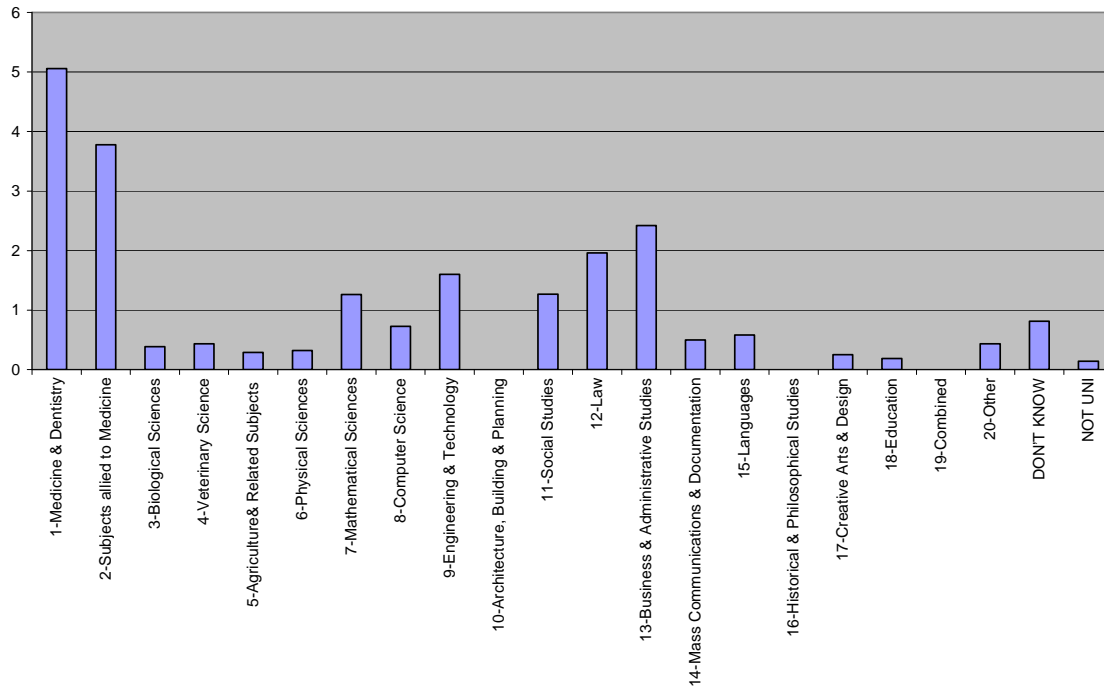
Figure B shows gender biases in subject take up. The proportions were calculated, first by changing counts to column percentages for females and for males respectively. Two charts are provided in this figure. The first of these gives the female to male (f:m) ratio for the likelihood that they intend to continue to a University Degree in that subject. Greater than one indicates a greater likelihood for females, less than one, a lesser likelihood for females (a greater likelihood for males). For example, the f:m ratio for languages is approximately 12. This means a female student in our sample is 12 times as likely than a male student to indicate a degree in languages. The second chart in this figures shows the male to female (m:f) ratio. We note that these charts are equivalent, however, by displaying the data in both ways allows for easier interpretation. For example, we have a 9:2 male: female ratio for engineering and technology. This is easier to see by looking at the m: f chart than by looking at the f:m chart where the 2:9 ratio is not so easy to read. We note that, for some subjects, these ratios are produced from small numbers and so the basic column percent table split by gender is also provided for completeness (see Figure C).

**Figure C: Percentage of female students (over male) intending on University Degree subjects at DP3**

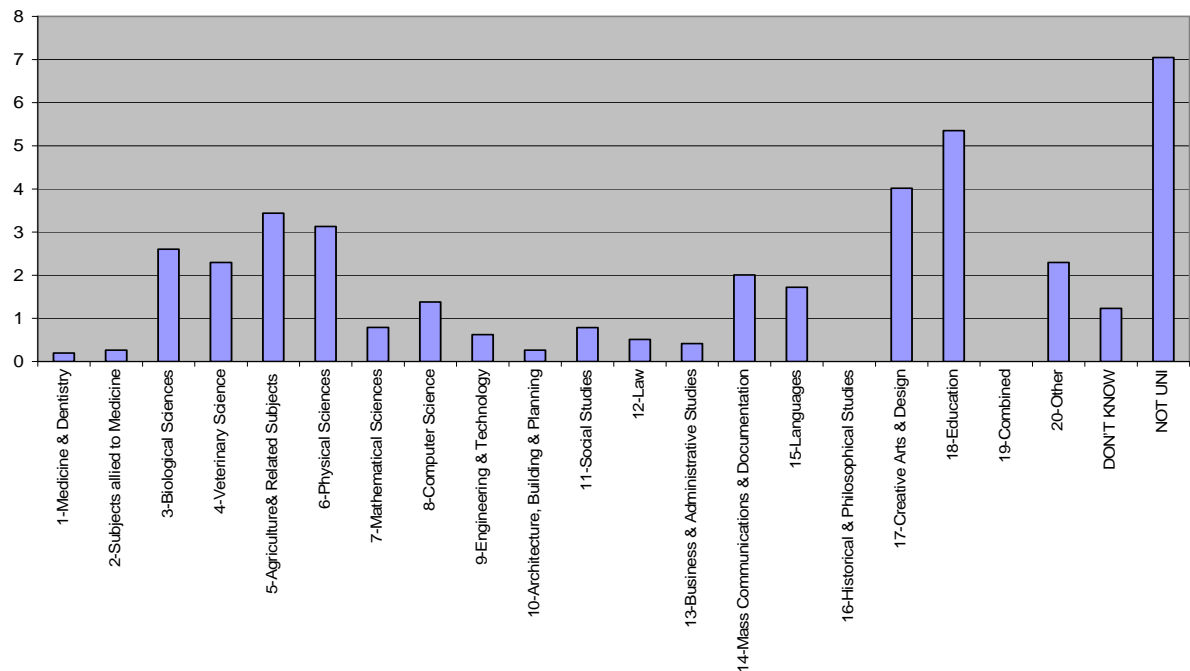


**Note:** The figure shows the percentages within subject of female students (over total sample) which means male % = 100 – female %

**Figure D: Ratio of the likelihood of Minority Ethnic students intending on University Degree subjects in relation to White British students**



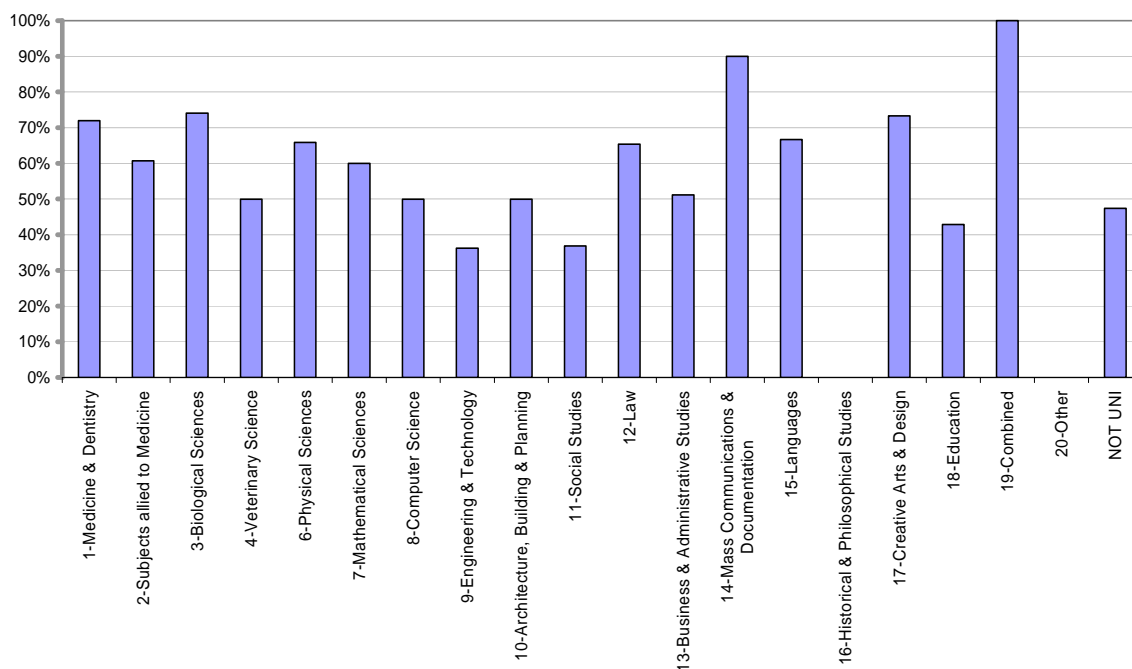
**Figure D1: Ratio of 'Other' to 'White British'**



**Figure D2: Ratio of 'White British' to 'Other'**

**Note:** Figure D shows likelihood of intent for university degree subject for different minority ethnic groupings. Ratios were calculated as in the same way as for the gender ratios (Figure B).

**Figure E: Percentage of students who changed university subject choice between DP1 & 3 (within each subject choice)**

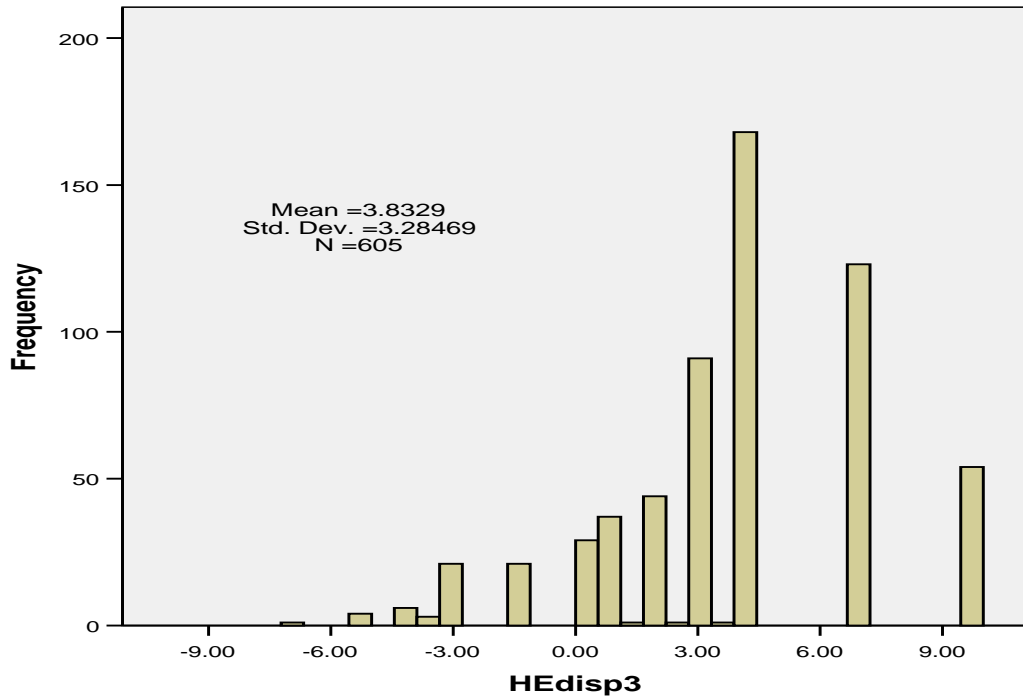


**Table B: Destinations for the most frequently changed subject choices**

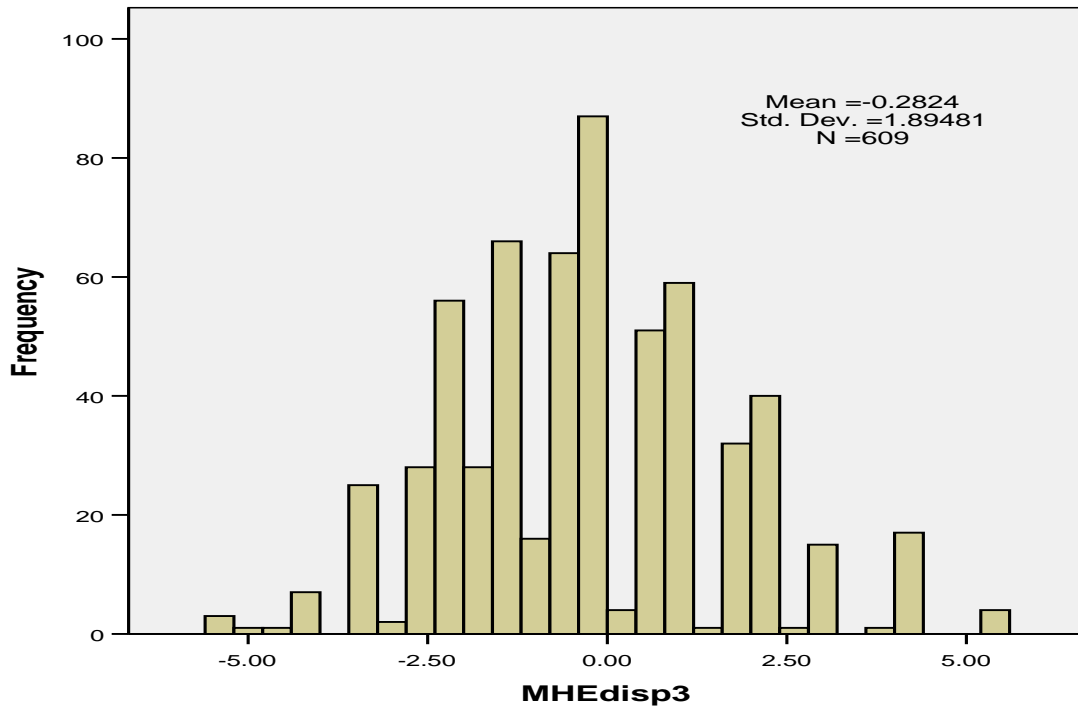
DP1 choice (N at DP1)	Changed to ... at DP3	Total number changed at DP3
<b>1-Medicine &amp; Dentistry (N=156)</b>	Subjects allied to medicine (N=20; 34%) Biological Sciences (N=10; 17%) Mathematical Sciences (N=6; 10%) Engineering and Technology (N=6; 10%) Don't Know (N=6; 10%) OTHER (N=11; 19%)	59
<b>2-Subjects allied to Medicine (N=59)</b>	Business and Administrative Studies (N=3; 18%) Biological Sciences (N=2; 12%) Don't Know (N=4; 23%) OTHER (N=8; 47%)	17
<b>3-Biological Sciences (N=74)</b>	Subjects allied to medicine (N=3; 15%) Mathematical Sciences (N=3; 15%) Don't know (N=4; 20%) OTHER (N=10; 50%)	20
<b>6-Physical Sciences (N=109)</b>	Computer Science (N=6; 21%) Engineering and Technology (N=5; 17%) Subjects allied to medicine (N=4; 14%) OTHER (N=14; 48%)	29
<b>7-Mathematical Sciences (N=84)</b>	Business and Administrative Studies (N=7; 33%) Physical Sciences (N=3; 14%) OTHER (N=11; 52%)	21
<b>9-Engineering &amp; Technology (N=126)</b>	Business and Administrative Studies (N=4; 40%) Don't Know (N=10; 16%) OTHER (N=11; 44%)	25
<b>13-Business &amp; Administrative Studies (N=181)</b>	Social Sciences (N=10; 23%) Don't Know (N=7; 16%) OTHER (N=26; 48%)	43



**Figure F: Distribution of the sample (N=610) on the measures of HEdisp (a) and MHEdisp (b) at Date Point 3**



**Figure F1: HE disposition at Data Point 3**



**Figure F2: MHE disposition at Data Point 3**

Note: These figures show that in general our sample is biased towards (skewed) students with high intentions of going to university. The distribution of the students on the disposition for more mathematically demanding subjects measure is more spread out.

**Figure G: Maths course taken at DP3 by ethnicity for those students taking AS Trad Maths at DP1.**

