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Will opposites attract? Similarities and differences in students' perceptions of the stereotype profiles of other health and social care professional groups

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Summary

The extent to which health and social care (HSC) students hold stereotypical views of other HSC professional groups is of great potential importance to team working in health care. This paper explores students' perceptions of different HSC professional groups at the beginning of their university programmes. Findings are presented from an analysis of baseline data collected as part of the New Generation Project longitudinal cohort study which is assessing the impact of interprofessional education over time on a range of variables including stereotyping. Questionnaires were administered to a cohort of over 1200 students from 10 different HSC professional groups entering their first year of university. Stereotypes were measured using a tool adapted from Barnes et al. (2000) designed to elicit stereotype ratings on a range of nine characteristics. The findings confirm that students arrive at university with an established and consistent set of stereotypes about other health and social care professional groups. Stereotypical profiles were compiled for each professional group indicating the distinctive characteristics of the groups as well as the similarities and differences between groups.

Midwives, social workers and nurses were rated most highly on interpersonal skills and on being a team player whilst doctors were rated most highly on academic ability. Doctors, midwives and social workers were perceived as having the strongest leadership role, whilst doctors were also rated most highly on decision making. All professions were rated highly on confidence and professional competence and, with the exception of social workers, on practical skills. A comparison of profiles for each professional group reveals that, for example, pharmacists and doctors were perceived as having very similar characteristics as were social workers, midwives and nurses. However, the profiles of nurses and doctors were perceived to be very different. The implications of these similarities and differences are discussed in terms of their potential impact on interprofessional interactions, role boundaries and team working.

Keywords: *Interprofessional education, common learning, stereotypes, undergraduate, health and social care students*

Background

There is a clear policy commitment in England to the introduction of interprofessional educational (IPE) opportunities for all health and social care (HSC) students and four leading-edge sites have been funded to pioneer these initiatives (Department of Health, 2001). One such initiative is the New Generation Project *Common Learning* (CL) programme. During this programme, students work together in small groups with a range of students from other professional groups at different points throughout the duration of their course (O'Halloran et al., in press). The professional groups represented are audiology, medicine, midwifery, nursing, occupational therapy, pharmacy, physiotherapy, podiatry, radiography and social work. The CL programme is mandatory, is assessed and the aim is to ensure that students learn "with, from and about each other" (Freeth et al., 2002, p. 12). It is hypothesized that this process will be inhibited if students hold negative stereotypes of other HSC groups.

The concept of stereotyping has been identified as a potentially important influence on interprofessional interactions (Carpenter, 1995a, 1995b; Carpenter & Hewstone, 1996). However, little is known to date about whether students entering health and social care professional programmes hold stereotypical perceptions of their own and other professions or whether there are differences and similarities between the stereotype profiles of professional groups.

Stereotypes in an interprofessional context

Stereotypes are "social categorical judgment(s) . . . of people in terms of their group memberships" (Turner, 1999, p. 26). It is seen as innately socially undesirable to hold stereotypes of the members of social groups other than one's own (the outgroup). However, stereotyping is a natural human process (Haslam et al., 2002) and one that may have both positive and negative outcomes. Positively, individuals may use their established stereotypes to guide their intergroup behaviours. This is a valid mechanism whereby people make sense of their interactions with other groups. They are a means to efficiently deal with an outgroup with minimum expenditure of energy (Haslam et al., 2002; Haslam et al., 2000). In the health arena, stereotyping has been recognized as a factor that mediates group interaction. It is a means by which health professionals are able, for example, to take shortcuts and cope with the demands placed upon them during their interactions with both the client and the employing organisation (Kirkham et al., 2002). The generalized and often accurate views that the practitioner and his/her peers hold of a particular patient group may guide the professional in an appropriate manner when facing an individual from this patient group for the first time.

However, stereotypes may also generate false or negative expectations of another groups' attitudes or behaviours. It is possible that these negative expectations of a group create a reality through a process of self-fulfilling prophecy (Hilton & Von Hippel, 1996). For example, prior perceptions that doctors are arrogant may taint future interactions with this group. If other HSC professionals enter an interprofessional situation with these expectations in place, doctors may well begin to behave as expected. Alternatively, other professionals may misconstrue what otherwise would be interpreted as relatively benign behaviour. Further, if a professional group is faced with the stereotypes held of them by other groups, this may have an impact on their self image and output. Negative perceptions of the public stereotyping of nursing, for example, has been thought to

influence the development of a poor collective self esteem, job satisfaction and performance in nursing professionals (Takase et al., 2001). 100

Given that all individuals hold and employ stereotypes in their intergroup interactions, it is anticipated that HSC students will as well. These may reflect either their perceptions of the roles of other professionals or reflect the personal characteristics that may attract individuals to each of the professions. Students may also hold stereotypes that reflect the public image of various HSC professionals created through presentation of these professional groups through the media or through their previous experience as clients of the HSC services (Hallam, 2000; Conroy et al., 2002). Historical influences such as domination of a particular professional group by a single gender, may lead to masculine or feminine stereotypes being interwoven with the stereotypes held of the professional group itself (Hallam, 2000). Other factors, such as the legislation governing the responsibilities of a professional group, may also play a role (Baldwin et al., 1983). The set code of ethics for pharmacists in the United States, for example, prevented these professionals from discussing therapy with the client. It is thought likely that this enforced practice might have augmented the public stereotype of the pharmacist being uncommunicative and low on interpersonal skills (Baldwin et al., 1983). 105 110 115

Students are arguably a special subset of the general population as a consequence of their particular interest in pursuing a career in the field and may well have a unique set of perceptions because of this interest. These early perceptions are likely to be further developed through the socialisation processes that make up professional training (du Toit, 1995). By the time students become established HSC professionals, stereotypical beliefs of one another may be entrenched. Studies of undergraduate HSC students near the end of their programmes (Carpenter, 1995a, 1995b; Carpenter & Hewstone, 1996) or with post graduate students already in practice (Barnes et al., 2000; Carpenter et al., 2003) show these groups to hold clear and established stereotypes of different HSC professional groups on a range of characteristics. There are indications that students may hold these views even earlier as they enter their training (Hind et al., 2003; Tunstall-Pedoe et al., 2003). It has been argued that these stereotypes may interfere with interprofessional team working (Carpenter, 1995a, 1995b; Carpenter & Hewstone, 1996; Barnes et al., 2000; Miller et al., 2001; Carpenter et al., 2003). 120 125

It has also been suggested that bringing together students of different professional groups during interprofessional education at an undergraduate level will combat the formation or reinforcement of negative stereotypes that might inhibit interprofessional working in practice (Leaviss, 2000). This is supported theoretically by the contact hypothesis (Allport, 1979). Here potentially harmful negative stereotypical beliefs and attitudes held by one's own social group (the ingroup) of the other professional group (the outgroup) may lead to intergroup discrimination. These stereotypes held of the outgroup are called heterostereotypes. The contact hypothesis suggests that positive change in these beliefs and attitudes may be engineered if the different social groups are brought in contact with one another. 130 135

According to the contact hypothesis, change in heterostereotypes will only be achieved if particular conditions are present during the contact situation. These conditions require that the different groups have equal status within the contact situation, work together on common goals, have institutional support, cooperate with each other and have positive expectations of the contact situation. In addition, joint working should be successful and the members of the outgroup be perceived as typical members of that group (Brown et al., 1986; Hewstone & Brown, 1986; Barnes et al., 2000). One of the underlying objectives of interprofessional education (IPE) and Common Learning (CL) is to bring students of 140 145

different professional groups together and to provide some of these conditions that will eventually lead to intergroup attitude change. For example, perceived equality between the groups may be achieved by initially introducing CL in the higher education institutional context when their professional hierarchies of practice are less established.

Group interactions, however, are governed by more than one group simply holding negative or positive stereotypes of another. Group interactions may also be mediated by the *comparison* individuals make between their stereotypes of their own group and those they hold of the outgroup. On the one hand, perceived similarities between interacting groups are thought to be desirable (Stephan & Stephan, 1984). These authors propose that ignorance of other groups leads to an assumption that they are different to one's own group. Acquired knowledge of the other group creates feelings of empathy and a sense of common identification (Pettigrew, 1997). In other words, it may be hypothesised that if students perceive there to be similarities between professional groups then positive relationships between student groups may develop.

However, a perception of difference between one's own and another group also appears important. Tajfel et al. (1971) argue that, when members of different social groups interact, they make comparisons between their perceived characteristics of their own and other groups. They do so in order to establish their identity of self. It is important to this identity that they see themselves and members of their own group as distinctive from other groups on at least some characteristics (Branscombe et al., 1999; Zarate & Garza, 2002). In other words, the stereotypes they attach to their ingroup should be seen as distinct from those they hold of the outgroup. If they fail to find this distinctiveness, poor group interrelations may result (Branscombe et al., 1999). This dichotomy has been recognized and an appreciation of both similarity and difference between professional groups is noted as another necessary condition of contact during IPE initiatives.

The work of Hind et al. (2003) and Tunstall-Pedoe et al. (2003) indicates that new students enter university with established stereotypes of other professional groups on a range of characteristics. However, the extent to which students at this early level discriminate between professional groups on a range of specific characteristics or perceive similarities and differences between professional groups remains unclear.

This paper, therefore, considers the findings of a study designed to explore the following research questions:

- Do neophyte undergraduate students (participating in IPE and CL) enter their education programmes with preconceived ideas of other HSC groups?
- To what extent are professional groups perceived to be different from each other on a range of characteristics?
- Do students perceive some professional groups to share similar stereotypical profiles?

Methods

Overview

The material presented in this paper is drawn from baseline data collected as part of a comparative, longitudinal study of the impact of CL on attitudes, beliefs and behaviours of two groups of students involving a comparison and intervention group (Macleod Clark et al., 2005). The findings reported here are derived from the baseline data of students from

the intervention group, encompassing 10 professional groups across two Universities. It is hypothesized that these students' stereotypes will be influenced by CL and will change over time as a result of the CL experience. The stereotypes that students hold of the HSC professional groups are, therefore, one of the measures of attitudes and beliefs monitored over the progress of the study. The baseline data provide a unique opportunity to examine the stereotypes held by such neophyte students before intensive exposure to students from other professional groups during CL. 200

The instrument

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Data on students' stereotype ratings of other professional groups were collected using a questionnaire in which students were asked to rate other professional groups on nine characteristics: academic ability, interpersonal skills, professional competencies, leadership, being a team player, being an independent worker, confidence, decision making and practical skills. This instrument was adapted from that used by Barnes et al. (2000) designed for post registration students. An example of the final version of the scale is shown in Appendix 1. 210

The findings explored in this paper related to stereotype ratings that students gave of professional groups other than their own (heterostereotypes). Students were asked to rate the other professional groups involved in CL on a scale of 1 (very low) to 5 (very high) for each characteristic. 215

The instrument was extensively piloted and content validity was established by a panel of academics, HSC professions and pre-registration students. They judged each question on its clarity, its relevance to the construct it was measuring and its appropriateness for first year pre-registration. 220

The questionnaire was refined and piloted with a group of 411 undergraduate HSC students from a cohort who were not study participants. The test-retest reliability of each item in the instrument was tested using Pearson's R. Those items that were not reliable over time at a 5% level of significance were rejected. 225

Sample

The questionnaire was administered to the full population of ten professional groupings of first year HSC students ($N=1426$) participating in CL at the beginning of the academic year (October 2003). Given the size of the cohort, it was not practical to ask all students to rate all other professions. Four versions of the questionnaire were therefore created, each asking for a rating on a different subset of professions. The four versions were distributed proportionally across each professional group. 230

Ethical considerations

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Students provided written consent agreeing to participate in the study and for their data to be used in analysis. A student guardian was identified to whom students were referred in the event of them encountering any difficulties with their participation in the study. This mirrors the Caldicott guardian system put in place to protect children participating in research investigations (Department of Health, 1999). The position is held by an independent member of university of staff, who is not involved in the educational or research side of CL and is experienced in the field of health ethics and law. 240

Analyses

To determine the degree to which students discriminate between professional groups on each characteristic, the mean heterostereotype ratings given to each professional group were compared. The statistical significance of the differences between mean ratings was calculated using a one way Analysis of Variance with a Scheffé post hoc analysis.

A profile of characteristics was created for each professional group in order to present an overall image of the perceptions held by students. The profiles provide a framework for exploring similarities and differences.

Results

The final sample of student questionnaires collected for analysis was 1256 representing an 88% response rate. Table I shows the distribution of this sample across the different student professional groups.

Hierarchy of mean ratings given by students for each professional group on each characteristic

The mean ratings that students gave each professional group on each characteristic were considered individually. The hierarchy of the mean ratings for each characteristic has been presented in Tables II–VI along with any significant differences between the mean ratings. These differences indicate the degree to which students differentiate between the professional groups on each of the nine characteristics. The mean ratings in each table have been displayed in separate blocks. Where mean ratings of two professional groups appear in the same block, this indicates that the ratings for each professional group are not significantly different from each other. If two mean ratings appear in separate blocks these are then significantly different. Where the mean rating of a professional group appears in two or more blocks, this indicates no significant difference exists between the rating of this group and the ratings of any of the other professional groups appearing in these blocks.

The mean ratings were classified as High (4.00 and above), Medium (3.50–3.99) or Low (3.49 and below).

Midwives, social workers and nurses received the highest ratings on the interpersonal skills characteristic (Table II). Pharmacists and doctors were seen as having the lowest

Table I. Distribution of student sample across professional groups.

Variable	N	%
Audiologists	28	2.2
Doctors	178	14.1
Midwives	13	1.0
Nurses	600	47.7
Occupational therapists	73	5.8
Pharmacists	130	10.3
Physiotherapists	76	6.0
Podiatrists	39	3.1
Radiographers	63	5.0
Social Workers	58	4.6

interpersonal skills, both receiving low mean ratings. Students clearly and strongly differentiated between the professional groups on this characteristic. This is indicated by the large number of significant differences calculated between mean ratings received by each professional group on this characteristic and the hence the large number of blocks presented in this table. 295

Students also distinguished clearly and strongly between professional groups on the characteristic of academic ability (Table III). This differentiation is most evident at the higher end of the scale with doctors and pharmacists being seen as most academically able; clearly differentiated from each other and all other professional groups. Differentiation is less evident lower down the scale and no professional group received a low rating on academic ability. 300
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Table II. Interpersonal skills: the hierarchy of mean ratings assigned by students to each professional group. 310

Number of judgements made on each profession					
Midwives	306				4.59
Social workers	301				4.53
Nurses	154			4.48	4.48
Occupational therapists	299			4.17	4.17
Physiotherapists	296		4.00	4.00	
Audiologists	296		3.91	3.91	
Podiatrists	302	3.68	3.68		
Radiographers	287		3.60		
Doctors	268	3.44	3.44		
Pharmacists	286	3.28			

Mean ratings in different blocks are significantly different from each other. These differences are significant at the $p < 0.01$ level. The exception is the difference between the ratings given to audiology and occupational therapists. This difference is only significant at the $p < 0.05$ level. 320
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Table III. Academic ability: the hierarchy of mean ratings assigned by students to each professional group. 330

Number of judgments made on each profession					
Doctors	268				4.81
Pharmacists	284				4.26
Physiotherapists	293			3.94	
Audiologists	296		3.92	3.92	
Radiographers	286		3.91	3.91	
Midwives	306		3.83	3.83	3.83
Podiatrists	301	3.76	3.76	3.76	3.76
Occupational therapists	299	3.72	3.72	3.72	
Nurses	153	3.59	3.59		
Social workers	302	3.58			

Mean ratings in different blocks are significantly different from each other. These differences are significant at the $p < 0.01$ level. The exceptions are the differences between the ratings of occupational therapists and physiotherapists and between the ratings of occupational therapists and radiographers. These are only significant at the $p < 0.05$ level. 340

Being a team player is another characteristic on which students make a clear distinction between the professional groups (Table IV) although again mainly at the high end of the scale. Nurses, midwives and social workers were rated most highly with doctors and pharmacists appearing at the bottom of the hierarchy, albeit with a medium rather than low rating.

Ratings on the leadership characteristic (Table V) produced some differentiation between the professional groups, especially near the top of the scale. Doctors were most highly rated and perceived as significantly different from all other professional groups. Ratings of midwives and social workers were also significantly higher than the remaining professional groups.

All health professional groups were rated highly on the practical skills characteristic with midwives being rated the highest. The only clear distinction made by students on this characteristic occurred at the lower end of the scale (Table V) where social workers were rated significantly lower on this characteristic than any of the health professional groups.

Differentiation between the professional groups was again evident on the “ability to make decisions” characteristic (Table VI). High ratings were achieved across the board with the exception of nurses who were given a slightly lower rating on this characteristic (although not one significantly different to the ratings for podiatrists and occupational therapists).

The pattern of ratings on the characteristic of “being an independent worker” is similar to the decision making characteristic with doctors and pharmacists perceived as most able to work independently (Table VI). Nurses were seen as being the least independent workers. Nonetheless, this group still received a medium mean rating.

Differentiation was particularly low on the characteristic “confidence”, with all professional groups being rated medium to high. Doctors, midwives and social workers were perceived as having the highest level of confidence (Table VII).

All professional groups were rated highly on professional competence. Doctors, midwives and radiographers received the highest ratings but significant differences are only seen

Table IV. Team player: the hierarchy of mean ratings assigned by students to each professional group.

profession	Number of judgments made on each profession			
Nurses	154			4.45
Midwives	306			4.25
Social workers	301			4.19
Occupational therapists	299		3.90	
Physiotherapists	297	3.83	3.83	
Radiographers	286	3.76	3.76	3.76
Audiologists	296	3.74	3.74	3.74
Podiatrists	302	3.60	3.60	
Pharmacists	285	3.54		
Doctors	268	3.53		

Mean ratings in different blocks are significantly different from each other. These differences are significant at the $p < 0.01$ level. The exceptions are the differences between the ratings between physiotherapists and doctors; and between occupational therapists and social workers; between pharmacists and physiotherapists. These are only significant at the $p < 0.05$ level.

Table V. Leadership and practical skills: the hierarchy of mean ratings assigned by students to each professional group.

Professional group being rated	Number of students making rating	Leadership	
Doctors	268		4.12
Social workers	302	3.70	
Midwives	305	3.69	
Occupational therapists	299	3.40	
Audiologists	296	3.37	
Nurses	154	3.31	
Podiatrists	301	3.30	
Physiotherapists	295	3.27	
Pharmacists	282	3.18	
Radiographers	287	3.15	

Mean ratings in different blocks are significantly different from each other. These differences are significant at the $p < 0.01$ level. The exception is the difference between the ratings of midwives and occupational therapists. This is only significant at the $p < 0.05$ level.

Professional group being rated	Number of students making rating	Practical skills	
	306		4.54
Physiotherapists	297	4.51	4.51
Nurses	154	4.32	4.32
Radiographers	286	4.27	4.27
Podiatrists	302	4.25	4.25
Occupational therapists	299	4.16	
Doctors	267	4.16	
Audiologists	296	4.14	
Pharmacists	286	4.06	
Social workers	302	3.51	

Mean ratings in different blocks are significantly different from each other. These differences are significant at the $p < 0.01$ level. The exception is the difference between the ratings of radiographers and midwives. This is only significant at the $p < 0.05$ level.

between these three professional groups and occupational therapists, podiatrists and social workers (Table VII).

Stereotype profiles of each professional group based upon mean stereotype ratings made of each characteristic

Figures 1 – 4 illustrate those profiles of professional groups that either differ greatly or appear to be very similar.

This comparison of the profiles shows that doctors and nurses are perceived to be very different on most characteristics (Figure 1). There is, however, some congruence between the profiles of these two professional groups on professional competence and practical skills.

The profiles of doctors and pharmacists were very similar on a number of characteristics (Figure 2) including academic ability, albeit doctors were still rated significantly higher than pharmacists (see Table III). Both professional groups were given similar high ratings for

Table VI. Decision making and being an independent worker: the hierarchy of mean ratings assigned by students to each professional group.

Professional group being rated	Number of students making rating	Decision making	
Doctors	268		4.70
Pharmacists	286		4.27
Midwives	306	4.20	4.20
Audiologists	296	4.08	4.08
Physiotherapists	297	4.06	4.06
Social workers	302	4.05	4.05
Radiographers	287	4.03	4.03
Occupational therapists	299	4.00	4.00
Podiatrists	302	4.00	4.00
Nurses	154	3.70	

Mean ratings in different blocks are significantly different from each other. These differences are significant at the $p < 0.01$ level. The exceptions are the differences between the ratings of radiographers and nurses; between pharmacists and occupational therapists; between pharmacists and podiatrists. These are only significant at the $p < 0.05$ level.

Professional group being rated	Number of students making rating	Being an independent worker	
Doctors	268		4.51
Pharmacists	285		4.37
Physiotherapists	296	4.21	4.21
Radiographers	287	4.20	4.20
Podiatrists	302	4.17	4.17
Audiologists	296	4.15	4.15
Midwives	306	4.14	4.14
Social workers	301	4.01	4.01
Occupational therapists	299	4.01	4.01
Nurses	154	3.71	

Mean ratings in different blocks are significantly different from each other. These differences are significant at the $p < 0.01$ level. The exception is the difference between the ratings of physiotherapists and doctors. This is only significant at the $p < 0.05$ level.

professional competence, practical skills and being good independent workers. The groups were both rated low on interpersonal skills and just reach the medium categorization as team players. The biggest perceived difference between doctors and pharmacists can be seen in the domain of leadership skills, a characteristic for which pharmacists were given particularly low ratings. Pharmacists were also rated significantly lower than doctors on the characteristics of decision making and confidence.

The profile of characteristics for nurses, midwives and social workers are very similar with very congruent ratings on interpersonal skills and team player abilities (Figure 3). The similarity between midwives and social workers is particularly striking in that students perceive them equally in terms of leadership role, decision-making and confidence. Students perceived nurses and midwives to have high practical skills whilst seeing social workers as significantly less equipped on this characteristic.

The profiles created of the five remaining professional groups (radiographers, occupational therapists, physiotherapists, podiatrists and audiologists) were found to be flatter and

Table VII. Confidence and professional competence: the hierarchy of mean ratings assigned by students to each professional group.

Professional group being rated	Number of students making rating		Confidence
Doctors	268		4.53
Midwives	305		4.20
Social workers	300	4.16	4.16
Physiotherapists	297	4.07	4.07
Pharmacists	286	4.03	4.03
Audiologists	294	4.02	4.02
Occupational therapists	297	3.96	
Radiographers	287	3.95	
Podiatrists	295	3.92	
Nurses	154	3.88	

Mean ratings in different blocks are significantly different from each other. These differences are significant at the $p < 0.01$ level. The exceptions are the differences between the ratings of midwives and occupational therapists; between radiographers and midwives; between midwives and nurses. These are only significant at the $p < 0.05$ level.

Professional group being rated	Number of students making rating		Professional competence
Doctors	267		4.35
Midwives	304		4.30
Radiographers	283		4.29
Pharmacists	284	4.24	4.24
Nurses	150	4.19	4.19
Physiotherapists	295	4.18	4.18
Audiologists	296	4.17	4.17
Occupational therapists	299	4.04	
Podiatrists	302	4.04	
Social workers	302	4.02	

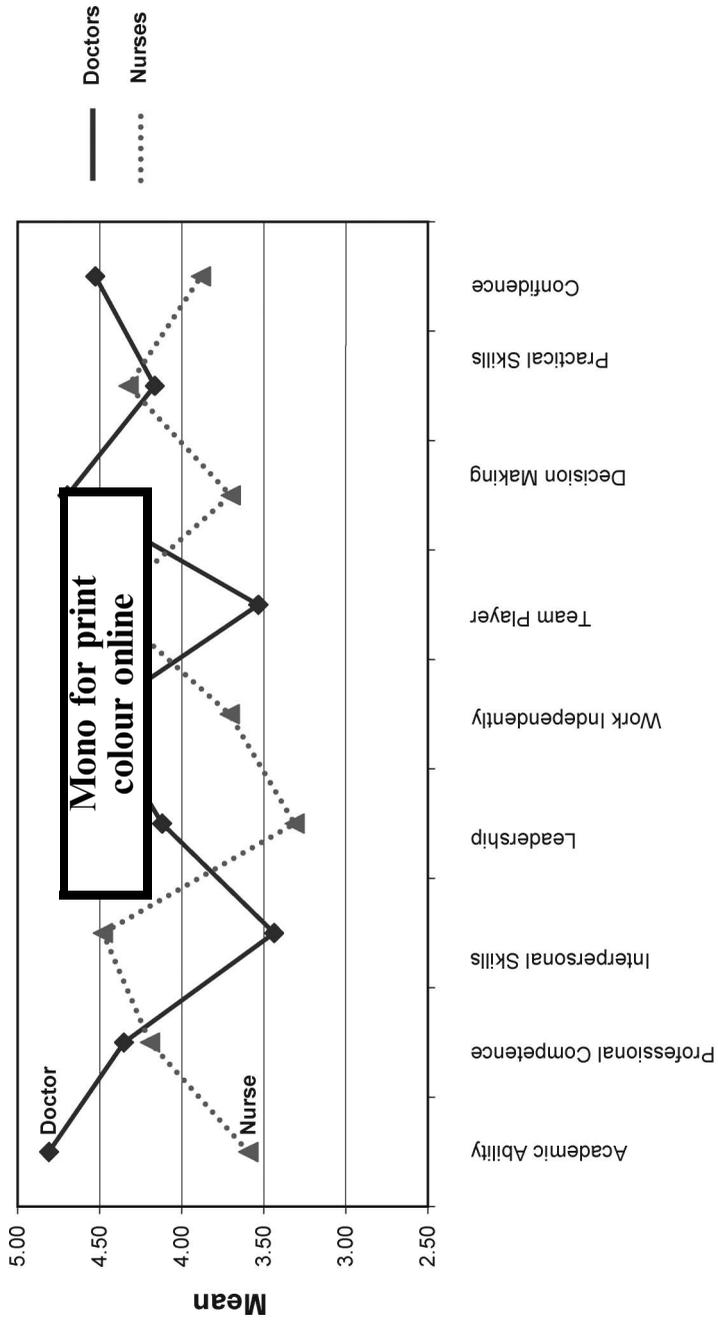
Mean ratings in different blocks are significantly different from each other. These differences are significant at the $p < 0.01$ level. The exceptions are the differences between the ratings radiographers and occupational therapists and between radiographers and podiatrists. These are only significant at the $p < 0.05$ level.

very similar to each other (Figure 4). Students appeared to hold less well defined and more moderate views of the characteristics of these professional groups.

Discussion

The findings from the study indicate that neophyte undergraduate students do indeed arrive at university with defined stereotypes of other HSC groups. This emphasizes the need to investigate the potential influence of IPE on student stereotypes over time. It also supports the potential value of introducing IPE as early as possible to maximize potential positive attitude change where it is appropriate.

For example, students perceived midwives, social workers and nurses to have strong team player and interpersonal skills. Doctors and pharmacists were rated lowest in these domains. These perceptions resonate with previous studies of students both at comparable and different stages of their education or career (Tunstall-Pedoe et al., 2003; Barnes et al., 2000;



Characteristics

Figure 1. A comparison of the stereotype profiles of nurses and doctors.

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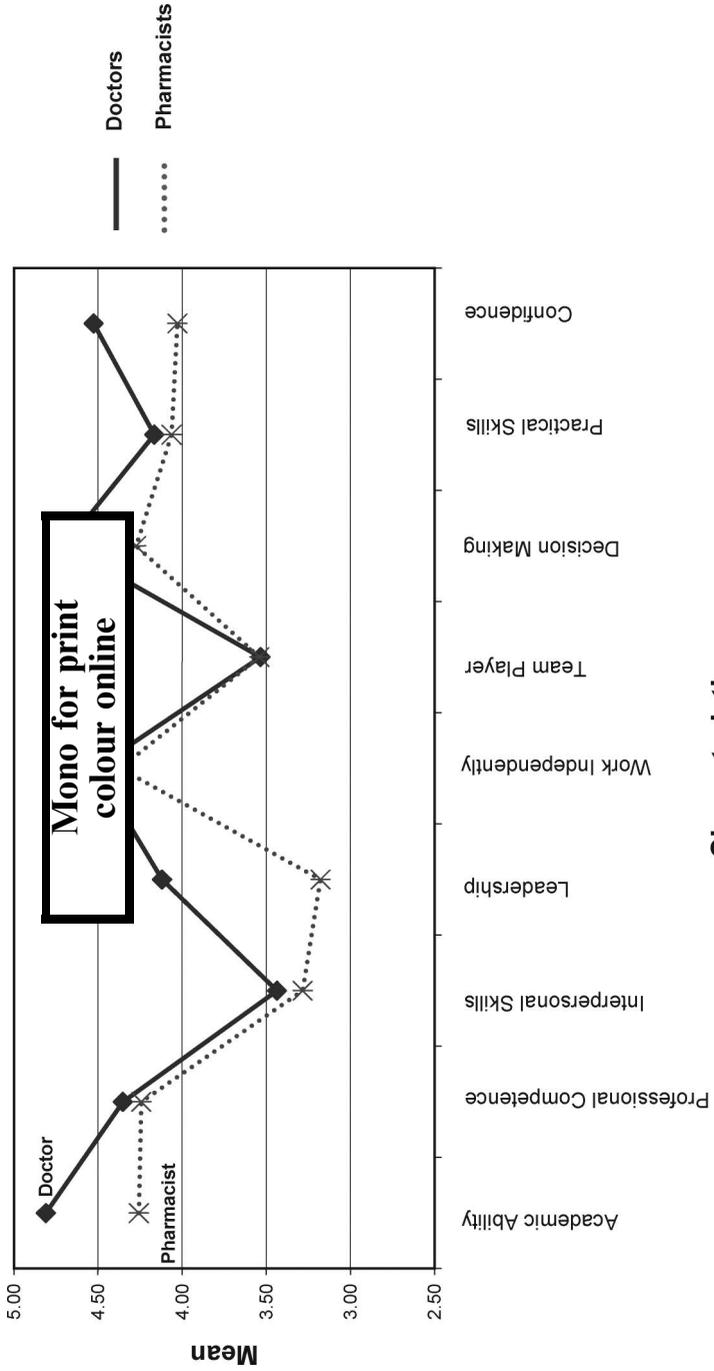
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Characteristics

Figure 2. A comparison of the stereotype profiles of doctors and pharmacists.

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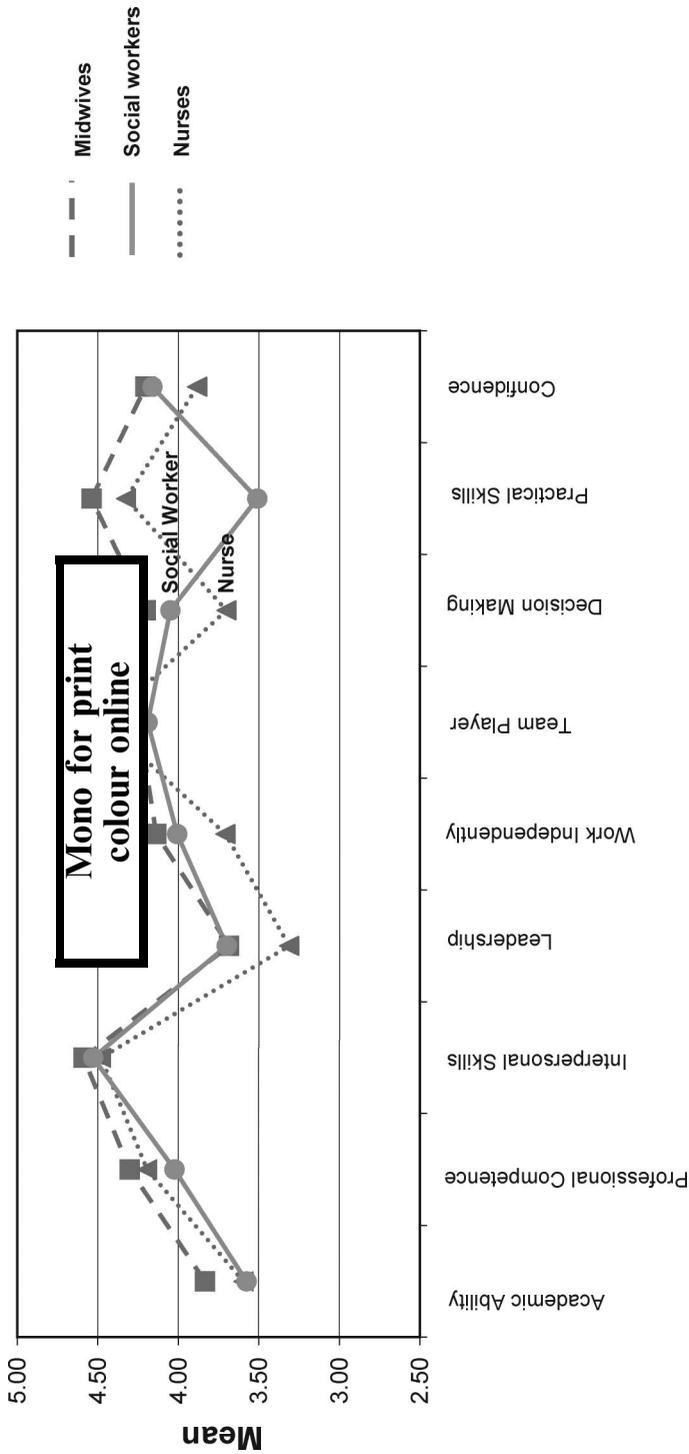
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Characteristics

Figure 3. A comparison of the stereotype profiles of nurses, midwives and social workers.

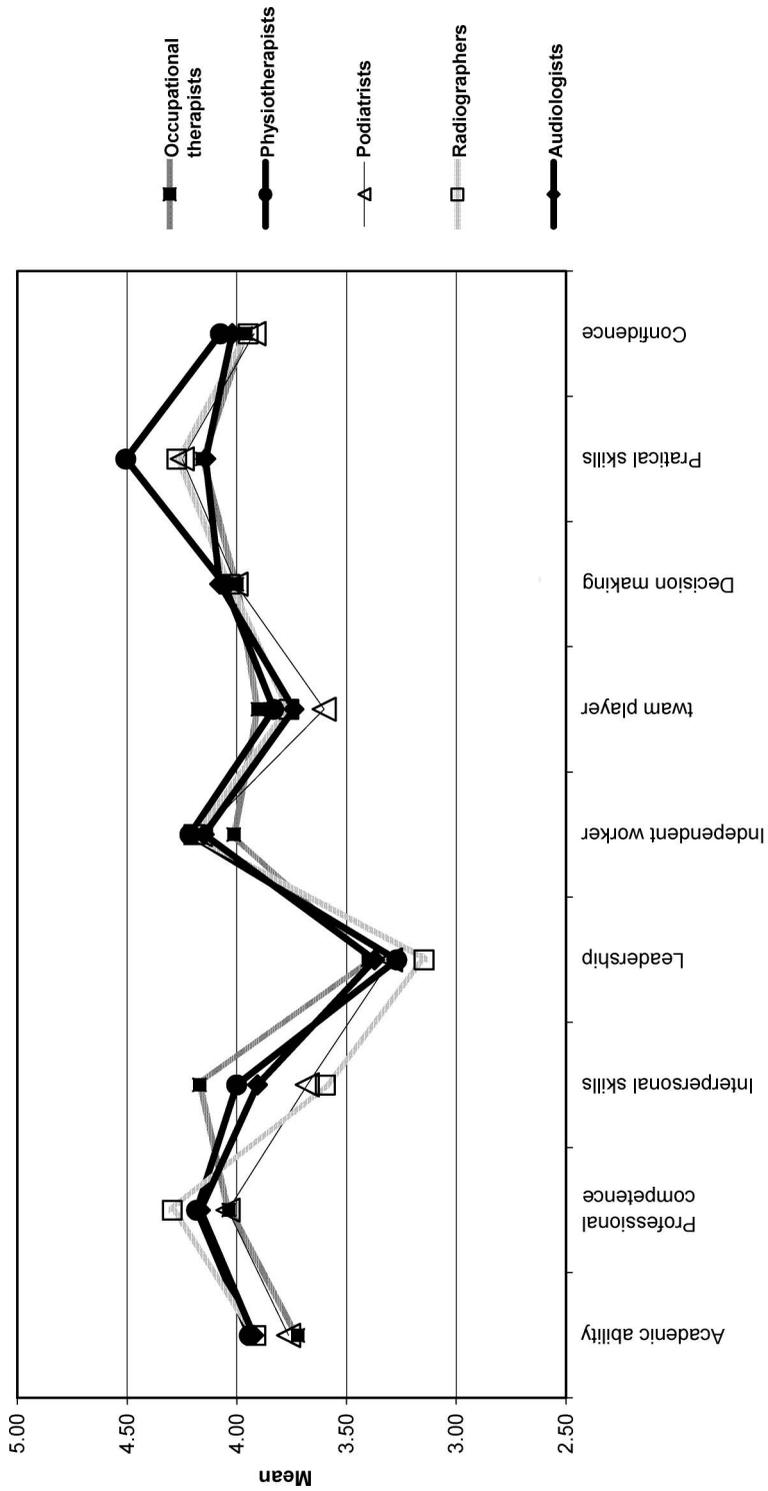


Figure 4. A comparison of the profiles for occupational therapists, physiotherapists, podiatrists, radiographers and audiologists.

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Carpenter, 1995b). Hind et al. (2003) also found students rated pharmacists significantly less highly as communicators than pharmacy students had rated themselves. It could be hypothesized therefore that introducing IPE early in the programme could positively influence longer term perceptions in these domains.

740 Similarly, doctors and pharmacists were rated highest in terms of their academic ability. The higher ratings of doctors compared with other professional groups is confirmed in other studies. Barnes et al. (2000) found the academic rigour of the doctor (psychiatrist) was highly rated and significantly more so than community practice nurses, social workers and occupational therapists. This pattern is confirmed by Carpenter (1995a, 1995b) in
745 comparisons between doctors and nurses and in comparisons of social workers and doctors (Hewstone et al., 1994) and in comparisons made between doctors, radiographers and physiotherapists (Tunstall-Pedoe et al., 2003). The extent to which these perceptions of greater intellectual ability in doctors will impact on interprofessional working and team working is not known. However, it could be argued that such stereotypes will hinder
750 recognition of team leadership skills in other professions.

Indeed, findings from this study confirm that at the beginning of their programmes students appeared to rate doctors highly in terms of their leadership skills. These findings suggest that there is an assumption very early on in students' minds that doctors are natural leaders, assumptions that are in place even before the socialization processes inherent in
755 their training and later in practice have taken place. These findings on leadership echo earlier studies elsewhere (Barnes et al., 2000) that showed high ratings on leadership for psychiatrists and lower ratings for community practice nurses and occupational therapists. However, there is some disparity around the perceived leadership role of the social worker (Table V). Low leadership skills were reported for social workers by Barnes et al. (2000) and this professional group was not distinguished from occupational therapists and nurses on
760 this characteristic. However, new students in our study saw social workers as showing these skills over and above a number of other professional groups. This discrepancy may be due to the fact that the Barnes et al. study involved post registration students, whereas the current study investigated early preregistration students. Alternatively, Barnes et al. (2000) focussed
765 specifically on the mental health team where nurses and occupational therapists may be perceived to have a stronger leadership role.

Students in this study perceived social workers to have fewer practical skills than other professional groups. This would seem to contradict findings reported by Barnes et al. (2000) where social workers were rated more highly on practical skills than psychiatrists. However,
770 this may be a function of psychiatry being less hands-on than other medical specialities.

With very few exceptions, the nature of the stereotypes assigned to the different professional groups by the students in the current study is consistent with those described in the previous literature. There appears to be little difference between students' perceptions of other professional groups whether they be in their first year of training (as in the current
775 study), the end of training (as in Carpenter, 1995a; 1995b) or at a postgraduate level (as in Barnes et al., 2000; Carpenter et al., 2003). This suggests that traditional stereotypical views have persisted despite educational, gender mix and role changes across the professional groups, in recent years. For example, the nursing curriculum has become more academic (Kaler et al., 1989), communication courses have been introduced into the pharmacy
780 curriculum (Hughes & McCann, 2003; Owens & Gibbs, 2001), the gender mix of some professional groups such as medicine have shifted (British Medical Association, 2004) and the major developments in extending roles in nursing and physiotherapy as in the new consultant therapist posts and nurse prescribing (Department of Health, 2000). It might have been predicted that such changes to professional preparation, roles and boundaries

would result in changes in the public and professional images of the professional groups. 785
However, the findings from our study and others (Castledine, 1996) suggest that change in
stereotypical images of certain professional groups is slow in coming. For example, holding
the stereotype that few of the professional groups other than doctors have leadership
qualities indicates the challenge that lies ahead if the leadership qualities of other 790
professionals are to be recognised and encouraged. This may be particularly the case for
the nursing and allied health professions. In spite of major developments in extended role
and advanced practice, being independent workers and the ability to make decisions still
appear to be underplayed in these groups.

Findings from the data analysed in this study also suggest that students clearly distinguish 795
between the professional groups in terms of their interpersonal skills, academic ability and
being a team player. They are seen as more alike, and less distinct on the remaining
characteristics, especially professional competence and confidence. If stereotype change is a
desirable outcome of IPE, it is recommended that efforts might best be focused on changing
the perceived characteristics for which professions are seen as most distinct. In other words,
emphasizing a change in students' perceptions of the interpersonal skills, academic ability 800
and team player ability of other professional groups to reflect reality rather than a stereotype.
However, it is important to recognize that there must be value in the fact that professional
groups do have some different characteristics. It is essential that, where these differences
reflect reality rather than stereotype, they are appreciated and celebrated equally. For
example, an aim of IPE should be that students learn to value interpersonal skills and being a 805
team player equally highly as academic ability.

The study has also provided potentially valuable data on the similarities and differences
between the profiles of characteristics in each professional group. These profiles suggest that
students appear to have a more definite image or firmly held stereotypes of doctors,
pharmacists, nurses, midwives and social workers as professional groups. There is also some 810
indication from these profiles that doctors and pharmacists are seen as one subset of the
HSC professions with distinguishing features such as high academic ability and being able to
work independently. Midwives, nurses and social workers are another subset with
distinguishing features such as high interpersonal skills and being a team player. These
findings raise questions for future investigation related to the nature of future interactions 815
between the professional groups.

How will the different images of the professional groups influence the way students
interact with other groups during CL and beyond in practice? Will opposites attract or create
friction?

It may be hypothesized that having a team with members that are perceived to have 820
characteristics that complement each other would foster team performance, reduce internal
competition and any threat to professional distinctiveness. In other words, will opposites
attract so that interactions between the professional groups with clearly different stereotype
profiles (such as doctors and nurses) are more harmonious than those between professional
groups with less distinctive profiles (such as audiologists and radiographers) or who share 825
similar traits (such as doctors and pharmacists)? If it is assumed that stereotypes are to some
extent based on perceptions of the actual roles professional groups might perform, further
investigation of group profiles may shed light on how students anticipate their prospective
working relationships with a range of other health and social care professions. For example,
students perceived the characteristics of doctors' and nurses' roles to be very distinctive 830
(Figure 1). Does this mean that students see these professional groups as complementary
and supportive of each other or is the distinction a sign of false expectation and potential
conflict? These issues are explored elsewhere (Hean et al., 2006).

835 An alternative suggestion is that perceived similarities between professional groups may
 generate feelings of unity and empathy and that professionals with similar profiles, such as
 doctors and pharmacists or midwives, nurses and occupational therapists are expected and
 subsequently do achieve more harmonious relationships. Further, if students perceive
 840 professional stereotype profiles to overlap, do they then perceive there to be an overlap in
 the role of professional groups? Does the similarity in the midwife, social worker and nurse
 profiles represent a perceived overlap in the caring/nurturing roles that students expect
 these professionals to perform?

Will similarities and differences act as potential sources of harmony or conflict? Further
 investigation is now required to determine whether groups that are perceived to be similar
 develop better working relationships as suggested by Stephan and Stephan (1984). Or will
 845 similarities be seen as a lack of distinctiveness and a source of threat to their professional
 interactions (e.g., Branscombe et al., 1999)?

The remaining professional groups (audiologists, radiographers, physiotherapists,
 occupational therapists and podiatrists) in this study made up a further subset in which
 few distinguishing features were obvious. It has been noted elsewhere that neophyte
 850 physiotherapists have very well defined levels of professional identity when they enter their
 ② education programmes (Adams et al., in press). It is as yet unclear how physiotherapy
 students with such a clear professional identity might react when brought together with
 other students who perceive physiotherapists to have no clear determining characteristics
 and to be very similar to a range of other allied health professions.

855 Finally, in terms of educational delivery, it is important to reflect on the impact of
 undertaking this kind of research which involves extracting stereotypical ratings. The
 process of asking students to articulate their stereotype ratings during this research raised
 their awareness more clearly of such issues. There is potential, therefore, to utilise such
 instruments as an educational tool to facilitate student exploration of stereotyping within an
 860 IPE initiative.

Conclusion

865 This study suggests that neophyte undergraduate students enter their training programmes
 with well defined stereotypes of other HSC groups and that professional groups are seen as
 distinct on some characteristics but not others. There are also clear indicators that subsets of
 professional groups share more perceived characteristics than others. Such similarities and
 differences in stereotype profiles may have crucial implications for future working
 870 relationships between professional groups. It remains to be determined whether the
 stereotypical expectations that students hold of each professional group will persist over time
 and after exposure to IPE. Likewise the extent to which these stereotypes will translate into
 actual behaviour during future interprofessional collaboration and team working is not yet
 known.

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Appendix 1

Exemplar section from student stereotype rating questionnaire.

How would you rate Occupational therapists ¹ on:	Very high				Very low
	5	4	3	2	1
Academic ability	<input type="checkbox"/>				
Professional competence	<input type="checkbox"/>				
Interpersonal skills (e.g. warmth, sympathy, communication)	<input type="checkbox"/>				
Leadership abilities	<input type="checkbox"/>				
The ability to work independently	<input type="checkbox"/>				
The ability to be a team player	<input type="checkbox"/>				
The ability to make decisions	<input type="checkbox"/>				
965 Practical skills	<input type="checkbox"/>				
Confidence	<input type="checkbox"/>				
	1	2	3	4	5

¹Occupational therapists are used as an example. Identical questions were asked about all the other professional groups involved in the study.