Development of the 'Attitudes to Health Professionals Questionnaire' (AHPQ): A measure to assess interprofessional attitudes

Authors: Susanne Lindqvist; Anna Duncan; Lee Shepstone; Fiona Watts; Shirley Pearce

This is a reprint of an article submitted for consideration in the Journal of Interprofessional Care © (2005) [copyright Taylor & Francis], Volume 19, Issue 3 June 2005, pages 269 - 279

The Journal of Interprofessional Care is available online at:
http://www.informaworld.com/smpp/content~content=a713995875

Abstract

This paper describes the development and preliminary validation of a measure to investigate interprofessional attitudes and how these attitudes change over time. Items for the questionnaire were elicited from 'construct exercises' with staff from different Health Schools resulting in a 20-item 'Attitudes to Health Professionals Questionnaire' (AHPQ). The questionnaire was completed by first year students from five different health professions. Its structure was evaluated using principal components analysis, the internal consistency was determined and the test-retest reliability assessed. Analysis of these data led to rephrasing/ removal of certain items and a revised form of the AHPQ. The revised AHPQ was completed by a different cohort of students and a preliminary validation was carried out. A solution with two main components labelled 'caring' and 'subservient' emerged from analysis of the structure of the initial AHPQ, the overall internal consistency was good although the test-retest reliability varied. Preliminary validation of the revised questionnaire suggested significant differences, on both scales, in students' attitudes towards different health professions at the outset of their training. The AHPQ appears to be a useful instrument for the assessment of interprofessional attitudes in the health professions.

Keywords: interprofessional; attitudes; questionnaire; health; undergraduate; education

Introduction

Each individual acquires a range of attitudes throughout life, and these attitudes influence their choice of profession and probably their approach to interprofessional working. When embarking on a training programme, the development of a professional identity plays a crucial part of becoming a professional (Bucher & Stelling, 1977). Interactions with peers and role models are likely to influence this process, although the notion of future professional identities may start to form at a much earlier stage (Cavenagh *et al*., 2000). Likewise, attitudes to interprofessional working are

known to emerge long before the end of the professional training (McPherson *et al*., 2001). Therefore, students are likely to enter their training programme with attitudes of their own professional role, and the role of others. In clinical settings, differences have been shown to exist in the way that different professions are perceived (Mackay, 1993; Walby *et al*., 1994). If these perceptions translate to negative interprofessional attitudes, they may also inhibit teamworking skills (Areskog, 1988; Mackay, 1993; Parsell *et al*., 1998), which could have undesirable effects on patient care (Ryan & McKenna, 1994). By introducing interprofessional education at the pre-registration level, positive attitudes to other professions should be given an opportunity to develop from the very beginning of the students' training. As yet, it is not known which approaches to interprofessional education are most likely to foster positive attitudes to interprofessional working (Funnell, 1995; Parsell *et al*., 1998). Neither has it been ascertained, when the optimal time would be to introduce different professionals to each other, in order to obtain the best learning outcome (Areskog, 1988 & 1995; Hind *et al*., 2003; Pirrie *et al*., 1998). Practical questions such as these would be easier to answer if we were able to measure the impact of interprofessional education programmes on attitudinal change.

Eiser (1997) defines attitudes as indicators of how people make sense of their experience. He draws an important distinction between attitudes, beliefs and behaviour. He relates the term 'belief' to something specific that one could settle as either true or false, whereas 'attitude' relates to personal judgements of values and preference, which according to Eiser go beyond simple facts and is considered more general. This paper aims to develop a measure of attitudes to health professionals that could be of benefit in understanding differences in attitudes between health professional groups, as well as evaluating attitudinal change over time.

At the University of East Anglia (UEA) Norwich, UK, we currently run an interprofessional learning (IPL) programme, which aims to prepare students for interprofessional teamworking by improving their understanding of the roles of each health professional. The IPL programme involves first-year students from nursing, medicine, occupational therapy, pharmacy, midwifery and physiotherapy. The students work together in cross-professional groups around a case scenario for 9 consecutive weeks and we run three 9-week sessions throughout the year. Our aim is to assess whether this approach to interprofessional learning influences attitudinal change. To date, there are relatively few reliable and validated instruments that could be used to measure differences in how each profession is viewed by our students and the effect of the intervention on attitudinal change.

Parsell & Bligh (1999) developed the 'Readiness for Interprofessional Learning Scale' (RIPLS), aimed at measuring students' readiness for interprofessional learning and attitudes towards interprofessional education. RIPLS was developed using a similar method to the 'Interdisciplinary Education Perception Scale' (IEPS) designed by Luecht *et al*. (1990) to investigate students' perceptions in relation to interprofessional education. Although these are very important tools, they are both generic in nature and do not specifically address students' attitudes to different health professionals, which is what we have set out to investigate.

Carpenter (1995) described a 'Health Care Stereotypes Scale' intended to measure attitudinal change in medical and nursing students. The scale included a list of 8

stereotypical characteristics generated by a mixed group of students, who were asked to brainstorm about characteristics typical of the medical and nursing profession, respectively. It was administered to a small group of nursing and medical students who were asked to indicate, on a 7-point scale, how each characteristic applied to their own group, to the other profession, and also how their own professional group was perceived by the other. The author acknowledged that the list of stereotypes used in the questionnaire might have been deficient, implying that the measure in its current format may not have been sensitive enough to detect important changes in professional attitudes. The study suggested that professional stereotypes influence the effectiveness of teamworking relationships between nursing and medical students and essentially showed that interprofessional education diminished negative attitudes between these two professions. This was demonstrated by showing improvements on some of the attitudinal dimensions investigated in the study, resulting in a mutual recognition of each profession's strengths and weaknesses, thus leading to a greater willingness to interact. These findings highlight the importance of being able to measure the impact of interprofessional educational opportunities on attitudinal change and the need to develop an instrument applicable to a larger range of health professionals.

This paper describes the development and preliminary validation of an instrument, which may help to fill the existing gap. Our initial approach to assessing students' interprofessional attitudes was to elicit a number of bipolar constructs (Kelly, 1955) that reflected people's attitudes to different health professionals. We then developed a scale incorporating these constructs on which we ask students to make judgements about health professionals. We anticipate that the 'Attitudes to Health Professionals Questionnaire' will continue to evolve, and this paper describes the first two stages of the development leading to its current format.

Method

In this paper we present the first two stages of the development of this questionnaire. To aid the reader, we will refer to the first two stages as 'Stage One' and 'Stage Two', with the first stage describing the initial questionnaire and the second explaining how the initial version was revised.

Generation of items: Stage One

Items for the proposed questionnaire were elicited from a 'construct exercise' with 20 staff members from a range of different backgrounds in each one of the different Health Schools at UEA (Nursing and Midwifery, Allied Health Professions and Medicine, Health Policy & Practice). These staff members consisted of: 4 nurses, 2 general practitioners, 2 general medical consultants, 1 occupational therapist, 1 physiotherapist, 1 midwife, 2 domestic staff, 1 health economist, 3 secretaries, 1 administrator, 1 statistician and 1 biologist.

The 'construct exercise' was introduced individually to the staff members by the same researcher and lasted for approximately 10 minutes. The format of the exercise, based on Kelly's (1955) personal construct theory, sought to elicit the person's own constructs by which they make sense of the world. A construct was defined as the way in which two things are seen as the same and different from a third. Staff rather than

students were approached for this exercise, since our view was that the constructs should be elicited from people with ongoing experience or knowledge of a range of health professions.

Each of the 20 staff members were presented with nine different professions (lawyer, nurse, social worker, midwife, accountant, occupational therapist, hospital consultant, physiotherapist and general practitioner). Each subject was asked to consider three of these nine professions, and describe how two of these were seen as similar, and different from the third (e.g. two may be perceived as being assertive while one was seen as being non-assertive). Each construct derived from this exercise served as verbal anchors for each end of a visual analogue scale, consisting of a continuous 10 cm line, and represented one of the items in the questionnaire. Each person was offered the opportunity to repeat the task with a new group of three professions which led to a new construct. Some of the constructs described by participants of this exercise were very similar (if not identical). On these occasions the constructs were merged into one. Apart from that, all constructs were included in the initial questionnaire. This exercise resulted in an initial 20-item questionnaire entitled 'Attitudes to Health Professionals Questionnaire' (AHPQ).

Sample of students given the initial AHPQ: Stage One

All students training to become health professionals at UEA in the spring semester of 2003 were invited to take part in a study to develop a measure of interprofessional attitudes by completing the questionnaire on two occasions. We aimed to recruit roughly half of the student population in each of the different training programmes. 190 students from five health professional training programmes including: medicine (75), nursing (58), occupational therapy (25), physiotherapy (25) and midwifery (7) agreed to participate, and informed consent for completion of the questionnaire was obtained before distribution. This sample size was considered appropriate, since the 'rule of thumb' for exploratory principal components analysis (see later section about statistical analysis) suggests a minimum sample of 120 (Oppenheim, 1992). The relative proportion of students in the sample related to the number of students that had just entered their professional training and as a result there were unequal numbers of students in each group.

In order to assess the test-retest reliability (see section about statistical analysis), the questionnaire was distributed to the students on two occasions, 3 - 7 days apart, in the second semester of the first year of their training. According to Nunnally (1978) test-retest measures are considered adequately high if equal to, or greater than 0.7.

Scoring of the questionnaire

Each student was presented with a questionnaire consisting of five sections with 20 items (one per profession and every section contained the same 20 items). Each item consisted of one construct with anchors at each end of a 10 cm visual analogue scale, and the students were asked to mark every line with a cross to indicate where they felt a typical member of each health profession should be placed on each dimension. All items were scored by measuring the distance from one end of the scale to the mark made by the student.

Statistical analysis

A principal components analysis, based upon the correlation matrix, was performed to assess the internal structure of both the initial, and the revised questionnaire (see below). The internal consistency was assessed for both questionnaires using the Cronbach's alpha coefficient. The test-retest reliability of the initial AHPQ was evaluated by examining intra-class correlation coefficients (ICC), for each item, from the two occasions the AHPQ was completed by the students. The form used was ICC(2,1) following the notation of Shrout & Fleiss (1979).

Initial data collected from the revised questionnaire, described below, were compared across professions and subjected to a two-way analysis of variance (ANOVA) followed by *post-hoc* analysis using Tukey's test. All data analysis was carried out using the Statistical Package for Social Sciences (SPSS version 11).

Revision of items: Stage Two

The initial version of the AHPQ was subjected to revision in the light of the emerging structure and reliability. The first author of this paper in consultation with all the other authors was responsible for the process of revision. Items were considered for removal if the loading of a component was less than 0.5. Similarly, if the overall Cronbach's alpha coefficient increased when an item was removed, the internal consistency was improved by removing or rephrasing this item. Likewise, individual items with a test-retest ICC less than 0.7 may have conflated two different constructs and were therefore either amended or removed.

Sample of students given the revised AHPQ: Stage Two

Following the removal and rephrasing of certain items, the revised AHPQ was administered to a new sample (160) of first-year students at the outset of the IPL programme in the autumn semester of 2003. These students were from six health professional training programmes including: medicine (40), nursing (38), occupational therapy (25), physiotherapy (25), midwifery (7) and pharmacy (25) just about to start a 9-week IPL programme. The response rate was 100% for this second sample. The first intake of undergraduate pharmacy students at UEA was September 2003. This time therefore, the questionnaire distributed to the students had six sections, reflecting the addition of pharmacy students to health training programmes.

Results

Principal components analysis: Stage One

Two main components emerged from the principal components analysis accounting for 43% of the total variance, and a third component had 7% of the total variance. The third component was later disregarded, as we decided to remove items loading less than 0.5, and by doing so only one item loaded on the third component. 17 of the 20 original items loaded on the two remaining components, and the alpha coefficients were calculated to assess their respective internal reliability (Table I).

Component 1: 'Caring'. As shown in Table I, the first component was relatively strong and accounted for 33% of the total variance. All 13 items that loaded on this component showed good internal consistency ($\alpha > 0.91$) and appeared to be related to the 'caring' features of a profession. Examples of items with high loadings on this component included caring, sympathetic and thoughtful.

Component 2: 'Subservient'. The second component was much weaker, as it accounted for only 10% of the total variance (Table I) and the items loading on this component had moderate internal reliability ($\alpha > 0.59$). The items loading on this scale appeared to have a dependent and vulnerable quality. Hence we labelled this scale 'subservient'.

Reliability: Stage One

The internal consistency coefficient for the initial 20-item questionnaire was high ($\alpha = 0.86$) and the alpha coefficient for each component was 0.91 and 0.59, respectively. Test-retest ICC was determined for each individual item, and was shown to vary between 0.34 and 0.85.

After careful analysis of the data presented so far, certain items were considered for removal or rephrasing and the procedure is described in Stage Two of the development of the AHPQ.

Table I. Results from principal components analysis

	Component loadings (> 0.5)	
	I	II
	(33% of the total variance)	(10% of the total variance)
Initial items	α= 0.91	α= 0.59
Caring/ non-caring	0.822	
Sympathetic/ non-sympathetic	0.837	
Thoughtful/ arrogant	0.802	
Flexible/ rigid	0.775	
Approachable/ non-approachable	0.747	
Patient-centred/ self-centred	0.738	
Gentle/ rough	0.734	
Person centred/ technically focused	0.722	
Empathetic/ non-empathetic	0.605	
Not money-oriented/ money-oriented	0.594	
Values teamwork/ values independent work	0.549	
Conciliatory/ confrontational	0.548	
Practical/ theoretical	0.509	
Vulnerable/ confident		0.714
General knowledge/ specific knowledge		0.601
Non-assertive/ assertive		0.596
Poorly paid/ well paid		0.515
Stressed/ not-stressed		
Controlled/ independent		
Values guidance/ values autonomy		

Note: Data shown in table are from Stage One of the development of the questionnaire and includes loadings > 0.5.

Revision of the initial questionnaire: Stage Two

Table II shows the results from the revision of items in the questionnaire, which led to removal or rephrasing of items.

The items 'stressed/ not stressed', 'controlled/ independent' and 'values guidance/ values autonomy' had loadings less than 0.5, the internal consistency of the questionnaire increased when any one of these three items was removed, and the test-retest ICC values were less than 0.7 (thus all three items fulfilled criteria i, ii and iii, see Table II). This led to the removal of 'stressed/ not stressed' whilst the two other items were rephrased. The item 'general knowledge/ specific knowledge' was removed since it increased the internal consistency when removed, showed low test-retest reliability, and may not have represented a pair of true opposites (e.g. fulfilled criteria ii, iii and iv). 'Money-oriented/ not money-oriented' was removed as the item showed a very low test-retest reliability (ICC = 0.46). Likewise, 'need to be empathetic/ doesn't need to be empathetic' was simplified to become 'empathetic/ not empathetic' in order to increase the test-retest ICC. Items such as 'flexible/ rigid', 'values

teamwork/ values independent work' and 'conciliatory/ confrontational' were all rephrased since they had low test-retest ICC and were likely to compound two different characteristics, hence the clarification of these items (which all fulfilled criteria iii and iv). Items that fulfilled the fourth criteria only were either kept without any alterations, or rephrased. Finally, items like 'caring/ non-caring', 'sympathetic/ non-sympathetic', 'approachable/ non-approachable' and 'non-assertive/ assertive' were all kept unaltered. These items scored high on the test-retest reliability of the initial questionnaire and were all shown to be important for the internal structure of the revised version of the AHPQ.

Table II. Rationale for the revision/ rephrasing of items: Stage Two

Items in initial questionnaire	i	ii	iii	iv	Items in revised AHPQ
Stressed/ not-stressed	x	x	x		Item removed
Controlled/ independent	x	x	x		Not independent/ independent
Values guidance/ values autonomy	x	x	x		Does not value autonomy/ values autonomy
General knowledge/ specific knowledge		x	x	x	Item removed
Not money-oriented/ money-oriented			x		Item removed
Need to be empathetic/ do not need to be empathetic			x		Empathetic/ not empathetic
Flexible/ rigid			x	x	Flexible/ not flexible
Values teamwork/ values independent work			x	x	Value teamwork/ Does not value teamwork
Conciliatory/ confrontational			x	x	Confrontational/ not confrontational
					Conciliatory/ not conciliatory
Person centred/ technically focussed				x	Not technically focused/ technically focussed
Thoughtful/ arrogant				x	Thoughtful/ not thoughtful
					Arrogant/ not arrogant
Patient-centred/ self-centred				x	Patient-centred/ not patient-centred
					Not self-centred/ self centred
Gentle/ rough				x	No change
Poorly paid/ well paid				x	No change
Vulnerable/ confident				x	No change
Practical/ theoretical				x	No change
Caring/ non-caring					No change
Sympathetic/ non-sympathetic					No change
Approachable/ non-approachable					No change
Non-assertive/ assertive					No change

Notes: The following criteria were considered throughout this process: (i) component loading was < 0.5; (ii) the overall alpha coefficient increased when item was removed; (iii) individual test-retest intra-class correlation was < 0.7; (iv) the anchors conflated two different constructs.

Preliminary assessment of the structure and reliability of the revised AHPQ: Stage Two

As with the initial questionnaire, two main components emerged from principal components analysis of the data, and these accounted for 50% of the total variance (Table III). The internal consistency for the revised 20-item questionnaire increased slightly (α = 0.87) and the alpha coefficients for each component were 0.93 and 0.58, respectively.

When comparing data from the principal components analysis from the initial and the revised questionnaire (Tables I and III) it became clear that there were little changes in how the different items loaded on the first component. However, the loading pattern for the second component showed more distinct changes. As with the initial AHPQ, two major components emerged from subjecting the data to principal component's analysis and these were again shown to describe 'caring' and 'subservient' characteristics, respectively. Two items; 'poorly paid/ well paid' and 'not confrontational/ confrontational' did not load on either component during this preliminary assessment of the structure, suggesting room for further improvements of the AHPQ.

Preliminary validation of the revised AHPQ: Stage Two

Analysis of the questionnaires completed by 160 students entering the IPL programme showed clear differences in students' attitudes towards six health professions (occupational therapy, nursing, pharmacy, physiotherapy, medicine and midwifery), on both the 'caring' and the 'subservient' scale. Figure 1 shows the mean value for the attitudes of each profession on both dimensions.

Table III. Initial results from the revised questionnaire

	Component loadings (> 0.5)	
	I	II
	(39% of the total variance)	(11% of the total variance)
Revised items	α= 0.93	α= 0.58
Caring/ non-caring	0.872	
Empathetic/ non-empathetic	0.839	
Approachable/ non-approachable	0.833	
Values team work/ does not value team work	0.823	
Sympathetic/ non-sympathetic	0.816	
Thoughtful/ not thoughtful	0.792	
Flexible/ not flexible	0.791	
Patient-centred/ not patient-centred	0.755	
Not self-centred/ self-centred	0.733	
Gentle/ rough	0.673	
Not arrogant/ arrogant	0.587	
Practical/ theoretical	0.545	
Conciliatory/ not conciliatory	0.533	
Vulnerable/ confident		0.644
Non-assertive/ assertive		0.616
Does not value autonomy/ values autonomy		0.554
Not technically focused/ technically focused		0.544
Not independent/ independent		0.521
Poorly paid/ well paid		
Not confrontational/ confrontational		

Note: Table shows that the same two components emerged from principal components analysis carried out after Stage Two.

It can be seen from Figure 1 that there are clear differences in students' attitudes towards different health professions on the 'caring' axis. Whilst the professions show tighter clustering on the 'subservient' axis, statistical analysis highlighted some significant differences. A two-way ANOVA (profession as a fixed effect and student as a random effect) was used to test for significant differences in mean 'caring' and 'subservient' scores at the beginning of the students' training. Tukey's test was used as a post-hoc analysis. There was a significant ($p < 0.001$) 'between group difference' in both mean 'caring' scores and mean 'subservient' scores. Pharmacists were viewed as significantly less 'caring' than medics, who in turn were seen as being significantly less 'caring' than physiotherapists. No significant differences were observed between occupational therapists, nurses and midwives on the 'caring' scale, but these professions were all regarded as being significantly more 'caring' than physiotherapists, medics and pharmacists. On the 'subservient' scale attitudes towards medics and nurses were significantly different from the attitudes towards the other four professions, with nurses being perceived as the most 'subservient' and medics the least.

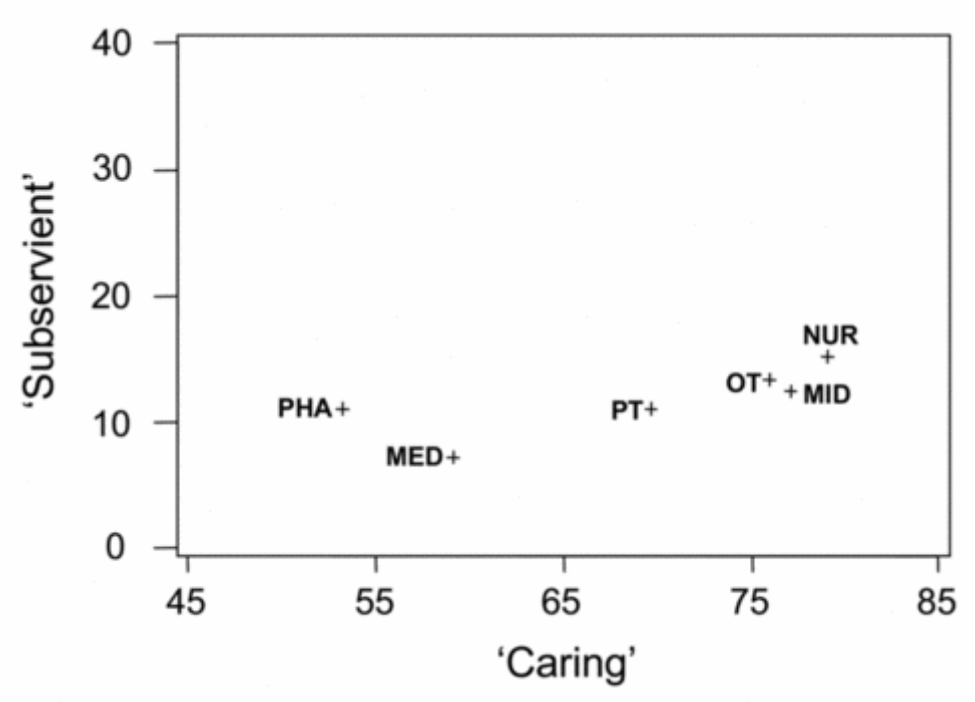

Figure 1. Plot of mean scores on both the 'caring' and 'subservient' axis showing differences in students' attitudes towards each of the six professions at the outset of their training.
Source: Data are from the revised questionnaire.

Discussion

This aim of this paper was to describe the development and preliminary validation of a questionnaire intended to assess attitudes to different health care professions. In the first instance, we wanted to develop an instrument that can be used to measure students' attitudes towards different health professions, including their own, at the outset of their training. Here we report the process by which we arrived at the second stage of the development of the questionnaire and present a preliminary validation from the revised version of the questionnaire. In the future we will also be using this instrument to investigate if and how these differences in attitudes change over time.

At the first stage of its development, the initial AHPQ showed good internal consistency and acceptable test-retest reliability. Two major components emerged from investigating the internal structure of the questionnaire. The first component described a robust 'caring' scale, whereas the second 'subservient' scale accounted for less of the variance and had lower reliability than the first component. The labels for the two dimensions will be reviewed after each stage of the development of the AHPQ in order to verify our current interpretation of the data.

During the second stage of the development, the questionnaire was revised and some items were removed or rephrased. This procedure improved the internal consistency of the whole questionnaire and the principal components analysis showed the same two components emerging. Although further improvements of the questionnaire will be made, preliminary validation suggests that it already has value as a tool to assess differences in student attitudes very early on in their training. Here we have shown that students hold clearly different attitudes to the range of professions included in this

study. This suggests that they enter their health professional training with an idea of how 'caring' and 'subservient' their chosen profession is, and how their profession compares to other health professions. In particular, whilst pharmacists and medics were regarded as distinct, they were seen as less 'caring' in comparison to occupational therapists, nurses, physiotherapists and midwives. However, it is important to note that data presented in this paper are preliminary, and that a larger student sample would be needed to complete the AHPQ in order to confirm these early findings. An extended validation and cross-validation will be carried out after all students (in the academic year of 2003/2004) have completed the IPL programme in order to investigate whether the AHPQ can be used to detect changes in attitudes towards professionals over time.

As mentioned previously in this paper, there has been a debate for some time about the value of interprofessional education, which approach is the most effective, and when is the optimal time to introduce it (Areskog, 1988; Areskog, 1995; Funnell, 1995; Hind 2003; Parsell & Bligh, 1998; Pirrie *et al*., 1998). More evidence is needed to clarify the effect of a given approach and there has been a call for more research based on reliable and validated evaluation tools (Barr, 1995; Freeth *et al*., 2002; Zwarenstein *et al*., 1999). We hope that the 'Attitudes to Health Professionals Questionnaire' will contribute to existing evaluation tools, and that it will be used either on its own, or in conjunction with other existing scales (Barnes *et al.*, 2000; Carpenter, 1995; Hewstone *et al*., 1994; Luecht *et al.*, 1990; Parsell & Bligh, 1999). In the first instance, we will use it to determine whether the differences in professional attitudes shown in this paper are susceptible to change by education and/or experience. Future papers reporting the impact of our pre-registration IPL programme, using the AHPQ as part of the evaluation, will help to address this important question.

Acknowledgements

We would like to thank all first-year health students and staff members at University of East Anglia, Norwich UK, who have been involved in the development of the AHPQ.

References

Areskog, N-H (1988) The need for multi-professional health education in undergraduate studies. *Medical Education* **22** , pp. 251-252.

Areskog, N-H (1995) Multi-professional education at the undergraduate level. - In K. Soothill, L. Mackay & C. Webb (Eds) *Interprofessional relations in healthcare*; London: Edward Arnold

Barnes, D., Carpenter, J. and Dickinson, C. (2000) Interprofessional education for community mental health: Attitudes to community care and professional stereotype. *Social Work Education* **19(6)** , pp. 565-583.

Barr, H. (1995) Evaluating interprofessional education. *CAIPE Bulletin* **10**

Bucher, R. and Stelling, J. (1977) Becoming professional. - Beverly Hills, CA: Sage

Carpenter, J. (1995) Doctors and nurses: Stereotypes and stereotype change in interprofessional education. *Journal of Interprofessional Care* **9(2)** , pp. 151-161.

Cavenagh, P., Dewberry, C. and Jones, P. (2000) Becoming professional: When and how does it start? A comparative study of first-year medical and law students in the UK?. *Medical Education* **34** , pp. 897-902.

Eiser, JR (1997) Attitudes and beliefs. - In A. Baum, S. Newman, J. Weinmann, R. West & C. McManns (Eds) *Cambridge handbook of psychology, health and medicine*; Cambridge: Cambridge University Press

Freeth, D., Hammick, M., Koppel, I., Reeves, S. and Barr, H. (2002) A critical review of evaluations of interprofessional education. - London: LTSN for Health Sciences and Practice

Funnell, P. (1995) Exploring the value of interprofessional shared learning. - In K. Soothill, L. Mackay & C. Webb (Eds) *Interprofessional relations in healthcare*; London: Edward Arnold

Hewstone, M., Carpenter, J., Franklyn-Stokes, A. and Routh, D. (1994) Intergroup contact between professional groups: two evaluation studies. *Journal of Community and Applied Psychology* **4** , pp. 347-363.

Hind, M., Norman, I., Cooper, S., Gill, E., Hilton, R., Judd, P. and Jones, SC (2003) Interprofessional perceptions of health care students. *Journal of Interprofessional Care* **17(1)** , pp. 21-34.

Kelly, GA (1955) The psychology of personal constructs. - New York: Norton

Luecht, RM, Madsen, MK, Taugher, MP and Petterson, BJ (1990) Assessing professional perceptions: Design and validation of an interdisciplinary education perception scale. *Journal of Allied Health* **19(2)** , pp. 181-191.

Mackay, L. (1993) Conflicts in care, medicine and nursing. - London: Chapman & Hall

McPherson, K., Headrick, L. and Moss, F. (2001) Working and learning together: Good quality care depends on it, but how do we achieve it?. *Quality in Health Care* **10(2)** , pp. 46-53.

Nunnally, JC (1978) Psychometric theory. - 2nd edn; New York: McGraw-Hill

Oppenheim, AN (1992) Questionnaire design, interviewing and attitude measurement. - London: Pinter Publishers

Parsell, G., Spalding, R. and Bligh, J. (1998) Shared goals, shared learning: Evaluation of a multi-professional course for undergraduate students. *Medical Education* **32** , pp. 304-311.

Parsell, G. and Bligh, J. (1999) The development of a questionnaire to assess the readiness of health care students for interprofessional learning (RIPLS). *Medical Education* **33** , pp. 95-100.

Pirrie, A., Wilson, V., Harden, RM and Elsegood, J. (1998) AMEE Guide No.12: Mulitprofessional education: Part 2-promoting cohesive practice in health care. *Medical Teacher* **20(5)** , pp. 409-416.

Ryan, A. and McKenna, H. (1994) A comparative study of the attitudes of nursing and medical students to aspects of patient care and the nurse's role in organizing that care. *Journal of Advanced nursing* **19** , pp. 114-123.

Shrout, PE and Fleiss, JL (1979) Intraclass correlations: Uses in assessing rater reliability. *Psychological Bulletin* **86(2)** , pp. 420-428.

Walby, S., Greenwell, J., Mackay, L. and Soothill, K. (1994) Medicine and nursing: Professions in a changing health service. - London: Sage

Zwarenstein, M., Atkins, J., Barr, H., Hammick, M., Koppel, I. and Reeves, S. (1999) A systematic review of interprofessional education. *Journal of Interprofessional Care* **13(4)** , pp. 417-424.