

# Academic Behavioural Confidence: A comparison of medical and psychology students

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## Abstract

**Introduction.** Sander, Stevenson, King and Coates (2000) identified differences between medical students in a conventional university and psychology students in a post-1992 university in their responses to different styles of learning and teaching.

**Method.** It had been hypothesised that differing levels of confidence explained why the former felt student presentations would teach them little while the response of the latter was based on fear of presenting. The study reported here investigated differing levels of academic confidence in these two groups using a scale designed to measure Academic Behavioural Confidence (ABC).

**Results.** There was a significant difference between the ABC scores for the two groups ( $p < .05$ ) in line with the prediction. Further examination of data showed that the ABC scores of the medical students as a group were more varied than those of the psychologists whilst the latter showed more variation across the elements of the scale. Proposals for the further development and deployment of the scale are considered.

**Conclusion.** This study suggests that these two groups come to university very differently prepared for meet the demands of higher education.

**Keywords:** Academic confidence, Medical students, Psychology students self-efficacy.

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## Introduction

There is growing interest in surveying students in Higher Education (HE) to find out how they perceive their experience and to understand the effect it has (Levine 1993; for a broader discussion, see Sander (2004) and Sander & Sanders, (in press)). Surveys can cause generalisation difficulties, unless the aim is to solve local problems and they may not consider theoretical underpinnings. The Academic Behavioural Confidence scale (ABC) was developed for use as a survey instrument to assess the confidence that university students have in their own anticipated study behaviours in relation to their degree programme. It was first published as the Academic Confidence Scale (Sander & Sanders, 2003) but was renamed because it focuses on confidence in actions and plans related to academic study (Sander & Sanders, 2006a). Academic behavioural confidence is conceptualised as being how students differ in the extent to which they have a 'strong belief, firm trust, or sure expectation' (Sander & Sanders, 2004) of how they will respond to the demands of studying at university. As such, ABC is distinct from the academic performance aspirations that students may have, although the two may be related to some extent. This confidence applies to the demands of the course as a whole rather than to individual module specific issues where self-efficacy measures would be more appropriate.

The relationship between academic confidence and self-efficacy is discussed elsewhere (Sander & Sanders 2006), and it has been suggested that it stems from the same four sources proposed for self-efficacy: mastery experience, vicarious experience, verbal persuasion and physiological states (Bandura, 1977, 1986, 1993). It is likely to be subject to change as experience impinges upon expectation (Sander & Sanders, 2006a). The ABC scale was developed within an ethos of using survey techniques to try and understand students within the large student groups that many university lecturers have to teach (Cassidy and Eachus, 2000). The rationale for this approach has been discussed in some detail by Sander (2004) but essentially it is argued that with large classes, there is little or no opportunity for the informal interactional discourse possible within small groups that allows the teacher to understand her or his students or help and guide them by effective teaching. This paper uses the ABC Scale to explore differences in two student groups that might be expected to differ substantially in academic confidence if mastery experience is a significant determinant. An earlier study suggested that these groups might indeed have different levels of confidence.

Sander, Stevenson, King and Coates (2000) showed that medical students were worried that role-plays and presentations were not effective learning methods, whereas the psychology students were worried about their competence to do them (Sander & Stevenson, 2002; Stevenson & Sander, 2002). These contrasting reasons indicate different foci of concern. The lack of confidence in ability that characterised the responses of the psychology students rarely featured in the medical students' comments. In seeking possible explanations for this, the differing entry profiles of the two groups suggested that the considerably higher Advanced Level, or A-level, examinations profiles of the medical students might cause higher academic confidence or self-efficacy in these students than in the psychology students. It would seem reasonable to postulate that there is a connection between past success and confidence, in line with Bandura's theory of Self-efficacy (1977, 1986, 1993). To test this, it was necessary to develop a scale to measure this specific construct of Academic Behavioural Confidence (ABC), drawing on the extensive self-efficacy literature.

Self-efficacy is defined as "people's judgements of their capabilities to organise and execute courses of action required to attain designated types of performance" (Bandura, 1986, page 391) or their confidence in their ability to do the things that they try to do (Pajares, 2000). Indeed, Bandura (2001) uses the terms confidence and self-efficacy fairly interchangeably in his examples of self-efficacy scales. A more detailed discussion of the relationship between self-efficacy and confidence can be found in Sander and Sanders (submitted).

Self-efficacy stems from four sources: past success (or mastery experience), vicarious experience, verbal persuasion and physiological states (Bandura, 1977, 1993). In this instance, past success may be the primary source of the differences in self-efficacy between the two groups of students in the Sander et al. (2000) study. Indeed, this past success is likely to be a predictor of future achievement, in part moderated by self-efficacy.

Empirical evidence shows that self-efficacy affects academic performance (Chemers, Hu & Garcia; 2001; Lane & Lane, 2001; McKenzie & Schweitzer, 2001; Zimmerman, Bandura & Martinez-Pons, 1992). Multon, Brown and Lent (1991) conducted a meta-analysis of 39 different studies, comprising 41 different data sets and found "positive and statistically significant relationships between self-efficacy beliefs and academic performance and persistence outcomes" (p 30). Pajares (2000) summarises by saying that "nearly two

decades of research has revealed that self-efficacy beliefs are strong determinants and predictors of academic accomplishments” (page 2). Self-efficacy also influences academic persistence (Lent, Brown & Larkin, 1984) and is related to self-regulated learning variables (Bandura, 1993).

Self-efficacy and academic confidence as measured with the ABC-scale have much in common. Bandura’s original definition however includes a reference to ‘courses of action required to attain designated types of performance’; whereas ‘behaviour’, rather than action indicates a way of conducting oneself, a continuous process and so this term is used in the ABC tool. Also, Bandura’s definition of self-efficacy emphasises performance, which was inappropriate for the construct being measured here. To refer to a desired outcome loses the distinction between the behaviour and aspirations for academic performance. In this context, there is a popular belief that outcome, academic performance, is largely determined by ability, which obscures the confidence construct.

In order to explore the hypothesised link between academic behavioural confidence and the contrasting responses from the two undergraduate groups, a means of measuring ABC was needed. Given the commonality between self-efficacy and ABC, the guidelines for measuring the former were followed, in specific rather than global measuring (Pajares, 1997, Bandura 2001). Another crucial aspect in the design of these measures is the recognition that self-efficacy is about what people feel they are able to do (Bandura, 2001), so the ABC-scale was designed to measure this rather than intended behaviour. With this scale, the study aimed to explore the Academic Behavioural Confidence of two contrasting groups: medical students in a traditional university and psychology undergraduates in a post ’92 university.

These two groups differ in their educational experience and attainment, or mastery experience which makes them ideal for this preliminary, validity study using the ABC-Scale. If this scale is to be developed further for psychometric screening, it should detect a difference between these two groups. It was hypothesised that the overall response to the scale by the medical students would be higher than that of the psychology students.

## **Method**

### *Participants*

The 284 participants in this study comprised level 1 psychology students, (n=102) at a new university - “Psychologists”, and level 1 medical students (n=182) from a traditional university - “Medics”. The entry requirements for these courses differed in the A level grades required, a psychology course required two Cs and 1 D grade, whereas medicine requires two As and one B. All level 1 students on each course were invited to take part in the study<sup>1</sup>

### *Materials*

This study used the Academic Behavioural Confidence Scale (appendix 1) and a questionnaire to ascertain students’ qualifications on entry to the course.

The ABC-scale was developed by identifying a number of behaviours that may be required during the course of academic study. These were discussed with teaching colleagues who offered some modifications. The resultant list of statements was refined down to 24 and was inspected by members of the academic staff, for face validity. The overall prompt at the top of the Scale read ‘How confident are you that you will be able to’ and the responses for each item were a chosen point on a five point rating scale from 1, ‘Not at all confident’ to 5 ‘Very confident’.

### *Procedure*

During induction week tutorials, participants were invited to complete the ABC- Scale and the questionnaire without conferring, along with other paperwork associated with enrolment. Thus the circumstances in which these were completed facilitated a considered response. Students were told that the researchers were interested in their views of about studying at university, that the data were to be used for research purposes only and that completion of this scale was voluntary, and that if they did not wish to complete it they were free to do , but no student refused.

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<sup>1</sup> A levels are taken in the final year of schooling and pass grades are A to E.

### *Method of Analysis*

The ABC-scale was scored by taking the mean response [to 2 dp] of each person's 24 responses. Thus the possible final academic behavioural confidence score ranged from 1 to 5.

Total points for A-level and General Certificate of Secondary Education examinations were calculated .

Using SPSS for Windows version 11.5, Cronbach's alpha tested internal reliability. Qualification scores were compared using independent t-tests and ABC scores across groups were compared using the more conservative Mann-Whitney test, as there is, as yet, no evidence that ABC scores are normally distributed. Spearman correlations were used to assess the relationship between ABC scores and academic performance.

### **Results**

A-level point scores were available for 231, (68% of Psychologists, 89% of Medics) and GCSE scores for 262 respondents, (96% and 90% respectively), the remainder entered university with different qualifications. The difference in proportion of A-level scores is arguably a measure of the differing routes into the two university courses. A comparison of the two groups shows that the Medics had higher scores in both GCSEs and A-levels (Table 1). Total A level scores are reported here as it is informative that the Medics tended to have taken more exams.

The difference in A-level scores was significant, ( $t=18.26$ ,  $df$  191 (no assumption of equal variance),  $p<.001$ ). These figures are similar to those collected in the study by Sander et al. (2000), confirming that this cohort is comparable to the earlier. Although both the current groups scored slightly higher than their predecessors, the gap between the two means is marginally greater this time. The difference in GCSE scores was also significant ( $t=10.6$ ,  $df$  260,  $p<.001$ ), confirming that the Medics had a much stronger academic history than the Psychologists (Table 1).

**Table 1 Public examination and ABC scores, means (SD)**

	Psychology students		Medical students	
	This study	Sander et al. (2000)	This study	Sander et al. (2000)
<b>A-level points</b>	17.4 (4.6)	15.0	32.3 (7.0)	27.8
<b>GCSE points</b>	53.1 (14.9)		76.1 (18.2)	
<b>ABC-scale</b>	3.78 (.39)		3.87 (.46)	

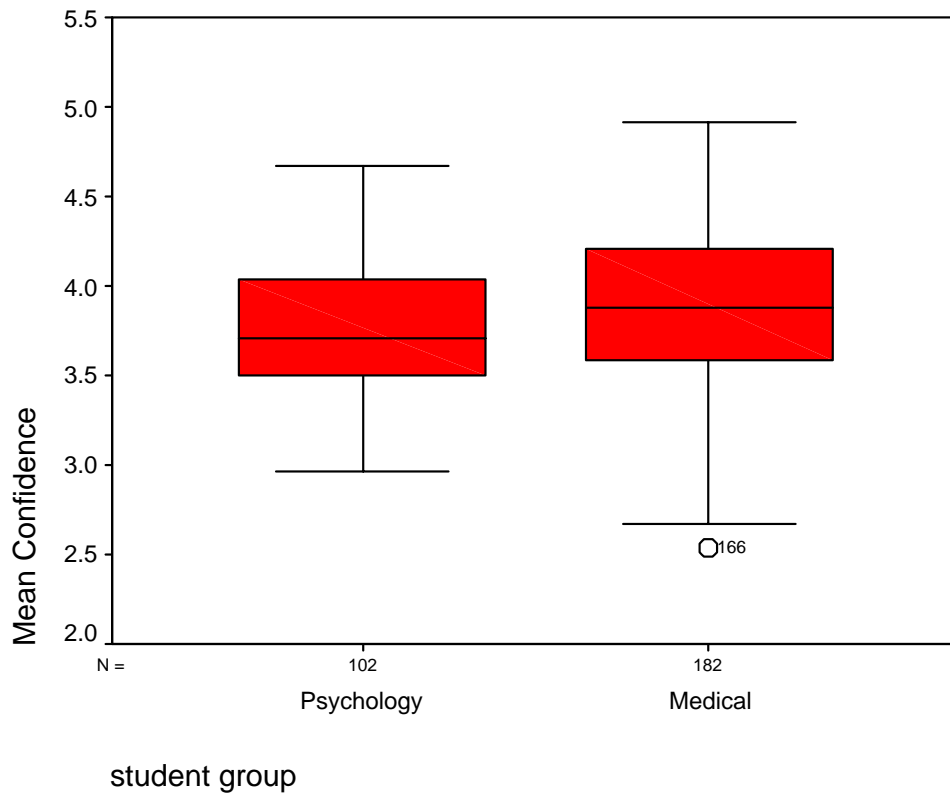
Examination of the ABC-scale showed ,in total only 27 individual items missed, and there was no consistent pattern in the omissions. Given the size of the sample, these omissions are not a problem for interpreting the data and indeed are likely to be a result of error as the 24 statements were printed quite closely to fit on a single page of A4 (appendix 1). Further support for this is that for all the seven statements that were missed, none were at either the top or bottom of the page.

The ABC-scale was tested for internal reliability and produced an alpha of .88, which indicates an acceptable level. The overall mean ABC score for the sample was 3.84 (SD 0.43). There was a difference between the groups showing that the Medics scored significantly higher as predicted given the difference in the earlier study, (Mann Whitney:  $z=2.73$ ,  $p<.05$ , one-tailed). A one-tailed test was appropriate, as it had been hypothesised that the medics would have higher confidence scores than the psychologists. Testing against this prediction with a two-tailed test would undermine the theoretical underpinnings of hypothesis testing. The difference between groups in ABC score is unlikely to be caused by their differential A-level examination success alone as these did not correlate significantly with ABC scores ( $\rho=.087$   $p>.05$ ).

Despite the statistically significant difference of the means for the ABC-scale they are relatively close given the substantial difference in A-level points, suggesting the advisability of post-hoc examination of the ABC data.

As can be seen in the box plot (Figure i), the Psychologists' lower mean score obscures the fact that the distribution of scores for the Medics is greater than that of the Psychologists. The scores ranged from 2.54 to 4.92 for the Medics and from 2.96 to 4.67 for the Psychologists. The variance ratio for the two was significant ( $F=1.37$ ,  $df=101, 181$ ,  $p<.05$ ).





**Figure 1. ABC-scale scores by student group**

To understand further the significant yet relatively small difference in ABC scores between the two student groups, the scores for each individual statement were examined. Table 2 presents these data for each group, and the difference between the means of the two groups, calculated by subtracting the Psychologists' mean from the Medics' mean, and ordered by the magnitude of this difference. The absolute size of the difference varied from 0.02 for Statements 19, (Make the most of the opportunity of studying for a degree at university) and 14, (Read the recommended background material) to 0.66 for Statement 5, (Give a presentation to a small group of fellow students). This last is particularly interesting as it bears directly on the earlier study (Sander et al 2000)..

**Table 2 Individual Statement by student group (Means & SDs)**

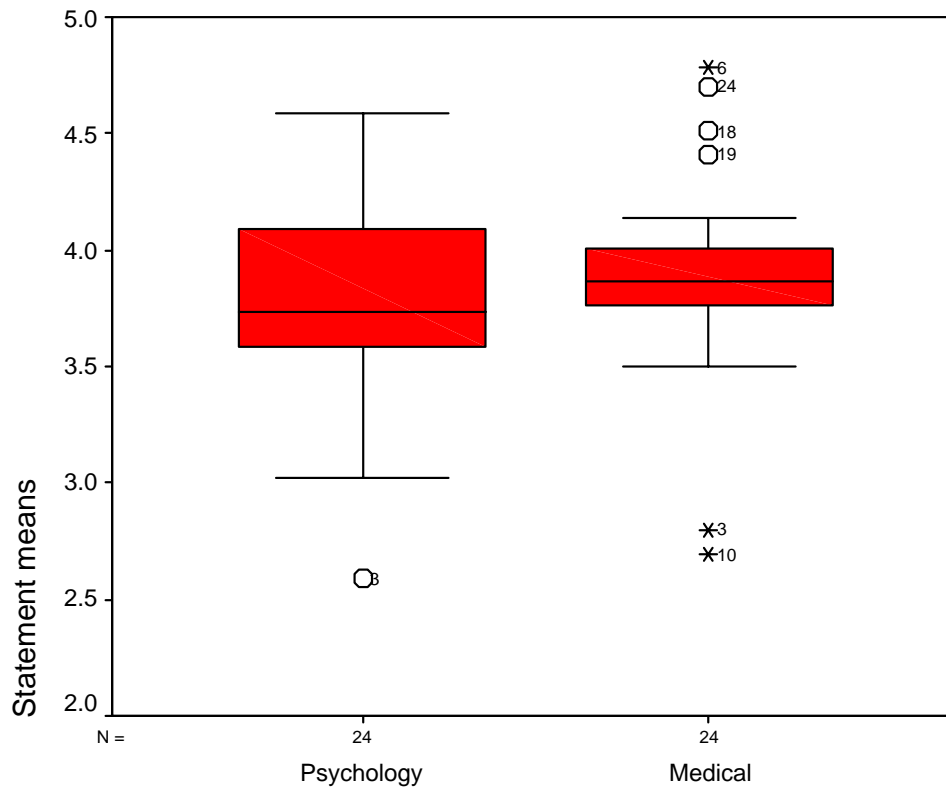
	STATEMENT	Psychology	Medical	Difference	z	p
		(SD)	(SD)	M-P	score	2 tails
		Mean	Mean			
5	Give a presentation to a small group of fellow students	3.29 (1.07)	3.95 (0.89)	0.66	<b>5.32</b>	<b>&lt;0.001</b>
2	Produce your best work under examination conditions	3.02 (1.10)	3.50 (0.92)	0.48	<b>3.53</b>	<b>&lt;0.001</b>
21	Plan appropriate revision schedules	3.37 (1.05)	3.68 (0.95)	0.31	<b>2.50</b>	<b>&lt;0.05</b>
22	Remain adequately motivated throughout	3.68 (0.75)	3.98 (0.10)	0.30	<b>3.60</b>	<b>&lt;0.001</b>
18	Be on time for lectures	4.27 (0.80)	4.51 (0.73)	0.24	<b>2.74</b>	<b>&lt;0.01</b>
6	Attend most taught sessions	4.56 (0.56)	4.78 (0.44)	0.22	<b>3.74</b>	<b>&lt;0.001</b>
3	Respond to questions asked by a lecturer in front of a full lecture theatre	2.59 (1.21)	2.80 (1.14)	0.21	<b>1.59</b>	<b>ns</b>
16	Write in an appropriate academic style	3.59 (0.97)	3.75 (0.89)	0.16		
4	Manage your work load to meet coursework deadlines	3.73 (0.77)	3.87 (0.86)	0.14		
13	Prepare thoroughly for tutorials	3.65 (0.80)	3.77 (0.79)	0.12		
24	Attend tutorials	4.59 (0.55)	4.70 (0.56)	0.11		
1	Study effectively on your own in independent / private study	3.89 (0.76)	3.98 (0.96)	0.09		
20	Pass assessments at the first attempt	3.57 (0.79)	3.65 (0.81)	0.08		
12	Follow the themes and debates in lectures	3.90 (0.61)	3.97 (0.72)	0.07		
8	Engage in profitable academic debate with your peers	3.73 (0.88)	3.79 (0.88)	0.06		
11	Understand the material outlined and discussed with you by lecturers	3.71 (0.73)	3.77 (0.70)	0.06		
7	Attain good grades in your work	3.74 (0.64)	3.77 (0.76)	0.03		
19	Make the most of the opportunity of studying for a degree at university	4.43 (0.64)	4.41 (0.70)	-0.02		
14	Read the recommended background material	3.93 (0.82)	3.91 (0.86)	-0.02		
15	Produce coursework at the required standard	3.86 (0.76)	3.83 (0.82)	-0.03		
23	Produce your best work in coursework assignments	3.93 (0.71)	3.86 (0.83)	-0.07		
9	Ask lecturers questions about the material they are teaching, in a one-to-one setting	4.33 (0.78)	4.14 (0.87)	-0.19	<b>1.77</b>	<b>ns</b>
17	Ask for help if you don't understand	4.26 (0.72)	4.04 (0.84)	-0.22	<b>2.05</b>	<b>&lt;0.05</b>
10	Ask lecturers questions about the material they are teaching, during a lecture	3.12 (1.13)	2.69 (1.05)	-0.43	<b>2.98</b>	<b>&lt;0.01</b>

Table 2 shows that there are seven statements for which the Psychologists scored higher than the Medics (although four of the differences are negligible). Therefore post-hoc tests were two-tailed. Avoidance of unnecessary multiple testing and use of the Bonferonni correction, was addressed strategically by testing first the statement with the greatest difference between the two groups using a Mann Whitney U- Test. Statements with progressively small differences were tested until a difference failed to reach significance, at which point testing ceased. As can be seen from the last two columns in Table 2, for 6 of the 24 statements, the Medics scored significantly higher than the Psychologists.

The six statements showing a difference in the opposite direction were tested in the same manner beginning with the greatest difference. It is noteworthy that the three statements with the largest differences here, (9, 10 and 17) all begin ‘ Ask lecturers...’. For two of these, Psychologists scored significantly higher than the Medics.

As well as the absolute scores given by the two groups for each statement, the rank positions of the statement means were compared across the two groups. Two statements showed markedly different rank positions. Statement 22, (Remain adequately motivated throughout) ranked 8th with the Medics and 16th with the Psychologists. Statement 5, (Give a presentation ...) lay at the extreme in this index, too, as it was in 10th position for the Medics, but 21st with the Psychologists, in line with the trigger for this research. However, for nine of the statements the rank position differences were 5 or less; for thirteen statements it was 1 or less. It is noteworthy that for both groups the same two statements evinced the most positive response, (6: Attend most taught sessions and 24: Attend tutorials). Similarly, the same three statements produced the least positive response in both groups (2: Produce your best work under exam conditions; 10: Ask lecturers questions about the material they are teaching, during a lecture and 3: respond to questions asked by a lecturer in front of a full lecture theatre). This indicates the areas of commonality in the confidence levels of these two groups.

Finally the distribution of the mean scores for each statement was compared across groups. Figure ii shows this distribution for the Psychologists was greater than that for the Medics towards both extremities and in the semi-inter-quartile range, in contrast to Figure i. Whilst the Medics, as individuals, showed greater variability in their ABC scores, the Psychologists, as a group responded with greater variability across the statements.



**Figure 2. Mean statement ratings by student group**

## Discussion

Comparing the ABC-scale scores of two groups of students with differing academic histories showed a small but significant difference in favour of the Medics, supporting the hypothesis that the two groups begin their undergraduate career with differing levels of academic confidence and serving as an explanation for the findings of Sander, et al. (2000). What causes the differences in ABC scores is not certain although the differential academic histories, is a likely cause, in line with mastery experience in self-efficacy theory. It is likely that there will also have been other between group demographic differences such social class, male-female ratio and geographic origin which were not recorded in this study, the potential influence of each on ABC would be worth exploring.

That the groups in this study had both achieved higher grades than their predecessors is in line with national developments at A-level examination. The differential between the

groups, however, was comparable to the earlier study, the Medics' mean points being 1.9 times greater than the Psychologists' in both studies.

The higher mean for the Medics obscures the extent of individual variation in this group with some Medical students demonstrating extreme confidence and others very little. Lacking confidence in a group where many show the opposite may be a very challenging experience for a new undergraduate. The relative uniformity of the Psychologists may provide a more supportive environment. It is possible that those at the lower range of the scale would benefit from academic counselling early in the course, and this may be especially appropriate in the case of medical students, who may feel isolated from their confident peers.

Examining the mean responses to individual statements found a predictable pattern with the low-level tasks (largely involving attending and being on time) having the most confident scores. The other statement at this extreme was 'Making the most of the opportunity...'. It may be that because this statement is fairly general it encourages affirmation without specific commitment. At the other extreme, the two items with the lowest scores both involved speaking aloud during a lecture, which is an awe-inspiring prospect for new undergraduates, whatever the discipline!

A comparison of the means for the two groups showed variability in the size and the direction of the difference between the two groups. One statement with a small difference was 'Read the recommended background material'. There is a potential ambiguity in this statement as being able to read something may be interpreted at a simple level of literacy rather than a commitment to follow up lecture notes by reading and comprehending additional material as intended. The rank positions for this statement were seventh (Psychologists) and eleventh, which could be taken to indicate that it was not subject to the simplistic interpretation.

At the other extreme, the greatest difference occurred in the statement about doing student presentations (statement 5), which accords with the earlier finding. The remaining five items that differed between the groups seem to describe a motivated student, at least as perceived by a teacher, by being on time, attending, planning and producing work under pressure. This may be characteristic of this particular group as there is fierce competition for

places on a traditional medical degree, and possibly only the most organised and motivated will make the grade.

Psychologists seemed the more confident of the two when it came to asking questions. There may be several explanations for this. One may be the perceived nature of medical training, with students expecting to learn a good deal of factual information. In contrast students beginning a psychology course may expect to develop an evaluative approach, particularly as about two thirds come with an A level in Psychology. This may encourage a questioning approach, and may therefore attract students of such a disposition. However, it may be that this difference is part of the confidence difference between the two groups. Maybe medical students do not think they will be able to ask questions because not understanding something is beyond their experience. It may equally be that, for them, the prospect of being seen to need to ask questions is anathema or that they were concerned about the image it would create in their peers.

Conversely, the Psychologists, having less confidence in their academic abilities may believe that they are going to have to ask lots of questions to survive the challenges of the course. This would explain why for the psychology students, although more homogenous in their responses as a group, their confidence across situations showed greater variation.

The ABC-scale has enabled a comparison across two differing groups of students. It is possible that, with refinement, it could be used as a diagnostic tool to pick up either individuals with problems or more general concerns across a cohort. Before this would be possible, however, the scale psychometric properties of the scale need further exploration and dissemination.

The high figure for internal reliability (.88) is interesting in light of the differing responses to the statements. Cronbach's alpha tests internal consistency and a high alpha can indicate either the measurement of a one-dimensional construct or several correlated dimensions. An alpha of 0.88 indicates a high level of internal consistency in the construct under investigation [the dimensionality of the scale is currently under exploration]

Whilst the predictive value of this instrument has yet to be tested, the differences it has identified across these two groups are thought –provoking. With refinement, it could well be

useful in surveys of student populations, especially those focussed on new undergraduates. Indeed, Sander (2004) has argued as class sizes in HE grow to a level where it is impossible to know every student, survey methods could be used to monitor how a cohort is progressing, maybe to identifying problems at an early stage. From the examination of the individual statements it is evident that these two groups show differences in their level of confidence about engaging in individual studying behaviours. It is likely that the explanation for this lies in their different mastery experience as invoked in the self-efficacy literature. Given these differences, it is important that the two student groups are provided with teaching and learning support that enables them to grow in confidence. If medical students find it hard to ask questions when they do not understand the material they are at risk of falling behind through their silence. Conversely if psychology students may be equally disadvantaged by a lack of confidence in their own presentation skills, academic performance, organization skills and motivation. Both these groups need tailored support to overcome these disadvantages. This is an example of how survey methods, and ABC in particular can be used to help tailor support for different groups.

This study required close examination of responses to individual statements. Future use would benefit from using only one decimal place in the mean score thereby providing a range of 41 points to this scale which could be considered manageable.

In conclusion, the data presented here paints a picture of two student groups coming to university very differently prepared for the demands of higher education; the consequences of this are worthy of further investigation.

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## Appendix 1: How confident are you that you will be able to:

1. Study effectively on your own in independent / private study	Very confident	Not at all confident
2. Produce your best work under examination conditions	Very confident	Not at all confident
3. Respond to questions asked by a lecturer in front of a full lecture theatre	Very confident	Not at all confident
4. Manage your work load to meet coursework deadlines	Very confident	Not at all confident
5. Give a presentation to a small group of fellow students	Very confident	Not at all confident
6. Attend most taught sessions	Very confident	Not at all confident
7. Attain good grades in your work	Very confident	Not at all confident
8. Engage in profitable academic debate with your peers	Very confident	Not at all confident
9. Ask lecturers questions about the material they are teaching, in a one-to-one setting	Very confident	Not at all confident
10. Ask lecturers questions about the material they are teaching, during a lecture	Very confident	Not at all confident
11. Understand the material outlined and discussed with you by lecturers.	Very confident	Not at all confident
12. Follow the themes and debates in lectures.	Very confident	Not at all confident
13. Prepare thoroughly for tutorials.	Very confident	Not at all confident
14. Read the recommended background material.	Very confident	Not at all confident
15. Produce coursework at the required standard.	Very confident	Not at all confident
16. Write in an appropriate academic style.	Very confident	Not at all confident
17. Ask for help if you don't understand.	Very confident	Not at all confident
18. Be on time for lectures.	Very confident	Not at all confident
19. Make the most of the opportunity of studying for a degree at university	Very confident	Not at all confident
20. Pass assessments at the first attempt.	Very confident	Not at all confident
21. Plan appropriate revision schedules.	Very confident	Not at all confident
22. Remain adequately motivated throughout.	Very confident	Not at all confident
23. Produce your best work in coursework assignments	Very confident	Not at all confident
24. Attend tutorials	Very confident	Not at all confident