

Current developments in measuring academic behavioural confidence

Paul Sander

Abstract

Using published findings and by further analyses of existing data, the structure, validity and utility of the Academic Behavioural Confidence scale (ABC) is critically considered. Validity is primarily assessed through the scale's relationship with other existing scales as well as by looking for predicted differences. The utility of the ABC scale is demonstrated through its ability to discriminate between undergraduate students on different courses; between dyslexic and non dyslexic undergraduate students; undergraduate students in different countries and undergraduate students of different sex. Changes in ABC over time are considered and linked to an over-confidence bias in students in higher education. Finally, it is suggested that the ABC scale and a related measure, the Performance Expectation Ladder can identify and help teachers in higher education understand students with low academic confidence who need supporting.

IT HAS BEEN ARGUED that understanding students' confidence could be beneficial to helping teachers create more effective learning environments for students (Sander, 2005). Research has shown the Academic Behavioural Confidence scale (ABC; Appendix 1) to be a valid and useful measure of students' confidence. Factor analysis shows the ABC scale as consisting of four sub scales: Grades, Verbalising, Studying and Attendance. Confirmatory factor analysis of the four scale model has shown acceptable fit statistics (Sander & Sanders, 2009; Sander and de la Fuente, under review). Both these studies show that working at the factor level can be useful in that some statistically significant and educationally meaningful results have emerged with important implications for both teachers and students in higher education which suggests that some reanalysis of earlier data may be warranted. In this article the evidence for the validity of the ABC scale will be critically considered and the utility of the ABC scale demonstrated through its ability to discriminate between students on different courses, in different countries and of different sex. Changes in ABC over time will be addressed, as will its link with dyslexia. Finally, the usefulness of the scale in higher education will be developed and discussed as

well as evidence that student ABC scores is indicative of an over confidence bias (Plous, 1993), some the implications of which are addressed.

Sander and Sanders (2003, 2006) introduced and located the Academic Behavioural Confidence scale in the psychological literature of self-efficacy, self-concept and self-esteem. The validity of the ABC scale was originally assessed by comparing undergraduate students' scores from the ABC scale with their estimation of their degree grade performance on the Performance Expectation Ladder (PEL, see Appendix 2, formally called The Ladder of Aspiration). Reanalysis of the data from Sander and Sanders (2003) at subscale level shows that this association is attributable to Grade confidence. This suggests a rather less than convincing validity measure for the ABC scale, but further research presented below is illustrative of the validity of the scale, but first, a brief consideration of the relationship between ABC measures and performance is offered. If the Grades subscale of the ABC scale alone correlates with anticipated performance, how does Grades relate to actual performance?

ABC scores do not correlate with A levels grades (Sander & Sanders, 2003; Sanders & Sander, 2007) even when the data is

reanalysed at subscale level. When level 1 summative assessment scores are correlated with ABC subscales using the Sanders, Sander and Mercer (2009) data, Studying confidence correlates with overall level 1 performance. Attendance correlated with coursework grades.

These predictive validity outcomes of the ABC scale may say something about student assessment but they are also very much in line with general efficacy or confidence measures (Torrano & González-Torres, 2004) which, in contrast to self-efficacy measures which are the single best predictor of outcome (Klassen, 2004), have 'limited utility in predicting task-specific performance' (Bong & Clark, 1999, p151). Leaving the theorists to debate the relationship between efficacy and confidence measures (Bong and Clark, 1999; Bong and Skaalvik, 2003; Pajares and Shunck, 2001), there is still a usefulness in working at person level rather than at task level as specified in self-efficacy measures. This is illustrated in the relationships between ABC measures and approaches to learning, dyslexia and self-regulation in learning, all of which are evidence for the validity of the ABC scale.

Validity of the ABC scale

A deep approach to learning is related to high academic self-efficacy (Ferla, Valcke & Schuyten, 2008). Does the ABC scale relate to a deep approach as a measure of criterion validity? Berbén (2008), Sander and de la Fuente (under review) and Sanders, Sander and Mercer (2009) have found that the subscales, Grades, Studying and Verbalising show significant, positive correlations with a Deep approach to learning measured using the R-SPQ-2F (Biggs, Kember & Leung, 2001). As illustrated in figure 1, students' academic confidence is conceived as a determinant of student outcome, as is students' approach to learning with these two variables being inter-related so the significant associations found between ABC measures and approach to learning are consistent with this model.

Another measure that has been used to validate the ABC scale is Vinegrad's (1994) dyslexia scale. Results show that the ABC scale's total score negatively correlates with Vinegrad's dyslexia measure (unpublished data from the study reported by Sanders, Sander & Mercer, 2009). Similarly, Barrett (2005) found that dyslexic students have lower total ABC scores than non dyslexic students with dyslexia being determined by the Vinegrad scale guideline. Asquith (2008) took these findings further in a robust study which compared three groups of undergraduate students: those without dyslexia; those who had been identified with dyslexia through screening by an educational psychologist and thus were receiving support from the university for their dyslexia and finally, those who were possibly dyslexic from using the Vinegrad scale as a screening tool. The students in this third group were not receiving any formal support from the university. Between the three groups, there was no significant difference in Attendance confidence but there were differences between the groups for the other three subscales. The dyslexic students receiving support had lower Grades confidence than non dyslexic students. For both Verbalizing confidence and Studying confidence, the non dyslexic students were more confident than both of the two dyslexic groups.

These low confidence findings for dyslexic students are in accord with other research. For example, Alexander-Passe (2006) using, amongst other measures, Battle's culture free self-esteem inventory (1992) in a London sixth form college found lower self-esteem in dyslexic students. Specifically, female dyslexic students had lower self-esteem than male dyslexic students. Also using Battle's culture free self-esteem inventory, Riddick, Sterling, Farmer and Morgan (1999) found that dyslexic university students had lower self-esteem than non-dyslexic university students as well as showing less confidence in their written work and academic achievements at university. It would be interesting to explore gen-

der differences in dyslexia in university students using the ABC scale especially as data from Sanders, Sander and Mercer (2009) shows that ABC does not correlate with self-esteem, at least as measured by the Rosenberg (1965) self-esteem inventory which in itself is not surprising as the scales are measuring different aspects of the self.

Further support for the validity and utility of the ABC scale in higher education comes from the significant PhD thesis of Ana Berbén at the University of Granada in Spain (Berbén, 2008). As part of a far reaching programme of research on the process of teaching and learning in higher education (de la Fuente & Justicia, 2007; de la Fuente, Carmen, Justicia & Berbén, 2008), Berbén found that the ABC correlated more with aspects of student learning like approach to learning and self-regulation than it did with students' perceptions of teaching as would be expected given that the ABC scale measures students' confidence, not student's perceptions of their teacher. Specifically, Berbén found that all four ABC subscales correlated significantly and positively with personal self-regulation (adjusting to goals and control of impulse) using the short self-regulated questionnaire (Carey, Neal & Collins, 2004, cited in Berbén, 2008), indicating that students with better self-control have greater academic confidence. Berbén also found statistically significant correlations between ABC measures and satisfaction with teaching and with final results, not withstanding the earlier discussion on the predictive power of more global confidence measures.

The ABC scale's power to discriminate

The ABC scale's utility is manifest in its ability to meaningfully discriminate between different student groups by level of confidence. It has already been noted that dyslexic students have lower ABC confidence measures than non-dyslexic students. Against a plethora of research that shows that the sex differences manifest in compulsory education continue through into higher education

(see Sander & Sanders, 2007; Sanders, Sander & Mercer, 2009), the Academic Behavioural Confidence of male and female undergraduate students was compared. Sander and Sanders (2009) found that male students had higher confidence than female students for each of; Grades, Verbalising and Studying. Likewise, higher Grades and Verbalising confidence was also found in male students by Sander and de la Fuente (under review), along with the contradictory finding that female students were significantly more confident for Studying and Attendance.

Reanalysing Sander and Sanders' (2003) data which was collected in Induction Week from new to university, level 1 students shows female students having significantly higher Studying confidence at the start of the first year of undergraduate study. Also, Sanders, Sander and Mercer (2009) collected data in induction week from new students and found no sex differences in the ABC subscale scores.

The possibility that male undergraduate psychology students have greater Grades confidence and Verbalising confidence and female students have a higher Studying confidence is in accord with other findings as discussed by Sander and de la Fuente (under review). Whilst the ABC findings are ambivalent in the direction of a sex differences for Studying confidence, sex differences in undergraduate academic confidence are worth exploring further (Sanders, Sander & Mercer, 2009).

The data does suggest the possibility that sex differences in ABC are less apparent in Induction Week before the students' undergraduate course starts, than later in their first year of study when the Sander and Sanders (2009) and Sander and de la Fuente (under review) data was collected. Whether this is a real effect requires further empirical data.

There is evidence that students on different degree courses have different Academic Behavioural Confidence levels. Indeed, this was part of the initial validation of the ABC scale as, following Sander et al. (2000), it had

been predicted that undergraduate students on a medical course at an East Midlands university would have greater academic confidence than psychology undergraduates at a new university in the south of Wales (Sander & Sanders, 2003); a prediction that was upheld with the medical students showing significantly higher composite ABC scores than psychology students (Sander & Sanders, 2003; Sanders & Sander, 2007).

However, as Sander and Sanders (2009) note, the small magnitude of the ABC difference between the medical and psychology student groups, groups with markedly different A level grades, is surprising and contributed to the exploration of the factor structure for the ABC scale. When Sander and Sanders' (2009) data is considered for just the psychology and medical students, the medical students show significantly more academic confidence than the psychology students for the ABC subscales Verbalising, Studying and Attendance. The non significant Grades confidence could explain the small effect in the previous studies.

The lack of a difference in Grades confidence between these two student groups is worth considering further. It could be that despite considerable differences in absolute performance at A level, both groups of students believed that they were working hard and met their university course offers which is, in itself a measure of success, giving them confidence in their ability to achieve required grades. The mastery experience, a key source of self-efficacy, of the two groups was the same but the students were working against different frames of reference. There is extensive research showing the importance of frames of reference in the establishment of the academic self-concept (Skaalvik & Rankin, 1995; Skaalvik & Skaalvik, 2002).

Course differences in academic confidence were found for medical students who had higher Attendance confidence and Grades confidence than health care students. Within the health care group, housing students had had lower Grades confidence than both nutrition and speech and lan-

guage therapy students. These confidence differences are in line with the average course A level grades which could negate the frames of reference argument just advanced although in terms of age, aspiration and route of entry, the health care students are quite different which could be affecting the ABC measure (Sander & Sanders, 2009). As discussed later, the confidence of groups atypical in entry profile needs to be explored further and compared to groups more typical by age and A level points.

Psychology students may have had lower Attendance confidence than the medical students, but a comparable group of psychology students had significantly higher Attendance confidence than Spanish psychology, educational psychology and teacher training students from the universities of Almería and Granada (Sander & de la Fuente, under review), although care must be exercised in interpreting this as a culture effect as course confounds with country. Berbén's (2008) analysis of students' expectations of teaching and learning using the USET scale (Sander et al., 2000), suggests that differences that are seemingly between universities in Spain on the one hand and Wales on the other can be attributed to differences in sample composition. What is clear is that the ABC scale can discriminate between student groups for Attendance confidence but the meaning of those differences has still to be established. Medical students having the greatest attendance confidence though, seems to accord with stereotypes of university medical training as does a low Attendance confidence accord with stereotypes about Spanish students.

Academic behavioural confidence and the overconfidence bias

Attention has been drawn to the existence of an over-confidence bias which is detectable in students' Academic Behavioural Confidence ratings. An overconfidence bias can be looked for in absolute confidence ratings from the ABC scale and less directly by looking for a drop in academic confidence during a course because, if there is an

over-confidence bias, then, in line with regression towards the mean and with reality impinging on expectations, ABC scores could be expected to fall over time. The reduction in academic confidence over time will be addressed first and then the evidence for an absolute over-confidence bias will be considered.

Zusho, Pintrich and Coppola (2003) found that American chemistry students' judgments of their confidence to do well in class decreased over time. Similarly, Sander and Sanders (2003) found, using a longitudinal design, that composite ABC scores dropped during the first year at university. Reconsideration of those data shows that there is a reduction in all of the ABC subscales over the first year of academic study. With a between subjects design, Sander and de la Fuente (under review) found lower levels of Verbalising confidence and Attendance confidence in final year students than in first year students.

What causes high confidence in the first place and what causes it to fall? Is it just a regression towards the mean or is the teaching and learning experience of the students causing a decline in academic confidence? Are our students too confident? Results from the ABC scale point to generally high levels of perceived confidence. Specifically, there are three lines of evidence for this. Firstly, the ABC sub-scale means have been found to be statistically significantly greater than the scale midpoints (Sander & de la Fuente, under review), confirmed through the reanalysis of the data from Sander and Sanders (2003 and 2009). However a significantly higher measure from the scale midpoint could be for reasons other than over-confidence and linked to people's use of Likert scales.

Secondly, the confidence levels for Attendance in relation to the other subscales have been higher. For example from the data in Sander and Sanders (2009), overall confidence means (SD in brackets) were: Attendance, 4.4(.5); Verbalising, 3.2(.8); Studying, 3.8(.6); and Grades, 3.7(.6) revealing an

Attendance confidence of at least half an interval higher on the 5 point Likert scale used.

Finally, Attendance measures have a marked negative skew. The skew values and with skew converted to a z score in brackets for the ABC subscales produced from the data from the Sander and Sanders (2009) study are: Attendance -1.4 (16.7); Verbalising -.3 (3.2); Studying -.3 (3.6); and Grades -.5 (6.2). Due to the large sample size (n=862), large z values would be expected and thus significance testing is precluded (Field, 2005) but the magnitude of the z value for skewness of Attendance against the other three measures can be noted with the Attendance skew around three times the size of the skew for the other subscales.

Another anomaly with Attendance confidence is that, whilst the UK university sector seems to be experiencing a problem of low student attendance (Cleary-Holdforth, 2007), very high Attendance confidence is found, although being confident that you could attend is not the same as actually attending. This is something that warrants further investigation.

In contrast to Attendance confidence, Verbalising has the lowest confidence score, although its average rating is still significantly above the scale midpoint. As has already been noted, male students show higher Verbalising confidence than female students; a finding in line with the literature (Sander & Sanders, 2007; Sanders, Sander & Mercer, 2009). The poorer Verbalising confidence of female students is something that could be addressed within universities, perhaps through tutorials and student presentations, although both are hard to offer to students in times of poor staff-student ratios.

Despite data showing that academic confidence statistically declines over the course of undergraduate study, there is still evidence that ABC measures correlate over time. Reanalysis of the data from Sander and Sanders (2003) shows that ABC at the beginning and end of students' first year of undergraduate study and at a third point at the

start of their second year, all four ABC subscales significantly correlate over time with the highest correlations for Verbalising and the lowest for Attendance. That there are significant correlations is interesting as it could be argued that there might not be a good correlation between ABC scores over time for two reasons. Firstly, at least in students' first year of study it might be expected that the confidence of the low-confidence students might increase due to the support of their teachers and the over-confidence that the majority of students have might be depressed by experience. Secondly, Zusho, Pintrich and Coppola (2003) found that the confidence of those students achieving less well dropped more markedly. Further research is required to explore changes in students' confidence. Students could be followed longitudinally through their course(s), with their confidence measured at critical times, along with their grade performance and other critical measures such as dyslexic status as discussed above, age and socio-economic class, both of which are known to be risk factors in student retention (Browitt & Walker, 2007) and thus likely to impinge on student performance and confidence. Another potentially fruitful research avenue would be to contrast students on courses selected for the very different entry requirements. Some university courses take students, often mature students, from unconventional backgrounds like the health care students mentioned earlier. What happens to confidence during a course when the student academic confidence norm at the start of the course is low?

The evidence for an over-confidence bias in ABC measures from university undergraduates raises a number of interesting issues. Klassen (2004) draws attention to the fact that there is considerable evidence of over-confidence, at least in 'Western' settings, to complete academic tasks. Bandura (1995) presents the argument that optimistic efficacy beliefs, if not over-confidence are necessary for effective behaviour in contrast to realistic efficacy beliefs which hinder signifi-

cant accomplishments. Bandura (1995, p. 13) notes that

One rarely finds realists in the ranks of innovators and great achievers ... The successful, the venturesome, the sociable ... and the innovators take an optimistic view of their personal capabilities to exercise influence over events that affect their lives ... such (optimistic) personal beliefs foster positive well-being and human accomplishments.

This is not a view that goes unchallenged though. Beyer (1999) argues that self-perceptions that are out of touch with reality not only reveal a lack of self-knowledge, but may also impede effective self-regulation and goal setting in academic, professional, and interpersonal situations. Beyer's data shows that American students overestimated their grades at all points in the semester. However, and in accord with the male student ABC Grade overconfidence already outlined, Beyer's female students in Introductory Psychology overestimated their grades less than male students did.

Students with low academic confidence

Two studies have identified a small number of students with academic confidence that is low in comparison to the sample majority. Sander and Sanders (2003) described and discussed a group of students who had predicted that they would score lower than the putative national average in their final degree result on the Performance Expectation Ladder. These students, in addition to raising a number of concerns at their exam board, had a significantly lower composite ABC score. Also, unpublished data from the Sanders, Sander and Mercer, (2009) study found twenty four students who had marked themselves at or below the national average on the PEL for both the first and final year of their course. There was no evidence that this group differed from the rest of the sample by age, learning style, dyslexia, or performance expectations for the year group measured by the PEL, but they did score significantly lower on Self esteem ($z=3.273$, $p<.005$) and composite ABC ($z=3.089$, $p<.005$). It would

seem therefore that these students represent a group notably lacking confidence in their own ability. There were significantly more females than males in this group (22 compared to 2, $\chi^2=3.191$ df, 1, $p<.05$). Worryingly this group was also more likely to have a poor outcome at the end of level 1, measured by being withdrawn or with incomplete assessments, or multiple fails, despite the fact that their average marks for completed work was statistically no lower than those for the rest of the sample. This suggests that these students' lack of confidence was unwarranted or that their mastery experience was not building their confidence.

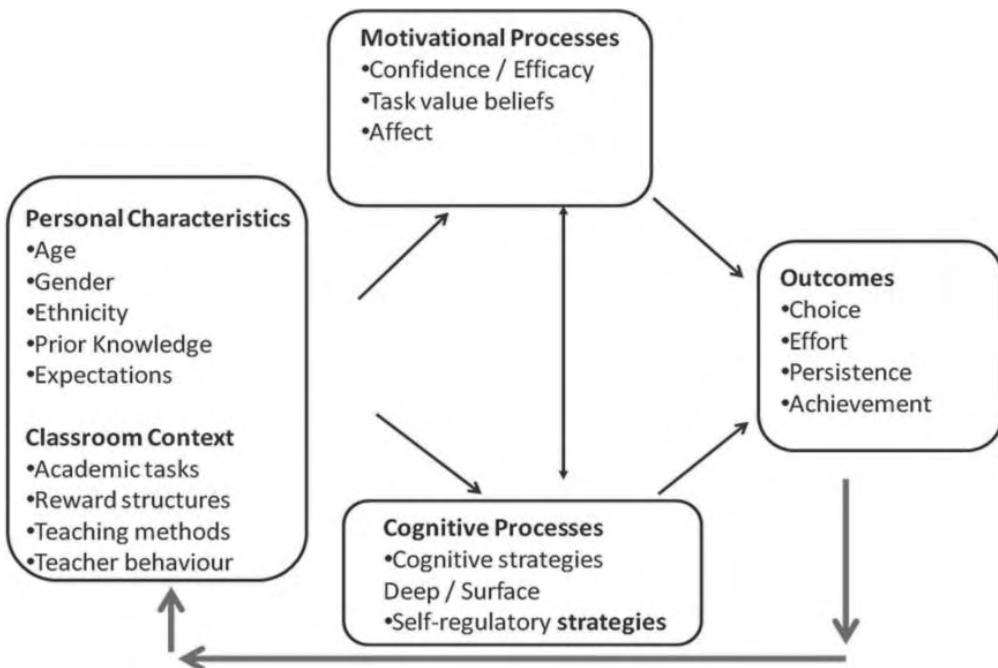
ABC and students' expectations of teaching and learning

The development of the Academic Behavioural Confidence scale was triggered by discovering the appreciably different expectations of teaching, learning and assessment held by medical students as

opposed to psychology students (Sander et al., 2000). Subsequently, Berbén (2008) and de la Fuente and Justicia, (2007) returned to exploring the relationship between academic confidence and student's expectations of teaching, learning and assessment as students' expectations are very much a part of the student characteristic in the Presage part of the 3P model of teaching and learning (Biggs, 1999). Figure 1, adapted from Zusho, Pintrich and Coppola (2003) suggests the relationship between student attributes and studying outcome.

In support of the predicted relationship between students' expectations of teaching, learning and assessment as measured by the USET scale (Sander et al., 2000), Berbén (2008) found interesting and educationally meaningful correlations between ABC scale scores and students' expectations of teaching measured by the USET scale. For instance, students with low academic confidence preferred formal lectures and did not

Figure 1: The teaching and learning dynamic, adapted from Zusho, Pintrich and Coppola (2003)



want student presentations. On the other hand, students with higher confidence preferred student presentations. However, the correlation coefficients were quite small and the sample size was large ($n=2429$); nor was there control for type 1 errors in the large number of statistical tests done. The connection between ABC and students' expectations of teaching, learning and assessment needs to be explored further to enhance our understanding of our students as learners not least because it is consonant with current theoretical perspectives of the university student in a learning environment.

Discussion and Conclusions

The research considered here suggests that measuring students' Academic Behavioural Confidence can be a useful thing to do. Notwithstanding the importance of efficacy scales and their predictive value to performance, understanding and exploring academic confidence at a more global level can be instructive (Sander & Sanders, 2007), helping teachers to understand their students to enhance the teaching process, even if just through a psychometric profile (Sander, 2005). For instance, lecturers may be unaware of the large range of confidence levels in a typical class and awareness of that may alter the way teachers approach their teaching. Further, knowing about the strong tendency to over-confidence in student groups could help teachers and personal tutors soften the blow of academic confidence reducing during the course. Indeed, induction processes could even attempt to realign expectations to develop more realistic confidence levels, unless of course Bandura (1995), rather than Beyer (1999) is correct in saying that overconfidence is necessary for effective behaviour.

Whilst the data shows that the majority of students are over-confident, two studies have identified small groups of students with very low confidence levels who are statistically more likely to have poor learning outcomes, not necessarily in terms of absolute marks but in completion of work and progression

to the next level of study. Although there is no evidence that the ABC scale can be used diagnostically, it can be used pragmatically alongside the PEL to help identify and monitor changes in students. With this in mind, the ABC scale, combined with the PEL has been used in students' Personal Development Plan programme. Students can complete scales such as these and share their ratings with their personal tutor. Tutors can then become aware of the areas in which students perceive themselves as having low (or high) academic confidence. With such insights, tutors are much better placed to help their students. Tutors may also like to discuss with students seemingly high levels of confidence, maybe in relation to Attendance.

The level of confidence that students have and the role that teachers and tutors can have in building confidence in those that lack it is important. As Bong and Clark (1999) say

Individuals with positive views of themselves strive to succeed and overcome even the greatest obstacles of life. Those people with weak or negative self-conceptions seem ... to fail to reach their fullest potential and fall short of their expected performance in the light of their objective capacity.' p. 139

The poor outcomes of the under-confident students discussed provide graphic evidence for this point of view. In failing to support such students, teachers are contributing to the students' poor outcomes.

The construction and validation of the ABC was a product of research into students' expectations of teaching, learning and assessment (Sander et al., 2000). Berbén's research (2008) took this further, looking at additional factors in the teaching and learning process. With a deeper understanding of the links between academic confidence and other facets of the student's approach to learning, models of the student, the teacher and the dialectic teaching and learning process can be further tested and refined (Berbén, 2008; de la Fuente & Justicia, 2007; de la Fuente, Carmen, Justicia & Berbén, 2008). From the

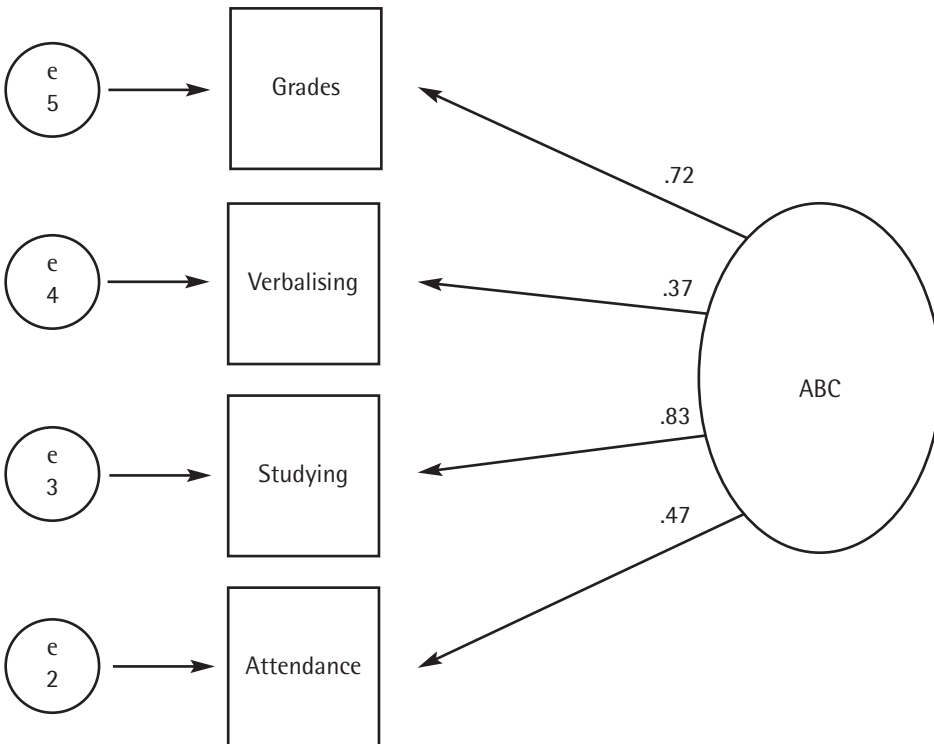
modelling to date, both students' expectations and their Academic Behavioural Confidence would seem to play a significant part along with self-regulation of learning and whether or not they adopt a deep or a surface approach to learning.

Away from the applications of the ABC scale, there are a few significant and more theoretical points that need to be made. Research has suggested that the four subscales of the ABC scale may belong to one of two broader categories (Sander and Sanders, 2009; Sander and de la Fuente, under review). The Studying and Attendance scales focus on aspects of academic confidence that are substantially under the control of the student, whereas Grades and Verbalising are more firmly a part of the teacher-student dyad. If these two models, the original model that conceives ABC as consisting of 4 factors and a second which introduces Student Con-

trol and Student Teacher Dyad, are compared using AMOS, the latter provides only a negligibly better fit to the data. The greatest contribution to ABC comes from the Grades and Studying factors as figure 1 shows. (The four factors shown in figure 1, of course are not directly observed variables but the aggregates of observed variables for greater legibility.) The fact that the four factor model provides a better statistical fit to the data than a uni-dimensional model means that the four subscale scores rather than an overall composite scale scores should despite the good internal reliability of the complete scale. One implication of this is that some caution should be exercised with the results summarised here that have used aggregate ABC scores.

For any one considering using the ABC scale, it should be realised that it was developed not as a general tool for use any higher

Figure 2: Path diagram for the four factor model
Quantities near paths are standardised loadings or correlations



educational setting but specifically for use with the type of teaching and learning experiences that UK psychology students encounter. As such, the scale may not be so readily useable in other countries, on other courses or with other teaching and learning modes. For example, students on art courses or science courses with studio work, lab work or field work encounter learning situations that the scale does not address. Also, students on distance learning programmes, such as those offered by the Open University, also learn in ways that the scale does not address and the scale addresses things that the distance learner is less likely to encounter. There is nothing absolute about the scale which could be adapted to meet specific needs although at the cost of having to

understand any new scale psychometrically.

Finally, if teachers need to know about specific confidences, for instance towards statistics in psychology (c.f. Ruggeri, Dempster & Hanna, 2009; Ruggeri, Díaz, Kelley, Papousek & Hanna, 2009), efficacy type scales are the way forward (Pajares, 1996). Those efficacy scales may measure Grades, Verbalising, Studying and Attendance, in specific contexts or they may be even more focused on particular aspect of the study process.

Correspondence

Paul Sander, Psychology, University of Wales Institute, Cardiff, Llandaff Campus, Western Avenue, Cardiff CF5 2YB.
E-mail: psander@uwic.ac.uk

References

- Alexander-Passe, N. (2006). How dyslexic teenagers cope: An investigation of self-esteem, coping and depression. *Dyslexia*, 12, 256–275.
- Asquith, C. (2008). *Dyslexia: Academic confidence, self-esteem and support in higher education*. Dissertation submitted for University of Wales Bachelor of Science degree.
- Bandura, A. (1995). *Self-efficacy in changing societies*. New York: Cambridge University Press.
- Barrett, A. (2005). *Dyslexia and confidence in university undergraduates*. Dissertation submitted for University of Wales Bachelor of Science degree.
- Battle, J. (1992). *Culture-free self-esteem inventories*. Austin, Texas: Pro-Ed.
- Berbén, A. (2008). *Proceso de enseñanza y aprendizaje en educación superior*. Tesis Doctoral, La Universidad de Granada, España.
- Beyer, S. (1998/1999). Gender differences in causal attributions by college students of performance on course examinations. *Current Psychology*, 17, 346–358.
- Biggs, J.B. (1999) *Teaching for quality learning in university*. Buckingham: Society for Research in Higher Education and Open University Press.
- Biggs, J., Kember, D. & Leung, D. (2001). The revised two-factor Study Process Questionnaire: R-SPQ-2F-2F. *British Journal of Educational Psychology*, 71, 133–149.
- Bong, M. & Clark, R.E. (1999). Comparison between self-concept and self-efficacy in academic motivation research. *Educational Psychologist*, 34(3), 139–153.
- Bong, M. & Skaalvik, E.M. (2003). Academic self-concept and self-efficacy: How different are they really? *Educational Psychology Review*, 15, 1–40.
- Browitt, A. & Walker, L. (2007). Retention and widening participation in the faculties of sciences and engineering, University of Glasgow. Sutton Trust Research and Publications. Retrieved 24 March 2009 from <http://www.suttontrust.com/annual-reports.asp>
- Clearly-Holdforth, J. (2007). Student non-attendance in higher education. A phenomenon of student apathy or poor pedagogy? *Level-3*, No 5. Retrieved, 29 January 2009 from http://level3.dit.ie/html/issue5_list.html
- De la Fuente Arias, J.; Carmen Pichardo, M., Justicia Justicia, F. & Berben, A. (2008). Enfoques de aprendizaje, autorregulación y rendimiento en tres universidades europeas. *Psicothema*, 20(4), 705–711. Retrieved 29 January 2009 from <http://www.psycothema.com/psycothema.asp?id=3544>
- De la Fuente Arias, J.; Justicia Justicia, F. (2007). El Modelo DIDEPRO® de Regulación de la Enseñanza y del Aprendizaje: Avances recientes. *Electronic Journal of Research in Educational Psychology and Psychopedagogy*, 13(3), 535–564. Retrieved 22 January 2009 from http://www.investigacion-psicopedagogica.org/revista/articulos/13/espagnol/Art_13_209.pdf
- Ferla, J., Valcke, M. & Schuyten, G. (2008). Relationships between student cognitions and their effects on study strategies. *Learning and Individual Differences*, 18, 271–278.
- Field, A. (2005). *Discovering statistics using SPSS*. London: Sage

- Klassen, R.M. (2004). A cross-cultural investigation of the efficacy beliefs of South Asian immigrant and Anglo non-immigrant early adolescents. *Journal of Educational Psychology*, 96, 731–742.
- Pajares, F. (1996). Self-efficacy beliefs in academic settings. *Review of Educational Research*, 66, 543–578.
- Pajares, F. & Schunk, D.H. (2001). Self-beliefs and school success: Self-efficacy, self-concept and school achievement. In R. Riding & S. Rayner (Eds.), *Perception* (pp. 239–266). London: Ablex Publishing.
- Plous, S. (1993). *The psychology of judgement and decision making*. New York, McGraw Hill.
- Riddick, B., Sterling, S., Farmer, M. & Morgan, S. (1999). Self-esteem and anxiety in the educational histories of adult dyslexic students. *Dyslexia*, 5, 227–248.
- Rosenberg, M. (1965). *Society and the adolescent self-image*. Princeton, N.J.: Princeton University Press.
- Ruggeri, K., Dempster, M., Hanna, D. & Cleary, C. (2009). Experiences and expectations: The real reason nobody likes stats. *Psychology Teaching Review*, 14(2), 75–83.
- Ruggeri, K., Díaz, C., Kelley, K., Papousek, L., Dempster, M. & Hanna, D. (2009). International issues in education. *Psychology Teaching Review* 14(2), 65–74.
- Sander, P. (2005). Researching our students for more effective university teaching. *Electronic Journal of Research in Educational Psychology and Psychopedagogy*, 3(1). Retrieved 21 January 2009, from http://www.investigacion-psicopedagogica.org/revista/articulos/5/english/Art_5_36.pdf
- Sander, P. & de la Fuente Arias, J. (under review). Walking tall, talking big: Measuring differences in UK and Spanish university students' academic behavioural confidence. *Psychology Learning and Teaching*.
- Sander P. & Sanders, L. (2003). Measuring confidence in academic study: A summary report. *Electronic Journal of Research in Educational Psychology and Psychopedagogy*, 1(1). Retrieved 21 January 2009 from http://www.investigacion-psicopedagogica.org/revista/articulos/1/english/Art_1_1.pdf
- Sander, P. & Sanders, L. (2006). Understanding academic confidence. *Psychology Teaching Review*, 12(1), 29–39. Retrieved 21 January 21 2009 from <http://www3.bps.org.uk/dtrp/membership-publication.cfm>
- Sander, P. & Sanders, L. (2007). Gender, psychology students and higher education. *Psychology Learning and Teaching*, 6(1), 33–36.
- Sander, P. & Sanders, L. (2009). Measuring academic behavioural confidence: The ABC Scale revisited. *Studies in Higher Education*, 34(1), 19–35.
- Sander, P., Stevenson, K., King, M. & Coates, D. (2000). University students' expectations of teaching. *Studies in Higher Education*, 25(3), pp. 309–323.
- Sanders, L. & Sander, P. (2007). Academic behavioural confidence: A comparison of medical and psychology students. *Electronic Journal of research in Educational Psychology and Psychopedagogy*, 5(3), 633–650. Retrieved 21 January 2009 from http://www.investigacion-psicopedagogica.org/revista/articulos/13/english/Art_13_150.pdf
- Sanders, L., Sander, P. & Mercer, J. (2009). Rogue males. Perceptions and performance of male psychology students. *Psychology Teaching Review* 15(1).
- Skaalvik, E.M. & Rankin, R.J. (1995). A test of the internal/external frame of reference model at different levels of math and verbal self-perception. *American Educational Research Journal*, 32, 161–184.
- Skaalvik, E.M. & Skaalvik, S. (2002). Internal and external frames of reference for academic self concept. *Educational Psychologist*, 37, 233–244.
- Torrano, F. & González-Torres, M. (2004). El aprendizaje autorregulado: presente y futuro de la investigación. *Electronic Journal of research in Educational Psychology and Psychopedagogy*, 2(1), 1–34. Retrieved 21 January 2009 from http://www.investigacion-psicopedagogica.org/revista/articulos/3/espannol/Art_3_27.pdf
- Vinegrad, M. (1994). A revised dyslexia checklist. *Educare*, 48(3), 21–23.
- Zusho, A., Pintrich, P.R. & Coppola, B. (2003). Skill and will: The role of motivation and cognition in the learning of college chemistry. *International Journal of Science Education*, 25(9), 1081–1094.

Appendix 1: Academic Behavioural Confidence scale

How confident are you that you will be able to:

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

Appendix 2: Performance Expectation Ladder

We are asking you to look ahead to think about what will be likely outcomes for you and your group for the next three years of the course. That is, at the end of level 1 this summer, at the end of level 2 in 2005, and at the point of graduation in 2006. To help you make this decision we have highlighted an average mark for psychology across all UK Universities.

So using the table below, for each year please indicate:

1. What you think will be the average mark for your year group by writing 'YG'
2. What you think will be your own average mark by writing 'ME'

Grade	Mark [%]	End of Level 1	End of Level 2	Graduation
A+	95-100			
	90-94			
A	85-89			
	80-84			
A-	75-79			
	70-75			
B+	69			
	68			
	67			
B	66			
	65			
	64			
B-	63			
	62			
	61			
	60			
	59			
C+	58			
	57			
	56			
C	55			
	54			
	53			
C-	52			
	51			
	50			
D+	49			
	48			
	47			
D	46			
	45			
	44			
D-	43			
	42			
	41			
	40			
F ₆	39			
	38			
	37			
F ₅	36			
	35			
	34			
F ₄	33			
	32			
	31			
	30			
F ₃	25-29			
	20-24			
F ₂	16-20			
	11-15			
F ₁	5-10			
	0-4			

Mean for psychology