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Predictive personality and ability indicators of academic performance at degree level (0166)

Apart from cognitive ability, it has been demonstrated that other (particularly psychological and behavioral) factors can affect academic performance. For example, an investigation reported by Chamorro-Premuzic & Furnam (2008) involved university students in the completion the NEO-PI-R (a personality scale that measures the 'Big Five'); the Study Process Questionnaire (a scale by Biggs et al, 2001), measuring students' approaches to learning; an IQ-type test and a reasoning test (designed to measure 'general intelligence', 'g'). These researchers found that participants' academic performance (unsurprisingly) correlated with the ability measures but also correlated with the tendency to have a 'deep' approach to learning (i.e. the tendency to seek connections between facts; to be unsatisfied with a superficial understanding of topics; etc.). Performance also correlated significantly with the personality factors 'Openness' (to new experiences) and (perhaps unsurprisingly) with 'Conscientiousness'. Their statistical analysis concluded that ability was significantly mediated by learning style and by personality factors. Hence it would appear that ability is a necessary – but not necessarily sufficient – factor in determining academic success. Busoni & Di Fabio (2007) administered a 'Big Five' personality scale and also the Advanced Progressive Matrices (APM). Both measures were found to be predictive of these students' academic performance with a major effect for 'Conscientiousness'. Similarly Conard (2006) controlled statistically for academic ability – as measured by the 'Scholastic Aptitude Test' (SAT) and by the 'Grade Point Average' (GPA) – and found that the personality measure 'Conscientiousness' mediated performance – as did the straightforward behavioural measure, class attendance. The current research (Bakewell, Bell & Rowley, 2011) is embedded within the above domains. The particular importance of personality factors and students' approaches to academic work will be emphasized in terms of producing and evaluating the 'Big Five for Students' (BFFS) currently being developed at the Manchester Metropolitan University (MMU) (Bakewell, Bell & Rowley, 2011). It is intended that the BFFS will substantially assist students in Higher Education in terms of providing a focus for reflecting upon ('auditing') their study habits and hence encouraging academically beneficial behavioural and attitudinal changes.

Cohorts of MMU Psychology students (from 2004 to the present academic year) have provided their A-Level results (from which UCAS points have been calculated). They also completed a battery of ability tests; scales related to approaches to study; and personality scales. The ability tests include the following: the 'Thinking Skills Assessment' (TSA) produced by Cambridge Assessment (University of Cambridge) – the TSA is employed as part of the Admissions process in several Departments across Cambridge; the IQ-type test known as Ravens Progressive Matrices (Plus) (RPMP); and a series of IQ-type tests hosted on the Cambridge Brain Sciences website – the tests completed were 'Digit Span' (a memory test), 'Odd One Out' (a reasoning test), 'Grammatical Reasoning', and 'Rotation' (a concentration test). The pedagogically-based scales completed were the Learning Styles Questionnaire

(LSQ) produced by Honey & Mumford (2006) and the Approaches & study Skills Inventory for Students (ASSIST) produced by Entwistle (2002). The personality scales completed were: Quintax (Stuart Robinson & Associates) – this measures the so-called ‘Big Five’ personality scales and does so within a work-based context; and the ‘Big Five for Students’ (BFFS) – this is similar to Quintax, but these personality measures are made within a pedagogical (rather than work-based) context. The extensive data base resulting from the above activities has already been subjected to a rather limited analysis and an interim report has been produced (Bell, 2009). This interim report is confined to addressing the predictive power (in terms of participants’ academic performance at degree level) of just some of the ability measures (A-Level results; scores for the TSA and for RPMP). Factor analysis was employed to examine the TSA Test itself. The ‘structure matrix’ provided evidence that the test is (as intended) comprised of two types of items addressing ‘critical thinking’ and ‘problem-solving’ respectively. Some evidence of the test’s validity as a predictor of academic performance was found. RPMP produced contradictory findings. The strongest predictors of performance at degree level were students’ achievement at A-Level and during the first year at university. Whilst the data analysis relating to the TSA Test remains incomplete (and inconclusive) at this point in time, the major finding of this research thus far is that performance at A-Level combined with performance at Year I at university provides a good prediction of final overall performance at Years II and III. In combination these two variables account for 46% and 58% of the variance of the ‘Method 1’ (M1) mark for graduates in 2007 and 2008 respectively. The M1 mark (employed at the MMU) is calculated using a students’ mean mark at Year II (weighted .25) combined with the mean mark at Year III (weighted .75).

Recommendations to the MMU programme management team for Psychology have been offered with particular reference to the possibility of incorporating the teaching of ‘thinking skills’ into the curriculum. In view of the predictive power of students’ performance in the first year of their degree studies, recommendations have also been offered in terms of increasing resources (staff efforts, teaching hours allocations, etc.) to incoming students during their first year.

The SRHE Annual Conference (December 2011) will be the target delivery date for the full and comprehensive report.

The BFFS has undergone the statistical processes of factor analysis (to establish that the scales have ‘factorial structural integrity’); analysis to establish the internal reliability of each of the five scales (Cronbach’s Alpha coefficients); and self-peer validity – and test-retest reliability – of each of the scales.

Students’ levels of engagement are examined in relation to academic performance: social engagement (Extraversion); empathic engagement (Agreeableness); procedural engagement (Conscientiousness); emotional engagement (Neuroticism); and creative engagement (Openness). Issues associated with the current development of narrative feedback (related to students’ completion of the BFFS) are also discussed. In particular, ethical issues related to providing students with narrative feedback are addressed – as are the difficulties inherent in producing feedback based on the dynamic interaction between participants’ scores on the five (BFFS) dimensions of engagement. (987 words)

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