Trait complexes and academic achievement: Old and new ways of examining personality in educational contexts

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Background. Although recent research has provided evidence for the predictive validity of personality traits in academic settings, the path to an improved understanding of the nature of personality influences on academic achievement involves a reconceptualization of both criterion and predictor construct spaces.

Aims. For the criterion space, one needs to consider student behaviours beyond grades and level of educational attainment, and include what the student does among other things outside of the classroom. For the predictor space, it is possible to bring some order to the myriad personality constructs that have been developed over the last century, by focusing on common variance among personality and other non-ability traits.

Methods. We review these conceptual issues and several empirical studies.

Conclusions. We demonstrate the possible increments in understanding non-ability determinants of academic achievement that may be obtained by focusing on areas where there is a theoretical convergence between predictor and criterion spaces.

There are two traditional indicators of academic achievement, namely grades and highest level of educational attainment. These two indicators are unarguably the most important to educators, students, their parents, and to those people who make public policy decisions. The educational psychology literature, going back to the time of Binet and his colleagues, decisively indicates that the psychological variable that best predicts these two variables is intellectual ability. Recent studies on schoolchildren (Deary, Strand, Smith, & Fernandes, 2007) and university students (Rohde & Thompson, 2007) have confirmed this. Further, various neuropsychological tests of ability have been shown to be strongly associated with academic performance (Mayes, Calhoun, Bixler,
Philip L. Ackerman et al.

There are essentially two reasons for this finding: the first reason is that omnibus tests of intellectual ability were originally designed specifically to assess the psychological characteristics of children who did not succeed in school. That is, one of the primary justifications for including particular scales on the intelligence test was that the scales were highly associated with grades in school (e.g., see Binet & Simon, 1911/1915). The second reason is that individual differences in cognitive/intellectual abilities, such as memory, problem solving, reasoning, and so on, are the limiting conditions upon which broad learning and academic performance depend.

Despite these two reasons, intellectual ability tests are far from perfect indicators of academic achievement. Indeed, although the upper bound validity for ability tests as predictors of academic achievement is as high as .81 (Deary, Strand, Smith, & Fernandes, 2007), typical, cross-sectional correlations are in the lower .50s (e.g., Johnson, McGue, & Iacono, 2006; see also Hell, Trappmann, & Schuler, 2007; Kuncel, Hezlett, & Ones, 2004; Poropat, 2009; Sackett, Kuncel, Arneson, Cooper, & Waters, 2009). Moreover, Anastasi (1954) noted that correlations between intelligence and academic performance measures decline from $r = .70$ in elementary school, to $r = .50$ in secondary school and to $r = .40$ in college (see also Chamorro-Premuzic & Furnham, 2005). In postsecondary education, it is well-known that tests of abilities and other measures of intellect show declining correlations with increasing years at school, starting at college entry. The pattern repeats at the start of postgraduate education – that is, abilities have the highest predictive validity at the beginning of a students’ university or postgraduate experience, and then subsequently decline in magnitude (e.g., see Humphreys, 1968; Humphreys & Taber, 1973).

There is little argument that individual differences in academic performance disappear with increasing years of education, even as there are often successive hurdles to admission, based on levels of intellectual ability. If differences between individuals at higher levels are not the result of random factors, it is likely that the more students are selected on their past academic achievement or intellectual ability, the more important non-ability factors (i.e., personality, self-efficacy beliefs, and motivational variables) become when it comes to distinguishing between better and worse students (Chamorro-Premuzic & Furnham, 2006a).

Recent evidence provides support for the notion that some measures of personality traits are good predictors of academic achievement (Chamorro-Premuzic & Furnham, 2009; see also O’Connor & Paunonen, 2007). Most notably, meta-analytic studies (e.g., Poropat, 2009) suggest that, when cognitive ability assessments are robust (e.g., an omnibus IQ measure or a battery of reliable and valid verbal and quantitative measures) and correlations are corrected for explicit selection or the schools have open admissions (no selection tests) Conscientiousness predicts postsecondary school achievement with the same strength that cognitive ability does. Given that Conscientiousness is unrelated or negatively related to cognitive ability (Chamorro-Premuzic & Furnham, 2006a), its contribution to the prediction of academic outcomes can be expected to be independent of IQ, though large-scale studies that use both Conscientiousness and IQ as predictors of academic performance are still to be conducted. Further, some studies have tried to understand the process by which conscientiousness effects academic success by a facet-level analysis of the trait (Luciano, Wainwright, Wright, & Martin, 2006) or knowing whether conscientious students do better by virtue of more consistent class attendance and/or diligent study (Dollinger, Matyja, & Huber, 2008). Similarly, Richardson and Abraham (2009) showed the link between conscientiousness and GPA in 611 British students was fully mediated by achievement motivation.
That said, even meta-analytic studies fail to report consistent results for the remaining of the main personality traits, and most recent studies focus on the Big Five, which, unlike cognitive ability, have not been conceptualized to predict, let alone explain, academic achievement (see section ‘Redefining the criterion construct space: Beyond grades and attainment’ below). There have been some explorations of the relations between personality factors and academic achievement other than the Big Five (e.g., for an early review, see Stein, 1963; also see Petrides, Chamorro-Premuzic, Frederickson, & Furnham, 2005; and a more recent meta-analysis of measures associated with the Eysenck personality theory and academic performance by Poropat, 2010). There have also been other indirect studies that have demonstrated associations between a variety of personality traits (e.g., ‘need for achievement, competitive striving, and curiosity’ [p. 266]) and positive IQ changes during childhood and adolescence (e.g., see Kagan, Sontag, Baker, & Nelson, 1958).

Furthermore, in order to advance research in the area of individual difference determinants of academic achievement, it is important to not only reorganize the predictor space, but also rethink the criteria commonly used to operationalize academic achievement.

Redefining the criterion construct space: Beyond grades and attainment

In order to understand how personality and other non-ability measures relate to academic achievement, one must look beyond simple grades and educational attainment. One must also keep in mind that while ability traits refer to behaviours under ‘maximal’ performance conditions (e.g., see Cronbach, 1949; Fiske & Butler, 1963), personality, and other non-ability traits (e.g., motivation, interests) refer to ‘typical’ behaviours, that is, what the individual would prefer to do, or what the individual does most of the time. Although personality traits such as Agreeableness, Conscientiousness, and Openness – correlate with traditional indicators of academic achievement (Komarraju, Karau, & Schmeck, 2009; Poropat, 2009), other aspects of academic activities are more likely to yield significant and substantial correlations. With this as the conceptual foundation, it is apparent that non-ability traits are most likely to be associated with: (a) the student’s academic behaviours outside of the classroom (e.g., when completing independent study or doing homework); (b) in the decisions made by students to enrol in various elective courses or in the choice of academic majors; (c) in the pursuit of academically oriented activities as a hobby or leisure activity (e.g., reading for pleasure, participating in academically oriented activities or attending cultural/intellectual events); (d) knowledge accumulated over a lifetime of school and non-school investment of time and effort; and (e) career choice and success after full-time education, which is a fundamental aspect of academic achievement, when one considers that a match between academic preparation and future occupation can be expected to provide the student with an appropriate set of knowledge and skills as a foundation for the job to be learned. By enlarging the construct space for academic achievement, it may be possible to find a rich network of personality connections with student behaviours. Moreover, unlike cognitive ability (which is related to academic achievement via learning or reasoning), there are likely many ways in which personality traits affect traditional academic performance outcomes. Thus, an examination of the mediating factors between the personality–academic performance path (such as those listed above) will
enrich our understanding of the processes by which non-ability traits affect educational outcomes.

**Defining the predictor construct space**

Modern differential psychology has made great strides in describing the kinds of variables upon which individuals differ - far beyond the four humours/temperament types described by Hippocrates and later by Galen (see Arikha, 2007) as Choleric, Melancholic, Sanguine, and Phlegmatic. However, what has been gained from empirical examination of the psychological dimensions of individual differences in the past 100 years, in terms of reliability, validity, and theoretical coherence, has come at a cost, most notably a cost of parsimony. Different researchers have taken divergent approaches to the description of human personality, but the approaches generally fall on what is typically called the 'lumper-splitter' dimension. Lumper-type approaches seek a minimal number of different categories upon which individuals may be rank-ordered, in order to provide a general description of personality types. The approach by Eysenck (1970) (which describes and individual on the basis of his/her standing on three major personality traits, Psychoticism, Extroversion, and Neuroticism) would be considered a lumper theory of personality. Similarly, the five-factor model of personality (i.e., Neuroticism, Extroversion, Openness to Experience, Conscientiousness, and Agreeableness) exemplified by the work of Costa and McCrae (1992) is also a lumper approach. In contrast, the splitter approach to personality highlights sets of relatively narrow traits, in order to provide a more nuanced representation of an individual’s characteristics. Cattell’s organization of personality traits is essentially a splitter approach - with at least 16 different personality traits identified (e.g., see Cattell, Eber, & Tatsuoka, 1988). Goldberg (2005), with his International Personality Item Pool, identifies items that are associated with as many as 269 different personality scales, though some of these clearly overlap with one another.

Other psychologists have taken a more unifying and far-reaching approach to describing personality. The prototypical framework for personality that takes this approach was proposed by Guilford (1959). He identified ‘personality’ as composed of 7 different groups of constructs, namely Attitudes, Temperament, Aptitudes, Morphology, Physiology, and Needs. That is, while other personality psychologists are willing to limit ‘personality’ to temperament or affect, Guilford suggested that one’s personality is made up of a wide range of constructs that transcend themes of affect, cognition (aptitudes), conation (interests), and aspects of the individual’s physiology. When one realizes that each of domains listed by Guilford has many subdomains, the task of describing an individual’s personality, with this perspective, becomes both unworkable (in terms of the amount of time and effort that would be required to make assessments of all of these constructs) and clearly not parsimonious.

To an outsider or educational practitioner, therefore, the question of the relationship between inherent differences between students (i.e., traits) and any educational outcome is problematic as they are faced with a wide array of personality models and measures that they may not feel qualified to distinguish between.

**How many traits?**

Leaving aside the domains of morphology and physiology (which are less ‘psychological’ in character), one critical question for those who wish to describe or classify individuals...
is ‘how many traits are necessary to provide a ‘good enough’ description?’ If we agree to admit the remaining five domains described by Guilford, we still have a large number of constructs to incorporate into a description of an individual. With a lumper more parsimonious orientation, at an absolute minimum, we could start with 3 or 5 broad personality factors, one or two aptitudes/abilities (such as general intelligence [g], Spearman, 1904; or general fluid intelligence [gf] and general crystallized intelligence [gc], Cattell, 1957), at least six major interest themes (realistic, investigative, artistic, social, enterprise, and conventional; Holland, 1973), six motivational themes (desire to learn, need for mastery, competitiveness, other-oriented goals, emotionality in achievement contexts, and worry in achievement contexts; Kanfer & Heggestad, 1997), 20 or more needs (Murray, 1938), and countless attitudes. Even taking the minimum number of traits from each domain, we are left with \(3 + 1 + 6 + 6 + 20 + ? = 36 + ?\) traits to describe the differences between individuals. If we take more of a splitter approach to describing individuals, we might have more than 200 personality traits and 180 or more aptitudes (Guilford, 1988), and a large number of job/occupation-specific interests to describe the differences between individuals. This may well be comprehensive but undoubtedly impractical. That is, even with only a dozen or two dozen traits to consider, various stakeholders (e.g., students, teachers, counsellors) would find it difficult to integrate such information into a coherent plan of action for educational choices. Moreover, the scientific method always recommends parsimony as a guiding principle, so approaches to the prediction of behaviour with fewer variables are preferred to ones that use more variables, when the results are essentially the same.

Commonality among traits

Although theories and empirical research in the domains of cognitive, affective, and conative domains of individual differences have largely developed in isolation from one another (e.g., see Ackerman, 1997), there is in fact a substantial amount of common variance both within each of the domains described above, and between these domains. Within the domain of aptitude, for example, there do not appear to be 180 mutually orthogonal (i.e., uncorrelated) different abilities. Instead, there is substantial agreement among researchers that the common variance among aptitudes and intelligence factors can be described as a hierarchy of abilities, with narrow domains (such as verbal fluency, reading speed, or addition/subtraction skills) at the bottom of the hierarchy, moderately broad domains at the next higher level (e.g., verbal, numerical, spatial abilities), and even higher-order general factors at the next higher level (e.g., fluid intelligence, crystallized intelligence, general visualization). At the broadest and highest level of the hierarchy is general intellectual ability. Similar approaches can be taken within the traditional domains of personality, needs, and motivation, and interests.

Determining the commonality across domains is somewhat more complicated than determining the commonality within domains, mainly because there are many fewer empirical studies in the literature that provide the cross-domain correlations necessary for such an analysis. In one meta-analysis and review of the personality–intelligence–interest cross-domain commonalities (Ackerman & Heggestad, 1997), however, the authors found several points of contact among these trait families. Specifically, they suggested that there were at least four ‘complexes’, based on modest to moderate correlations among personality, ability, and interest variables. The complexes represent constellations of traits that tend to be more highly correlated with one another, and less correlated with other constellations of traits. The trait complexes were identified as
Social (which includes social and enterprising interest themes, along with personality traits of extraversion, well-being, and social potency), Clerical/Conventional (which includes conventional interests, perceptual speed abilities, and conscientiousness and traditionalism personality traits), Science/Math (which includes math and spatial abilities, along with realistic and investigative interest themes), and Intellectual/Cultural (which includes crystallized intellectual abilities, openness to experience, and intellectual engagement personality traits, along with artistic and investigative interests [the latter is shared with the Science/Math trait complex]). In addition to these trait complexes, there were some traits that had pervasive correlations, such as the broad negative correlations between Neuroticism and a variety of other intellectual abilities. From a parsimony perspective, examination of trait complexes and the few personality traits with pervasive cross-domain correlations provides a framework for examining associations with other variables, such as academic achievement, without having to assess and evaluate literally hundreds of separate traits.

Another advantage of the trait complex approach is that in the prediction of outcome measures, the use of a small number of aggregated composite variables, is much less susceptible to the capitalization on chance relationships and the obscuring influences of multicollinearity of predictors in the determination of regression coefficients. This, of course, is a generalization of the same principle that keeps one from constructing regression estimates on the basis of individual test questions, or even small groups of items (e.g., facet scales on personality inventories).

Trait complexes and academic achievement
The meta-analytic results described above are largely inductive, having been derived through examination of aggregated results in the research literature. There is also a theoretical framework that articulates how trait complexes relate to academic achievement. Snow (1963, 1989) proposed that there may be combinations of traits that together, in a synergistic fashion, are facilitative or impeding of learning and performance. Snow called these ‘aptitude complexes’, but the underlying theory allows for a broad consideration of non-ability traits as components of these complexes (such as a complex with need for achievement and fluid intelligence, see Snow, 1989). The PPIK theory proposed by Ackerman (1996) takes Snow’s theory of aptitude complexes and the trait complexes derived from meta-analyses, as the foundation for suggesting that, for example, the Science/Math and Intellectual/Cultural trait complexes are facilitative of learning and acquisition of academic domain knowledge, while the Social and Clerical/Conventional trait complexes are impeding of learning and acquisition of academic domain knowledge. In several subsequent empirical studies, these proposals have largely been supported. The facilitative trait complexes are positively associated with individual differences in domain knowledge in the physical sciences (especially the Science/Math trait complex) and with domain knowledge in the social sciences and humanities (e.g., see Ackerman, 2000; Ackerman & Beier, 2006; Ackerman, Bowen, Beier, & Kanfer, 2001; Ackerman & Rolphus, 1999), and with learning in adult samples (e.g., Beier & Ackerman, 2005).

Inspired by Ackerman’s intellectual investment and trait complexes research, Chamorro-Premuzic and Furnham (2004, 2006a) conceptualized a model of ‘intellectual competence’ to provide a hierarchical and causal integration of some of the major ability and non-ability determinants of academic achievement. In this model, fluid cognitive ability is hypothesized to affect academic achievement not only via crystallized abilities, but also via intellectual curiosity and self-perceived ability (both of which
affect crystallized intelligence). The model also predicts that, in competitive settings, Conscientiousness may have a compensatory role - for lower cognitive ability - as promoter of higher academic achievement, and that sex differences in academic achievement (in favour of females) are moderated by Neuroticism (higher in females) and self-assessed intelligence (higher in males). Ultimately, the model incorporates that notion that an interplay of cognitive abilities and personality traits are involved in the determination of the direction and intensity of intellectual investments, which in turn, affect academic achievement in a variety of contexts. Which combinations of traits are most important determinants of behaviours, however, will depend on the particular academic achievements criterion variables that are to be predicted. Although this model is still in its infancy, three recent studies with primary school and university students provide partial evidence in its support.

Chamorro-Premuzic, Harlaar, Greven, and Plomin (2010) found that self-estimates of ability predicted subsequent school performance in a sample of 5,957 children aged 9–12, even whilst actual cognitive ability scores were considered (see also Greven, Harlaar, Kovas, Chamorro-Premuzic, & Plomin, 2009). This led the authors to support the idea that, regardless of its correlation with IQ or psychometrically measured ability test scores, self-perceptions are consequential for intellectual development and skill acquisition. In a smaller, but still longitudinal, sample, Chamorro-Premuzic and Furnham (2006b) found that self-assessed intelligence explains variance in university grades, too, even after cognitive ability test scores are considered. A recent study on Russian students has also shown subjective evaluation of intelligence and academic self-concept accounted for more than 50% of the variance in predicting academic achievement (Kornilova, Kornilov, & Chumakova, 2009). Rosopa and Schroeder (2009) also showed core self-evaluation interacted with cognitive ability to predict academic achievement.

Chamorro-Premuzic and Arteche (2008) tested the longitudinal predictive power of the full intellectual competence model (including sex, the Big Five, self-assessed intelligence, fluid and crystallized intelligence measures, and academic performance) in a sample of 473 UK undergraduates from 3 different universities, examining whether Neuroticism and Extraversion affect academic grades via self-assessed intelligence, and whether Openness and Conscientiousness mediate the effects of fluid on crystallized ability, as well as how much variance these variables account for in academic performance measures 4 years later. Results were widely supportive in identifying the predicted links among the different predictors of academic achievement; at the same time, the authors found additive effects on academic performance, whereby a combination of ability and non-ability traits explained around 20% of the variance in academic grades. These results were recently supported by a Spanish replication and extension (Chamorro-Premuzic, Quiroga, & Colom, 2009).

Situational press

Conventional wisdom indicates that the influence of non-ability traits (e.g., personality, interests, etc.) is substantially reduced when the situational press (i.e., constraints) is high, at least for individuals within the normal (not clinical) range. Whether non-ability traits have a significant and substantial influence when the situational press is low, depends on whether there are salient conditions for the particular traits to be important to the individual. When the task at hand is not limited by ability, strong situational press may be expected to result in a substantial reduction in inter-individual variance. For
example, offering a group of individuals $1,000 each to read 5 pages of a textbook before class could be reasonably expected to reduce the variance of compliance to nearly zero. When the task at hand is limited by ability, such as offering the same $1,000 for the students to solve a complex calculus problem in the next hour, the variance in performance attributable to personality may not trend towards zero (because of the potential for stress reactions), but it should be substantially lower than if there was a financial reward of $10 for solving the same calculus problem.

When considering the academic environment, there are examples of situations with high press and with relatively low press. On the one hand, the final exam would be considered to have relatively high situational press. That is, even students who are not particularly high in conscientiousness, will likely arrive at the appointed time, rather than walking into class a half-hour late, and they will likely devote the bulk of their attentional effort to performing well on the exam. On the other hand, a student’s behaviour when faced with a term paper to write, that is due a month in the future, would represent low situational press. How the student behaves under these circumstances will much more likely be influenced by his/her standing on personality traits such as conscientiousness, extroversion (especially if there is a party the student is invited to), openness to experience, the student’s standing on appetitive and aversive motivational traits, and the student’s interest in the particular topic domain associated with the term paper assignment.

Thus, when looking for commonalities between non-ability traits and academic achievement, one should concentrate on constructs for which the situational press is low, ceteris paribus, rather than constructs for which situational press is high. That is, student behaviours when faced with homework amongst an array of potential distractions (such as the TV, the computer, an mp3 player, friends on the phone, etc.) are more likely to be associated with non-ability traits, in contrast to in-class assignments and high-stakes examinations. Non-ability traits are also expected to have greater influence on behaviours that may be cognitively demanding, but that are only accomplished through substantial cumulative time and effort on the part of the student. That is, when an examination covers a relatively limited amount of material, mostly acquired in class or required homework assignments, the influence of non-ability traits may be relatively small. In contrast, when an examination covers materials that are acquired over months or years of both in-class and out-of-class time and effort (such as a professional certification test), one can expect that the influences of non-ability traits will be relatively larger. The reason for this is that performance on the examination is based on the aggregation of a large number of high- and low-situational press events. Under those conditions, students who are high in extroversion, low in conscientiousness, or low in topic interest would be expected to devote cumulatively less time and effort towards acquisition of domain knowledge, and thus perform poorly, in comparison to those students who were, for example, introverted, high in conscientiousness, and have a high level of interest in the topic domain. They may also be more inclined to solicit help or even cheat (by for instance plagiarism) if the examination method (i.e., term paper or project) allowed for it.

The one major exception to this framework concerns the role of Neuroticism and Anxiety on academic achievement indicators. For Neuroticism and Anxiety, more substantial influences may be expected under high-stakes situations, because the presence of evaluation apprehension may trigger a variety of cognitive and affective distractions among individuals who have higher levels of Neuroticism and Anxiety. Under low levels of situational press, in fact, these individuals may have less stress, and consequently
they would be more likely to perform at a level similar to individuals who are lower in Neuroticism and Anxiety. In the existing research literature, it is generally found that high-structure academic environments result in comparatively better performance for students who are high on Neuroticism and Anxiety (e.g., see Snow, 1989).

**Empirical research**

One example of how the trait complexes relate to aspects of academic achievement was conducted by Ackerman et al. (2001). In that study, a sample of 320 first-year university students completed a battery of 19 domain knowledge tests, ranging from physical sciences (e.g., physics, chemistry) to Humanities (literature, art, music). Five trait complexes were derived from questionnaires that assessed personality, interests, motivation, self-concept, and related traits. Two trait complexes were expected to facilitate the acquisition of academic domain knowledge, namely: Science/Math/Technology and Verbal/Intellectual. The other three trait complexes were expected to impede the acquisition of academic domain knowledge, namely: Social Potency/Enterprising, Social Close-ness/Femininity, and Traditionalism/Worry/Emotionality. Individual differences in all of the academic knowledge domains were positively associated with the Verbal/Intellectual trait complex. In addition, individual differences in physical science and technology domain knowledge were positively associated with the Science/Math/Technology trait complex. In contrast, the three impeding trait complexes were negatively associated with individual differences in various areas of academic domain knowledge. These results support two major propositions. First, non-ability traits appear to be associated with academic domain knowledge that has been acquired both in and out of the classroom. Second, the trait complexes have both convergent and discriminant validity, in that they are most highly associated with different domains of knowledge. That is, the results are consistent with the notion that a student’s standing on various trait complexes orients the student both towards or away from acquisition of academic domain knowledge, and towards or away from different domains (e.g., business vs. physical sciences vs. humanities).

In a study of adult learning, Ackerman and Beier (2006) investigated the respective influences of cognitive abilities and non-ability trait complexes in determining individual differences in knowledge about financial issues (e.g., financial planning, debt management, taxes, general investments, etc.). First, knowledge on these topic domains was assessed. Next, the participants were given a set of readings that included 20 print articles from a variety of sources, along with a one-hour audio programme with associated printed materials, and they were allowed 1 week to study the materials at home. In the last segment of the study, the participants returned to complete a parallel set of the knowledge tests that were administered prior to the study period. Trait-complex predictors accounted for roughly 20% of the variance in both initial and final domain knowledge test performance. In contrast, fluid and crystallized intellectual ability predictors accounted for about 30% of the variance in initial domain knowledge test performance, but 48% of the variance in final domain knowledge test performance. That is, the influence of trait complex composites remained constant, while the influence of ability measures increased, when the participants were faced with a specific assignment to read articles and listen to recorded instruction. When non-ability trait complexes were used as predictors after the influence of abilities had been first taken into account, the trait complex composites provided significant incremental predictive validity both at
initial and final assessments. Because the ‘homework’ assignment was highly structured and specific, it is not surprising that the influence of abilities in determining performance outcomes was substantial. One would predict that if the participants were given a less-structured assignment (i.e., to seek out information on the topics themselves), the role of the non-ability trait complexes at final assessment might be more substantial.

**Promising avenues for future research**

The vast majority of studies that have investigated the influence of personality and related traits on academic achievement have focused on grades (often with very skewed distributions or restricted ranges) or level of highest educational attainment. Although these are clearly important criteria, they represent a modest sample of the behaviours that people exhibit in the context of education, whether in the classroom, at home, or even in the context of lifelong learning. Theoretically, personality and other traits associated with typical behaviour, as opposed to maximal performance, are expected to have their greatest influence when the situational press is low. Therefore, the most promising avenues for future research in this area will be for investigators to take a broader view of educationally relevant behaviours when the behaviour of the student is not highly constrained. It may be especially interesting to examining how, for example, extroversion-related traits influence behaviours when the students are faced with decisions to complete homework in quiet isolation or in the cacophony of Instant Message alerts, cell-phone tones, a television programme in the background, or while listening to an mp3 player. That is, personality may predict where and for how long many students choose to study. Similarly, personality traits related to conscientiousness or need for achievement may be more influential in determining whether a student starts an independent-study project when it is first assigned, the night before it is due, or sometime in-between. Traits such as defensive pessimism (e.g., Cantor & Norem, 1989) may be more influential in determining the students’ study and assignment organization behaviours than they do actual test performance. Examining homework and study-related behaviours, because they occur in a rich and relatively unstructured environment, appear to be much more likely to capture non-ability trait influences than in-class assignments or grades.

Similarly, examining the choices that students make, when faced with elective or optional course selections, may also reveal that personality and related traits are more influential than ability-related traits. The students’ desire to learn and need for mastery traits may influence whether or not they select more difficult courses or easy courses. The trait-complex profiles of students may similarly be associated with the kinds of academic speciality areas that they pursue for higher education opportunities (e.g., see Ackerman & Beier, 2003).

Furnham (2010) has argued and demonstrated that a student’s personality has a logical impact on various educational *choices*. Thus, he demonstrated a personality similarity effect in that there was a significant correlation between a student’s Big Five personality trait score and those of the teachers they preferred to be taught by (Furnham & Chamorro-Premuzic, 2009). Another study demonstrated the logical, consistent, and predictable relationship between personality and choice of *teaching method* (Chamorro-Premuzic, Furnham, & Lewis, 2007). Further, in a number of studies with consistent findings, the London-based research group was able to demonstrate personality trait correlates of student preferences for different assessment methods like multiple choice
test, essays, voca viva, and dissertation (Furnham, Christopher, Garwood, & Martin, 2008). It thus seems personality has a large influence on what courses students may choose, depending as well as the students’ interest and self-perceived ability but also as they understand it, how the course is taught and examined. Hence, the systematic and predictable differences in the personality and ability profiles of students from different disciplines and faculties (arts, science, social science, etc.).

Even in the classroom, there are behaviours that may be more highly related to personality, such as the frequency of question-asking or help-seeking (e.g., see Pintrich, Smith, Garcia, & McKeachie, 1993), in determining where the student chooses to sit in the classroom, or even whether the student even shows up for class, when attendance is not taken. Conducting studies of personality influences on these and other sources of data may be expected to reveal that personality plays a much larger role in student behaviours, than examination of only grades and level of educational attainment.

References


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