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The relationships between personality, approaches to learning and academic success in first-year psychology distance education students

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Abstract: The first aim of this study was to examine the relationships between the big five personality traits and approaches to learning in a sample of first-year psychology distance students. Approaches to learning are the intentions a student has when faced with a learning task. A deep approach reflects an intention to understand the material, a strategic approach reflects an intention to achieve the highest grades possible, and a surface approach reflects an intention to cope with the course requirements by memorising facts. Consistent with previous research of on-campus students, the Intellect trait predicted the deep learning approach; the Conscientiousness trait predicted the strategic learning approach; and the Emotional Stability trait negatively predicted the surface learning approach. The second aim of this study was to investigate whether approaches to learning predict academic success, as measured by grade point average. As expected, the surface learning approach negatively predicted achievement. However, contrary to expectations, neither the deep nor the strategic learning approach predicted academic success. This finding may partly be explained by these first-year distance students undergoing a transition to the expectations and requirements of their flexible learning environments. Further research is warranted to establish whether the deep and strategic learning approaches become more likely to predict academic success in the latter years of study, after distance students have adapted to the flexible delivery methods. To this end, a longitudinal study that tracks the academic performance of these students until they complete their degrees or leave the university is recommended.

Keywords: approaches to learning, personality, academic success, distance education

Introduction

The student populations of universities today are more diverse in terms of educational experience, social background, and cultural factors than at any time in the past. Diverse student cohorts have produced increased demands for more flexible learning environments, with many students now choosing to study part-time and via distance education. Between 1997 and 2002, the federal government's funding of universities decreased from 53.8% to 40.1% (Australian Bureau of Statistics, 2005), resulting in a limited number of enrolment offers by universities and a higher cost to students. Students are now under greater pressure to succeed and universities have recognised the need to increase retention rates. Thus, better understanding those factors that influence student success in tertiary education has never been more vital.

Cognitive abilities are widely acknowledged as a key predictor of academic success (Ackerman & Heggestad, 1997). However, other non-cognitive, individual differences factors are also thought to play a key role in student learning, including personality traits and

approaches to learning (Duff, Boyle, Dunleavy, & Ferguson, 2004; Farsides & Woodfield, 2003). This paper will extend upon previous research by investigating the nature of the relationship between personality and approaches to learning in a sample of psychology distance education students. Additionally, it will examine the extent to which learning approaches predict academic success.

Personality traits

Despite the continued debate about the exact number of factors comprising personality, recent research has predominantly favoured use of a five-factor model (McCrae, 2001). Goldberg's (1999) Big-Five factors are known as: Extroversion, Agreeableness, Conscientiousness, Emotional Stability, and Intellect. Each factor is bipolar. For example, extroverts would be described as sociable, outgoing, and optimistic, while introverts would be described as passive, thoughtful, and unsociable. People high on the Agreeableness trait are courteous, flexible, trusting, good-natured, tolerant, and cooperative. At the opposite end of this continuum are individuals with high levels of egocentrism. Conscientious individuals are dependable, careful, thorough, responsible, and hardworking. In contrast, individuals with low levels of Conscientiousness display an inability to set and attain work goals. Emotional Stability is the polar opposite of Neuroticism, and is the manner in which an individual manages, challenges, maintains calm, and copes with stress. Neurotic individuals, for instance, experience a high level of psychological distress and anxiety. Intellect, also known as Openness to Experience, reflects an individual's willingness to experience novel situations. Individuals high on the Intellect trait proactively seek out and appreciate experience for its own sake. In contrast, those individuals low on the Intellect trait prefer familiarity and display more conventional behaviours.

Previous research has shown most of the five personality traits to predict academic success, although the findings have been mixed (Diseth, 2003). Conscientiousness, as defined by organisation, persistence, and motivation in goal-directed behaviours, is the trait most consistently positively associated with academic performance (Diseth). Studies have replicated this relationship in schools, and in undergraduate and postgraduate tertiary settings (Busato, Prins, Elshout, & Hamaker, 2000; Chamorro-Premuzic & Furnham, 2003; Nguyen, Allen, & Fraccastoro, 2005). However, Farsides and Woodfield (2003) found Conscientiousness was significantly positively related to first year results but not to final grades. Intellect has likewise been positively associated with academic success in both undergraduate (De Fruyt & Mervielde, 1996) and postgraduate tertiary settings (Hirschberg & Itkin, 1978). More recently, Farsides and Woodfield (2003) found Openness to Experience was significantly positively related to academic achievement. In contrast, researchers have generally found no association between Neuroticism and academic success as measured by grade point average (Busato et al.; De Fruyt & Mervielde), with some theorists suggesting that high levels of Neuroticism might impair academic achievement (Chamorro-Premuzic & Furnham). Early studies into the relationship between Extroversion and academic success have shown that introverts perform better than extroverts (Child, 1964; Entwistle & Entwistle, 1970), although other studies have since failed to replicate these results (Busato et al.). An association between Agreeableness and undergraduate academic success has rarely been found (Ackerman & Heggestad, 1997; Busato et al.; Farsides & Woodfield).

Approaches to learning

Approaches to learning are conceived as the individual differences in intentions a student has when faced with a learning task (Diseth, 2003). They reflect the strategies an individual uses to achieve a particular goal. The student approach to learning (SAL) tradition distinguishes between deep, surface, and strategic learning approaches (see Entwistle & McCune, 2004; Lonka, Olkinuora, & Mäkinen, 2004 for a review). The deep approach to learning reflects (a) an intention to understand the material by relating ideas to previous knowledge and experience, (b) searching for patterns and underlying principles, (c) seeking evidence and relating it to conclusions, (d) examining logic and argument critically, (e) developing awareness of the learning that is occurring, and (f) showing an active interest in the subject matter (Entwistle, McCune, & Walker, 2001). The surface learning approach reflects (a) an intention to cope with the course requirements by memorising facts and carrying out routine procedures, (b) studying without reflecting on either purpose or strategy, (c) treating the information as unrelated bits of knowledge, (d) finding difficulty making sense of new ideas, and (e) feeling undue pressure and worry about work (Entwistle et al.). The strategic learning approach reflects (a) an intention to achieve the highest possible grades by consistent effort in studying, (b) managing time and effort, (c) identifying good conditions and materials for studying, (d) monitoring study effectiveness, (e) developing alertness to assessment requirements and criteria, and (f) working to the perceived preferences of lecturers (Entwistle et al.).

Research has investigated the relationships between these three approaches to learning and academic success. The SAL paradigm argues that high achievement can be predicted by a deep approach, either alone or in combination with a strategic approach (Boyle, Duffy, & Dunleavy, 2003; Diseth & Martinsen, 2003). In contrast, low achievement can be predicted by a surface approach to learning (Biggs, 1999). Indeed, the surface approach to learning has consistently been found to negatively correlate with academic success (Boyle et al.; Diseth, 2003; Diseth & Martinsen).

Research is currently focussed on whether personality traits are related to the approaches to learning that students adopt (Busato et al., 2000; Diseth, 2003; Duff et al., 2004, Zhang, 2003). Positive predictive relationships have been found between the trait Openness to Experience and the deep approach to learning (Busato et al.; Diseth; Duff et al.; Zhang). In contrast, Conscientiousness has been shown to predict the strategic approach to learning (Diseth; Duff et al.; Zhang), and Neuroticism is a predictor of the surface learning approach (Busato et al.; Diseth; Duff et al.; Zhang).

Research aims

The first aim of this study was to examine the nature of the relationship between the five personality traits and the three approaches to learning using a sample of psychology distance education students. Based on previous research, relationships between personality (e.g., Intellect, Conscientiousness, and Emotional Stability) and approaches to learning (e.g., deep, strategic, and surface) were expected. The second aim of this study was to investigate whether academic achievement can be predicted by approaches to learning. It was expected that academic success will be positively related to deep and strategic learning approaches, and negatively related to a surface learning approach.

Method

Participants

A total of 119 first-year psychology students chose to participate in the study. However, complete data was only available for 97 students. All participants were distance education students from the University of Southern Queensland who participated online to gain credit in their foundation psychology course. The average age of the participant pool was 28.12 years ($SD = 8.47$). There were 71 females and 26 males. The mean age of the females was 28.41 years, with an age range from 17 to 57. The males had a mean age of 27.85 years, with an age range from 18 to 48.

Measures

The online test battery consisted of two parts. The first section contained 12 timed tests measuring four cognitive abilities (general reasoning, verbal, spatial relations, and visualisation). Most of these timed tests were taken from Ekstrom, French, Harman, and Dermen (1976) kit of cognitive factor-referenced tests. The second section contained the self-report survey (personality and approaches to learning). This battery was developed for use in a longitudinal study of individual differences in student achievement. However, only those measures relevant to the current research aims will be discussed here.

The self-report survey asked for demographic information on variables including gender, age, language, nation of origin, field of study, and previous tertiary experience.

Personality

The short form of the International Personality Item Pool (IPIP, Goldberg, 1999, 2001) was used to measure the Big-Five factors of personality: Extroversion, Agreeableness, Conscientiousness, Emotional Stability, and Intellect. The IPIP consists of 50 questions, with 10 items used to compute a total score for each major personality factor. Respondents used a 5-point Likert-type scale to rate each statement, ranging from 1 (*very inaccurate*) to 5 (*very accurate*). Total scores for each personality factor could theoretically range between 10 and 50. Goldberg (1999) showed that the IPIP scales each demonstrated acceptable internal reliabilities, with coefficient alpha estimates ranging between .79 (Conscientiousness) and .87 (Extroversion). Buchanan, Johnson, and Goldberg (2005) also found acceptable reliability estimates for the IPIP scales when they were administered online.

Approaches to learning

The 52-item Approaches and Study Skills Inventory for Students was used to measure the three approaches to learning adopted by students (Entwistle, 1997; Entwistle, Tait, & McCune, 2000): deep, strategic, and surface learning approaches. Participants indicate their relative agreement with statements by using a 5-point Likert-type scale, ranging from 1 (*disagree*) to 5 (*agree*). The deep approach scale contains four, four-item subscales (seeking meaning, relating ideas, use of evidence, and interest in ideas). The surface approach scale includes four, four-item subscales (lack of purpose, unrelated memorising, syllabus boundness, and fear of failure). Total scale scores for both the deep and surface learning approaches could theoretically range between 16 and 80. The strategic approach scale consists of five, four-item subscales (organised study, time management, alertness to assessment demands, and monitoring effectiveness). Total scale scores could theoretically range between 20 and 100. Entwistle et al. reported acceptable reliabilities for the deep ($\alpha = .84$), strategic ($\alpha = .80$), and surface ($\alpha = .87$) learning approaches.

Academic success

The measure of academic achievement in this study was grade point average (GPA). As the students were all first-year students, the GPA was the mean grade for a mixed number of first year courses, ranging between 1 and 4 courses. The GPA scores ranged between 3 (*fail*) and 7 (*high distinction*).

Procedure

The current data was collected on-line from a small sample of first-year psychology distance education students. The total testing time for the Internet-administered test battery was about 2 hours. Testing was carried out over a 4-week period. Personalised feedback was provided to each participant, summarising each student's learning preferences, strengths and weaknesses, and outlining strategies for optimising their individual learning environments.

Results

Descriptive statistics are shown in Table 1. It is evident that each of the five personality scales demonstrated satisfactory internal consistency estimates (Goldberg, 1999). Similarly, the deep, strategic, and surface approaches to learning scales each showed acceptable alpha reliabilities (Entwistle et al., 2000). The participants, on average, scored highest on the Agreeableness trait and lowest on the Emotional Stability trait. The descriptive statistics observed for the three approaches to learning are comparable to those reported by others (see Diseth, 2003).

Table 1: Summary statistics: Academic success, personality, and approaches to learning

Measure	<i>M</i>	<i>SD</i>	No of items	alpha ^a	Theoretical range of scores
Academic Success					
GPA	4.98	.99	-	-	-
Personality					
Extroversion	31.47	8.64	10	.90	10-50
Agreeableness	41.58	5.67	10	.84	10-50
Conscientiousness	34.69	6.17	10	.74	10-50
Emotional Stability	30.69	8.97	10	.89	10-50
Intellect	35.43	6.12	10	.78	10-50
Approaches to Learning					
Deep	60.97	8.92	16	.87	16-80
Strategic	71.89	10.76	20	.84	20-100
Surface	46.87	10.32	16	.82	60-80

Note. ^a*N* = 111, otherwise *N* = 97.

Table 2 presents the correlations between academic success, personality, and approaches to learning variables. In this sample of distance education students, the expected positive correlations between deep approach and Intellect ($r = .46, p < .05$) and strategic approach and Conscientiousness ($r = .30, p < .05$), and negative correlations between surface approach and Emotional Stability ($r = -.44, p < .05$) were observed. It is interesting to note that Agreeableness correlated positively with both deep approach ($r = .33, p < .05$) and strategic approach ($r = .28, p < .05$), and negatively with the surface approach ($r = -.36, p < .05$). This finding is in contrast with results obtained from other on-campus samples of first-year psychology students (see Diseth, 2003). In the current sample, none of the personality factors in Goldberg's (1999) IPIP were related to academic success (GPA). This finding is in contrast with previous research (see Diseth) and indicates that none of the approaches to learning were acting as mediator variables between personality and academic achievement. As expected,

GPA was negatively correlated with the surface learning approach ($r = -.23, p < .05$). The measure of academic success was also significantly positively correlated with both deep and strategic learning approaches, $p < .05$.

Table 2: Correlations between academic success, personality, and approaches to learning

Variable	GPA	Extro	Agree	Consc	Emots	Intel	Deep	Strat	Surf
Academic success									
GPA	1.00								
Personality									
Extroversion	.09	1.00							
Agreeableness	.18	.10	1.00						
Conscientiousness	-.02	-.11	.37*	1.00					
Emotional stability	-.05	.25*	.17	.18	1.00				
Intellect	.06	.21*	.42*	.08	-.08	1.00			
Learning approaches									
Deep learning	.21*	.13	.33*	.21*	-.03	.46*	1.00		
Strategic	.25*	.16	.28*	.39*	.27*	.12	.50*	1.00	
Surface learning	-.23*	-.16	-.36*	-.23*	-.44*	-.15	-.13	-.04	1.00

Note. Extro = Extroversion; Agree = Agreeableness; Consc = Conscientiousness; Emots = Emotional Stability; Intel = Intellect; Deep = deep learning approach; Strat = strategic learning approach; Surf = surface learning approach.

* $p < .05$.

A series of regression analyses were performed to further investigate the relationships between personality and approaches to learning. First, the deep learning approach was regressed onto the five personality traits, $R^2 = .25, F(5,91) = 6.20, p < .05$. The result indicated that Intellect was a significant predictor of the deep learning approach, $\beta = .37, p < .05$. Second, the strategic learning approach was regressed onto the five personality traits, $R^2 = .23, F(5,91) = 5.32, p < .05$. The result indicated that Conscientiousness was a significant predictor of the strategic learning approach, $\beta = .33, p < .05$. Finally, the surface learning approach was regressed onto the personality traits, $R^2 = .29, F(5,91) = 7.25, p < .05$. The result indicated that Emotional Stability was a significant negative predictor of the surface learning approach, $\beta = -3.98, p < .05$. Agreeableness was also a significant negative predictor of the surface approach, $\beta = -.24, p < .05$.

To test the hypothesis that approaches to learning are important predictors of academic success (GPA), a regression analysis including the three approaches to learning was conducted. The result indicated that GPA was significantly predicted by approaches to learning, $R^2 = .34, F(3,93) = 3.99, p < .05$. However, only the surface learning approach was a significant predictor of GPA, $\beta = -.21, p < .05$, in the negative direction.

Discussion

Personality and approaches to learning

A key finding of this study is that certain personality traits predict learning approaches. Results from regression procedures indicate that each of the three learning approaches were significantly predicted by particular personality dimensions. Intellect was a significant predictor for the deep approach to learning. This finding replicates previous research (Busato et al., 2000; Diseth, 2003; Duff et al., 2004) and indicates that distance students who are open to learning experiences are likely to seek meaning and understanding in the concepts they are studying. As expected, Conscientiousness was a good predictor for the strategic learning approach. Conscientious individuals are characterised as organised, purposeful, and strong-

willed (Zhang, 2003). It is therefore not surprising that distance psychology students with a strong Conscientiousness personality trait have the motive to be alert to assessment requirements and to monitor their study efforts. This finding extends upon research that has previously used samples of on-campus psychology students (Diseth). Finally, Emotional Stability was a good negative predictor for the surface approach to learning, replicating previous research (Diseth; Duff et al.). Thus, students who are emotionally unstable tend to avoid the challenges associated with tertiary study by reproducing what they have been taught to meet the minimum requirements (Zhang).

An interesting finding of this study is the significant negative relationship between Agreeableness and the surface learning approach. Agreeableness was a significant negative predictor for the surface learning approach. This finding is in the opposite direction to relationships previously reported in the literature (e.g., Duff et al., 2004). Individuals high on the Agreeableness trait are characterised as cooperative, flexible, and helpful (Zhang, 2003). Therefore, it makes conceptual sense that distance education students high on these traits would not be satisfied with performing learning tasks that require a minimal effort. Further investigation is warranted to establish the meaningfulness of this relationship.

Approaches to learning and academic success

The expected correlations between the different approaches to learning and academic success (GPA) were found with the current sample of first-year psychology students learning via distance education. Academic success was positively related to the strategic learning approach and negatively related to the surface learning approach. Thus, students who intended to achieve high grades were successful; those who tended to reproduce the learning material were not successful. These results support previous findings (Boyle et al., 2003; Diseth, 2003; Diseth & Martinsen, 2003; Duff et al., 2004). A positive relationship between deep approach and achievement was also observed, although the deep approach was not found to be a significant predictor of academic success. Previous research indicates that a deep approach may be more likely to predict academic success in the latter years of a degree, when assessment procedures directly reward a demonstration of conceptual understanding (Diseth). Further research is warranted to investigate the extent to which deep approaches are beneficial to distance students across the different levels of study.

Specifically with regard to the prediction of academic achievement (GPA), surface approach was negatively related to achievement. This finding is consistent with previous research (Boyle et al., 2003; Diseth, 2003) and indicates that those distance students who were content to memorise the material and who lacked purpose in their academic pursuits were not successful in their first year of studies. However, in contrast to expectations, the strategic learning approach did not positively predict achievement. This finding may be attributed, in part, to the flexible learning environments for these first-year distance students. It makes substantive sense that most of these part-time, mature-age students would require additional time and assistance to adapt to the expectations and requirements of distance education. Indeed, at the time of testing, most students were in the process of completing their first semester of tertiary study. Therefore, they would still likely be undergoing a transition phase to the University, and thus focusing on strategies to “survive” rather than to achieve optimal grades. Further research is warranted. The academic progress of these students should be tracked and monitored to establish the level at which the strategic and deep learning approaches become predictors of academic success. To this end, multiple criteria of academic success should be used to establish the extent to which the learning strategies that students adopt are course specific.

Implications and future research directions

The current data confirmed that certain personality traits are related to, and predictive of, the approaches to learning that distance education students adopt. Significant positive relations were observed between Intellect and the deep approach, and between Conscientiousness and the strategic approach. A significant negative relationship between Emotional Stability and the surface approach was also found. The expected relationships between approaches to learning and academic achievement were also demonstrated. The surface approach was negatively related to achievement; the strategic and deep approaches were positively related to achievement. Therefore, educators can use this knowledge to encourage all students, including those learning via distance, to develop an active interest and engagement with the subject material. This teaching approach will help to enhance students' conceptual understanding, a key component of the deep learning approach (Duff et al., 2004). However, in the current sample of distance students, neither deep nor strategic learning approaches significantly predicted GPA. Therefore, further research is warranted to establish the extent to which teachers can help distance students adapt to their flexible learning environments and achieve success.

The results provided support for the notion that different learning approaches can be predicted by personality traits. However, replication of these results with a larger sample of students is required, including both on-campus and distance student cohorts. This will permit the structural relationship between personality, approaches to learning, and academic success to be further investigated. A longitudinal study that tracks the academic performance of these students until they complete their degrees or leave the university is warranted. This will help to establish whether these relationships are different across samples and/or study modes. It will also ensure that those students who are most at risk of failing or withdrawing from their degree are more easily identified, and where appropriate, provided with career counselling, mentoring, or targeted skills enhancement programs.

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