Mainly Openness: The relationship between the Big Five personality traits and learning approaches

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A B S T R A C T

In order to examine the relationship between broad personality traits and learning approaches, 852 university students completed the NEO-FFI [Costa, P. T., Jr., & McCrae, R. R. (1992). *Revised NEO Personality Inventory (NEO-PI-R) and NEO Five-Factor Inventory (NEO-FFI): Professional manual*. Odessa, FL: Psychological Assessment Resources] and SPQ [Biggs, J. B. (1987). *The Study Process Questionnaire manual*. Victoria: Australian Council for Educational Research], which assess personality and learning approaches, respectively. Seven previous studies were used to generate hypotheses on the relationship between these two measures, but only the positive link between Openness to Experience and Deep learning was supported by both correlational and structural equation modelling tests. Openness was also found to be negatively linked to Surface learning, but other Big Five traits were not saliently associated with learning approaches. Results indicate that the overlap between learning approaches and personality traits is lower than previously suggested. Implications are discussed.

There is a long and acrimonious debate about the relationship between individuals' approaches to learning, i.e., students' preferred learning strategies and motives, and broad personality traits (see Furnham, 2008), particularly since the publication of two of the most emblematic measures of learning approaches (Biggs, 1992) and personality (Costa & McCrae, 1992). The widespread acceptance of the Five Factor or "Big Five" model of personality (Chamorro-Premuzic, 2007; McCrae & Costa, 1997), which postulates that five major dimensions (i.e., Neuroticism or Emotional Stability, Extraversion/Introversion, Openness or Intellect, Agreeableness or Friendliness and Conscientiousness or Responsibility) are both necessary and sufficient to account for consistent behavioral, emotional and cognitive patterns in non-clinical samples, implies that other preference-based or stylistic constructs, such as learning approaches, may simply reflect broad individual differences in the Big Five (Duff, Boyle, Dunleavy, & Ferguson, 2004; Furnham, 1992, 2008; Jackson & Lawty-Jones, 1996).

On the other hand, there is little consensus on the structure of learning approaches, with different researchers opting for different instruments and taxonomies. For instance, most UK-based research is based on the Revised Approaches to Studying Inventory (RASI) (Backhaus & Liff, 2007; Duff, 1997; Duff et al., 2004; Richardson, 2003; Sadler-Smith & Tsang, 1998). In continental Europe, Vermunt's Inventory of Learning Styles (ISL) (Loyens, Rikers, & Schmidt, 2008;

Rozendaal, Minnaert, & Boekaerts, 2005; Vermunt & Verloop, 2000; Vermunt & Vermetten, 2004) is the dominant measure, though learning "styles" have sometimes been distinguished from "approaches" (Murray-Harvey, 1994). In the Far East (Zhang & Sternberg, 2000, 2001), Bigg's measure, which has also been used with several UK samples, is often employed, particularly in relation to personality traits (see below, method section and Tables 1 and 2).

Although learning approaches are seen as much more contextual than personality traits (Watkins, 1998), in recent years researchers have attempted to assess to what degree measures of learning approaches and personality traits are assessing unrelated, related, similar, or the same constructs, a question that can be justified for several reasons. First and foremost, an examination of the psychometric overlap between these two measures may highlight the conceptual similarities between personality and learning approaches (Chamorro-Premuzic & Furnham, 2005; Furnham, 2008; Zhang, 2003); these have a number of practical and theoretical implications as they may help researchers and practitioners to compare the results of different investigations (using personality or learning approaches measures). Second, personality traits have been conceptualized as less malleable than learning approaches (Furnham, 2008; Jackson & Lawty-Jones, 1996; Pedersen, Harris, Plomin, McClearn, & Nesselroade, in press), and interventions aimed at influencing students' learning approaches would benefit from knowing to what extent stable dispositions may "compete" with situational factors as determinants of learning approaches. Third, researchers or practitioners wishing to predict various educational outcomes, such as academic performance, vocational interests, or test anxiety, would benefit from knowing to

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what degree learning approaches and personality traits overlap (Chamorro-Premuzic & Furnham, 2005). For example, if the two set of predictors are only marginally inter-correlated they may explain more unique variance in the outcome variable than if they overlap substantially.

To this end, the current study set out to compare a well-known measure of learning approaches, the Study Process Questionnaire (SPQ; Biggs, 1987, see Table 1 for a description of each factor), with one of the most widely-used measures of the Big Five personality traits, the Neuroticism–Extraversion–Openness Five-Factor Inventory (Costa & McCrae, 1992). As noted above, the SPQ is just one measure of learning approaches and there are competing taxonomies and instruments, as well as revisions of the SPQ. It has also been noted that the SPQ, as a self-report, assesses students' perceptions or preferred learning approaches but not necessarily the approaches they actually adopt (Veenman, Prins, & Verheij, 2003). However, past research on personality and learning approaches has used Biggs' measure more than other measures of learning approaches.

1. Approaches to learning and the Big Five

Table 2 summarizes the results of the main studies on the relationship between the Big Five and learning approaches. As shown, correlations have been rather inconsistent, though there have also been a number of relatively consistent positive associations: Neuroticism with Surface learning, Extraversion and Conscientiousness with Deep and Achieving/Strategic learning, and Openness with Deep learning. Inconsistencies may partly be attributed to the small and homogenous samples, as well as the different inventories used. Furthermore, most studies only reported bivariate correlations, which are insensitive to third order variables and the overlap among different predictors or outcomes. Duff et al. (2004) are an exception as they tested a structural equation model (SEM), but their sample was small. On the other hand, Busato, Prins, Elshout, and Hamaker (1999) did examine a large sample but they looked at different learning styles and did not conduct SEM. Indeed, our literature review identified only a single study (Shokri, Kadivar, Farzad, & Sangari, 2007) that simultaneously examined, via SEM, the combined effects of the Big Five on learning approaches in a relatively large sample, though the focus of that investigation was to assess the extent to which learning approaches mediate the effects of the Big Five on academic achievement (see also Chamorro-Premuzic, & Furnham, 2008).

Likewise, previous studies yielded inconsistent findings on the extent to which the combined personality traits and learning approach factors overlap, with some studies (Chamorro-Premuzic, Furnham, & Lewis, 2007; Zhang, 2003) concluding that learning approaches and personality traits are related, but distinct, constructs (about 25% overlap), and others (e.g.,) reporting a substantial overlap

Table 1
Motives and strategies in approaches to learning and studying.

Approach	Motive	Strategy
Surface	Surface motive is to meet requirements minimally: a balancing act between failing and working more than is necessary.	Surface strategy is to limit target to bare essentials and reproduce them through rote learning.
Deep	Deep motive is intrinsic interest in what is being learned; to develop competence in particular academic subjects.	Deep strategy is to discover meaning by reading widely, inter-relating with previous relevant knowledge, etc.
Achieving/ Strategic	Achieving motive is to enhance ego and self-esteem through competition; to obtain the highest grades, whether or not material is interesting.	Achieving/Strategic strategy is to organise one's time and working space; to follow up all suggested readings, schedule time, behave as 'model student'.

Note. Based on Biggs (1987, p. 3).

Table 2
Summary of past correlations between Big Five traits and learning approaches.

	Surface	Deep	Strategic
Neuroticism	+++++++	−−−−−	−−/+
Busato et al. (1999)		−	
Zhang (2003)	++	−	−
Duff et al. (2004)	++	−	−
Chamorro-Premuzic et al. (2007)	++	−−	
Furnham et al. (2007)	+		+
Shokri et al. (2007)	+		
Chamorro-Premuzic and Furnham (2008)			
Extraversion	+	+++++	+++++
Busato et al. (1999)			+
Zhang (2003)		+	+
Duff et al. (2004)		+	++
Chamorro-Premuzic et al. (2007)		+	+
Furnham et al. (2007)	+	+	
Shokri et al. (2007)	+		
Chamorro-Premuzic and Furnham (2008)		+	
Openness	−−−−−	+++++++++++++	+
Busato et al. (1999)		++	
Zhang (2003)	−	++	+
Duff et al. (2004)		++	
Chamorro-Premuzic et al. (2007)	−−	++	
Furnham et al. (2007)	−−	++	
Shokri et al. (2007)	−	++	
Chamorro-Premuzic and Furnham (2008)		+	
Agreeableness	−−	+++/−	+++/−−
Busato et al. (1999)			+
Zhang (2003)	−		−
Duff et al. (2004)		−	+
Chamorro-Premuzic et al. (2007)	−	++	+/−
Furnham et al. (2007)			
Shokri et al. (2007)		+	
Chamorro-Premuzic and Furnham (2008)			
Conscientiousness	+/−−	+++++++	++++++
Busato et al. (1999)			+
Zhang (2003)	−	++	++
Duff et al. (2004)		+	
Chamorro-Premuzic et al. (2007)		++	+
Furnham et al. (2007)	+	+	++
Shokri et al. (2007)	−	++	
Chamorro-Premuzic and Furnham (2008)			

Note. Learning approach collapse motives and strategy; + positive significant correlation from .1 to .3; ++ from .3 to .5; +++ >.5; ditto for − but negative. *N*s: Busato 870; Zhang 420, Duff 146; Furnham 430; Shokri 419; Chamorro-Premuzic (2007), Chamorro-Premuzic, & Furnham (2008) 221, 158. Duff values based on Duff et al.'s (2004) erratum. In Busato Deep = meaning and Strategic = application directed. Duff measured approaches by RASI (Duff, 1997) and personality by 16PF (Cattell, Eber, & Tatsuoka, 1970). Other studies used Costa and McCrae (1992) NEO and Biggs' (1992) SPQ.

(about 45%). That said, the strength of the associations shown in Table 2 suggests that most of this overlap would be accounted for by the Openness–Deep learning approach relationship.

Overcoming the above limitations, the current study sets out to assess the extent to which learning approaches and personality traits are related by administering two emblematic measures of these constructs to a large and relatively heterogeneous sample of undergraduate students and applying SEM to confirm previous findings. In particular, based on the patterns observed in Table 2, positive effects[1]

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[1] The terms "effect/s" and "affected" are used primarily to denote that one variable or set of variables significantly *predicts* another; hence no causation is implied, though in line with the literature discussed personality traits are treated as exogenous as they are seen as less malleable and situational than learning approaches.