



# The relationship between learning and study strategies and big five personality traits among junior university student teachers



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## ABSTRACT

The present study examined the predictive association between big five personality traits and learning and study strategies in a sample of 521 Greek University junior student teachers, after thoroughly assessing the psychometric properties of the second edition of the Learning and Study Strategies Inventory (LASSI). Confirmatory factor analyses indicated that the factorial structure of the Greek translation of the scale did not reflect the three components of strategic learning identified by the scale developers, but was in line with evidence from psychometric studies of LASSI's first edition. Regression analyses revealed that high Extraversion and low Neuroticism scores predicted participants' use of learning and study strategies, while Conscientiousness, Openness to Experience, and Agreeableness presented mixed results. The results pose the need to take into consideration university students' personality traits for the implementation of more individualized educational interventions.

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## 1. Introduction

A significant body of educational research has investigated the predictive factors of academic success in college (e.g., Robbins et al., 2004). Most of the times, entry measures, such as high school grade point average and performance on standardized tests (e.g., SAT), are the major predictive factors used by educators, with current educational approaches, however, suggesting that these measures alone might be inadequate (Robbins et al., 2004). Recent research findings have showed that the use of learning and study strategies constitutes an antecedent factor of college students' academic performance (Yip, 2007), while a poor repertoire of study strategies (Proctor, Prevatt, Adams, Hurst, & Petscher, 2006) can lead to academic failure during the first year of studies (Tait & Entwistle, 1996). Whether these strategies however, are a “learnable” characteristic or a characteristic that could be attributed to pre-existing individual differences (i.e. personality) has not been systematically explored.

Learning strategies (e.g., motivation, time management, concentration) refer to “any thoughts, behaviors, beliefs, or emotions that facilitate the acquisition, understanding, or later transfer of new knowledge and skills” (Weinstein, Husman, & Dierking, 2000, p. 727). The application and combination of various learning and study strategies can have a pivotal role on college students' learning and academic performance (Petersen, Lavelle, & Guarino, 2006; Yip, 2007). Robbins

et al. (2004) for example, have found that the use of study strategies significantly predicted post-secondary students' academic competence, and to a greater extent their retention levels. The ultimate goal of educational researchers is to identify those students who experience academic difficulties and guide them on how to use various learning strategies or assist them in improving the existing ones, in order to substantially increase their academic progress (Weinstein & Palmer, 2002).

Understanding how individuals learn is a central issue among educators (Cassidy, 2004), with empirical literature suggesting that enduring characteristics, such as personality traits, brought by the students to the learning situation, can influence their learning outcomes (Nijhuis, Segers, & Gijssels, 2007). The examination of students' personality has been characterized as a cornerstone for the understanding of the individual differences in learning (Geisler-Brenstein, Schmeck, & Hetherington, 1996). Regarding the association between student personality and learning and study strategies, Entwistle and McCune (2004) claimed that students with different personalities are likely to employ different study strategies. In line with this, Heinström (2000) has argued that student personality traits can promote or hinder student motivation and learning strategies. In an effort to explain the link between personality and learning strategies, Heinström (2000) suggested that students' personality traits are expressed in their learning styles, which refer to the manner with which individuals negotiate different learning tasks (Cassidy, 2004). Student learning styles, in turn, are reflected in student learning strategies, which finally lead to specific learning outcomes. Furthermore, the study by O'Connor and Paunonen (2007) has lent support to the idea that there is a consistency in the learning strategies used by college students, which partially stems

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from habitual patterns of behaviors implied by personality trait theory. Finally, Zhang (2003) has also provided empirical evidence in favor of the contributory role of personality on college students' learning approaches (i.e. students' preferred strategies and motives; Chamorro-Premuzic & Furnham, 2009). However, to the best of our knowledge, only a limited number of studies have investigated the link between college students' personality traits and a wide range of learning and study strategies.

To facilitate those researchers who study college students' learning strategies, several measuring instruments have been developed (e.g., Flowers, Bridges, & Moore, 2012). One of these, the Learning and Study Strategies Inventory (LASSI), was initially released in 1987 (Weinstein, Schulte, & Palmer, 1987) and was revised in 2002, in an attempt to improve its psychometric characteristics and embody up to date developments in psychological research and educational practice (Weinstein & Palmer, 2002). The second edition of the LASSI is a 10-scale, 80-item assessment of students' awareness about and use of learning and study strategies related to skill, will, and self-regulation components of strategic learning (Weinstein & Palmer, 2002). However, although the first edition has been widely used (Cano, 2006) and has undergone thorough psychometric evaluation (Cano, 2006; Olausen & Bråten, 1998; Olejnik & Nist, 1992), much less is known about the psychometric properties of the second edition, whereas the only existing study (Prevatt, Petscher, Proctor, Hurst, & Adams, 2006) reports inconclusive evidence on the scale's factorial structure, suggesting further investigation.

### 1.1. Personality and learning strategies among university students

Although intelligence may be considered as the strongest predictor of student learning outcomes, it has been evidenced that student inherent characteristics (i.e. personality), are also responsible for individual differences in learning (O'Connor & Paunonen, 2007). As Furnham and Chamorro-Premuzic (2004, p. 944) have rightly stated, "intellectual ability refers to what a person can do, whereas personality traits may provide information on what a person will do". One of the most prominent and comprehensive models assessing personality is the Five Factor Model developed by McCrae and Costa (1987), capturing personality in five biologically predisposed dimensions: Neuroticism, Extraversion, Conscientiousness, Agreeableness, and Openness to Experience (McCrae, Jang, Livesley, Riemann, & Angleitner, 2001). The association between big five personality traits and college students' learning approaches and strategies has been explored in many studies (e.g., Chamorro-Premuzic & Furnham, 2009; Nijhuis et al., 2007; Swanberg & Martinsen, 2010), but with a limited repertoire of learning strategies.

Among the big five personality traits, Conscientiousness has been consistently associated with college students' learning and academic success (O'Connor & Paunonen, 2007; Swanberg & Martinsen, 2010). Conscientious students are characterized by self-discipline, hard-working attitude, persistence, goal orientation, and concentration (Bidjerano & Dai, 2007), characteristics that lead them to employ a systematic way of studying and a deep-achieving approach in learning (Chamorro-Premuzic, Furnham, & Lewis, 2007; Zhang, 2003). They tend to use self-regulation strategies in learning, such as time, effort, and studying environment management, and are more likely to relate new information with prior knowledge in order to achieve the desirable learning and academic outcomes (Bidjerano & Dai, 2007).

Similar to Conscientiousness, Openness to Experience is also a precursor of learning strategies which promote deep learning (Chamorro-Premuzic et al., 2007). Due to their intellectual curiosity, imagination, open-mindedness, and creativity (Chamorro-Premuzic et al., 2007), Open to Experiences college students are often intrinsically motivated about learning (Komarraju, Karau, & Schmeck, 2009), and have been found to employ effective information processing learning strategies, such as structuring new knowledge in meaningful categories and

relating them to their personal experiences (Komarraju, Karau, Schmeck, & Avdic, 2011).

Contrary to the positive influence of Conscientiousness and Openness to Experience on college students' learning, Neuroticism seems to work as an inhibitor (Komarraju et al., 2011). Students with neurotic personality characteristics show elevated anxiety and low self-confidence, which hinder them from being fully engaged in the learning process (Chamorro-Premuzic et al., 2007). They are usually afraid of failure, and in an effort to regulate their feelings of stress they tend to emphasize on reproducing the crucial components of the learning material than on its deep understanding (Biggs, 1988). However, although they have been found to be extrinsically motivated about academic excellence (Komarraju & Karau, 2005), they usually underperform academically (Chamorro-Premuzic & Furnham, 2003), suggesting that despite their substantial efforts to excel, their high levels of anxiety and the lack of effective learning strategies, impede them from achieving their goals, and as a result may increase their anxiety.

Extraversion has been extensively linked to academic success motivation and to the use of deep learning strategies, such as elaborative information processing (Chamorro-Premuzic et al., 2007). Extraverted college students may perceive studying as a means of getting hold of a degree or finding a well-paid job, without being intrinsically motivated for learning (Komarraju et al., 2009). They also tend to employ a strategic approach to learning emphasizing on the organization and the use of study skills (Duff, Boyle, Dunleavy, & Ferguson, 2004). However, Extraversion has been found to have a negative effect on college students' academic performance, due to the great emphasis they put on social interactions and activities (O'Connor & Paunonen, 2007). Komarraju and Karau (2005) showed that Extraversion was associated both with an engagement and an avoidance attitude towards learning. Thus, although extraverted students may use various learning strategies they are likely to be easily distracted when they perceive studying as meaningless to them.

Finally, empirical research on the link between Agreeableness and college students' use of learning strategies has provided ambiguous findings (Chamorro-Premuzic et al., 2007) rendering safe conclusions rather perplexing. However, since agreeable students are characterized by friendliness, trustworthiness, and cooperativeness (Komarraju et al., 2011), it could be assumed that they may prefer group work, and be willing to ask for help whenever they need it.

### 1.2. A review of the studies on LASSI's factorial structure

The LASSI is both diagnostic and prescriptive self-report scale assessing college students' thoughts, behaviors, and attitudes associated with strategic learning (Weinstein & Palmer, 2002), and providing educators with a diagnosis of students' learning strengths and weaknesses, thus contributing to the implementation of targeted educational interventions. The original LASSI had 77 items grouped into 10 subscales: Anxiety, Attitude, Concentration, Information Processing, Motivation, Selecting Main Ideas, Self-testing, Study Aids, Test-taking Strategies, and Time Management (Weinstein et al., 1987). The psychometric studies on the latent factorial-structure of the LASSI's first edition revealed an underlying second-order factor structure and suggested the revision of the scale (Olausen & Bråten, 1998; Olejnik & Nist, 1992).

The first study that proposed a correlated second-order factor structure for the LASSI was conducted by Olejnik and Nist (1992). Using two independent samples of U.S. college students, the authors examined whether the LASSI's ten subscales would reflect the three constructs of Rohwer and Thomas's (1987) learning model (i.e. selective allocation activities, processing activities, and cognitive monitoring activities). A series of exploratory and confirmatory factor analyses showed an underlying three-factor structure of Effort-related Activities, Goal Orientation, and Cognitive Activities. Effort-related Activities consisted of Attitude, Time Management, Motivation, and Concentration subscales, while Attitude, Information Processing, Study Aids, and Self-

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