



# The Big Five personality traits, goal orientations, and academic achievement<sup>☆</sup>



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## ARTICLE INFO

### Article history:

Received 25 October 2015

Received in revised form 23 January 2017

Accepted 28 January 2017

### Keywords:

Self-regulated learning

Personality traits

Goal orientations

Academic achievement

Mediation analysis

## ABSTRACT

In the past twenty years, educational researchers have intensely focused their interest on numerous internal and external factors that contribute to a students' academic achievement. In particular, some research has explored the relationship between students' motivational beliefs (e.g. self-efficacy, control perceptions, learning goal orientations) and their academic achievement, while others have investigated the role of students' personality traits in that achievement. However, not much research has examined the relationship between the Big Five traits, academic motivation, and academic achievement within the same study (Komarraju, Karau, & Schmeck, 2009). Therefore, the purpose of this study was to examine whether achievement goal orientations mediate the relationship between personality traits (Extraversion, Agreeableness, Conscientiousness, Emotional Stability and Intellect) and academic achievement.

The participants were 501 (160 boys and 341 girls;  $M_{age} = 16.19$ ) high school students in Croatia. They answered questions about their final mid-term grade in chemistry (the Croatian academic grade scale ranges from 1-fail to 5-excellent) and completed two questionnaires: The IPIP Big-Five factor markers (Goldberg, 1999) and the Achievement Goals Questionnaire (Rovan & Jelić, 2010).

The mediation analysis (a bootstrapping method) revealed that learning approach, performance-approach and work-avoidance goal orientations fully mediate the relationship between students' personality traits and their academic achievement, but only for Conscientiousness.

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## 1. Introduction

In the past twenty years, educational researchers have intensely focused their interest on numerous internal and external factors that contribute to a students' academic achievement. In particular, some research has explored the relationship between students' motivational beliefs (e.g. self-efficacy, control perceptions, learning goal orientations) and their academic achievement, while others have investigated the role of students' personality traits in that achievement. As Komarraju, Karau, and Schmeck (2009) emphasize, although previous research reveals associations between various personality traits and some aspects of academic motivation and achievement, not much research has examined the relationship between the Big Five traits, academic motivation, and academic achievement within the same study.

Prior research studies on the relationships between personality traits and academic achievement provide some inconsistent findings (e.g. about the contribution of different personality traits to academic

achievement) and have not explained the possible mechanism which is responsible for these relationships. It seems that one of the new theoretical models could provide possible hypothesis for such explanation. Precisely, new directions in educational psychology emphasize the role of self-regulated learning as a crucial determinant of effective learning. According to the social cognitive view, the process of self-regulation represents a reciprocal interaction of personal factors, environmental variables and behaviours. But, within this theoretical framework, research that links students' personality traits with different components of self-regulated learning is still lacking. Correspondingly, although self-regulated learning theory assumes that goal orientations (as a motivational component) are a function of both individual differences and contextual factors, very few research have investigated the relationship between personality traits and goal orientations. Moreover, on the basis of the self-regulated learning theory, it could be presumed that the relationship between personality and academic achievement is mediated by motivational components of self-regulated learning (such as goal orientations). Given the above, the aim of this study was to investigate the relationship between students' personality traits, their goal orientations (motivational components of self-regulated learning) and academic achievement with emphasis on the possible mediator role of goal orientations.

<sup>☆</sup> A part of this study was orally presented at the 6th European Conference on Personality (ECP16) (Trieste, Italy, July 10–14, 2012.)

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### 1.1. Self-regulated learning

Paris and Paris (2001) stated that self-regulated learning emerged as a construct that comprised various aspects of academic learning and provided more holistic views of the skills, knowledge, and motivation that students acquire. Self-regulated learning refers to learning which results from students' self-generated thoughts and behaviours systematically oriented toward the attainment of their learning goals (Schunk, 2001). Although recent models of self-regulated learning emphasize the students' active metacognitive, motivational and behavioural participation in their own learning process (Zimmerman, 2001), different models emphasize somewhat different aspects of self-regulated learning.

Zimmerman's (2000, 2001) three-phase model of self-regulated learning distinguishes forethought, performance and self-reflection phases. In the forethought phase, task analysis, including goal setting and strategic planning, has a crucial role. Because of the anticipatory nature of this phase, task analysis depends on a number of key sources of motivation, such as goal orientations, interest, task value, and self-efficacy or outcome expectations. In the performance phase, self-control and self-observation are the main processes. Self-control includes a range of task-specific strategies and general strategies, while two basic forms of self-observation are metacognitive monitoring and self-recording. The self-reflection phase consists of self-judgments (self-evaluation and causal attributions) and self-reactions (self-satisfaction and adaptive/defensive decisions about the learner's willingness to engage in further cycles of learning) (Zimmerman & Moylan, 2009). The effect that the self-reflection phase has on the subsequent forethought phase is crucial for the cyclical nature of self-regulated learning processes (Zimmerman, 2001).

As already mentioned, under the social cognitive framework the process of self-regulation represents a reciprocal interaction of personal factors, environmental variables and behaviours. In this framework, one of the unanswered questions about self-regulated learning concerns the extent to which self-regulated learning could be recognised as a learnable characteristic or as a characteristic which reflects a range of stable individual differences, including personality (Bidjerano & Dai, 2007). Research into the relationship between self-regulated learning and individual personality traits is still rare (probably because of the social-contextual and developmental foundations of self-regulated learning). Bidjerano and Dai (2007) suggested that further research should investigate how personality traits predispose individuals to employ self-regulated learning. Additionally, further research must take into account the possibility that a particular personality trait could have different roles in different phases of self-regulated learning (e.g. Conscientiousness could be associated with learning goal orientations in the forethought phase; with deep learning strategies in the performance phase; and with internal causal attributions in the self-reflection phase). Following these suggestions, we decided to validate whether learner's personality traits are associated with one of the motivational components of self-regulated learning, that is, with goal orientations (dominantly linked with the forethought phase). In addition, on the basis of the self-regulated theory (Zimmerman, 2001) and previous research (McCabe, Van Yperen, Elliot, & Verbraak, 2013) we assumed that personality is causally prior to goal orientations and academic achievement (personality traits predispose students to develop different goal orientations and consequently to attain different academic achievement) and that goal orientations as motivational beliefs are causally prior to academic achievement. Therefore, we also tried to investigate whether goal orientations such as learners' motivational beliefs mediate relationships between their personality traits and academic achievement.

### 1.2. Personality traits and academic achievement

The Big Five personality traits model (Extraversion, Agreeableness, Conscientiousness, Emotional Stability/Neuroticism and Openness/

Intellect) is the most commonly used taxonomy of personality traits in psychology, but as DeYoung, Quilty, Peterson, and Gray (2013) pointed out it was developed empirically rather than theoretically, that is, it is based on patterns of correlations between personality traits descriptors. Therefore, after the identification of five factors, the interpretation and labelling of these factors sometimes caused controversy. One such controversy is a debate about the label of the fifth trait: Openness to Experience vs. Intellect. As Shiner and DeYoung (2013) concluded, this debate has been mainly resolved by the observation that Openness and Intellect describe different but equally central aspects of a broad factor which reflects a tendency toward cognitive exploration (Openness reflects perceptual and aesthetic interests, while Intellect reflects intellectual interests). In this study, the term Intellect will be used as the label for this personality trait considering that we applied Goldberg's (1999) questionnaire which labelled this trait as Intellect.

The Big Five personality traits are related to an extensive range of behaviours and important life outcomes including learning and academic achievement. A meta-analysis made by O and Paunonen (2007) has revealed that the overall correlation between Conscientiousness and academic achievement across the studies was 0.22. Since Conscientious individuals are predisposed to being exacting, well-organized, diligent, responsible, disciplined and focused it is not surprising that Conscientiousness has been related to academic achievement regardless of how this achievement is operationalized (Chamorro-Premuzic & Furnham, 2003; Conrad, 2006; O & Paunonen, 2007; Wagerman & Funder, 2007; Nofle & Robins, 2007; Hakimi, Hejazi, & Lavasani, 2011; Steinmayr, Bipp, & Spinath, 2011). Among other personality traits, Intellect was sometimes positively associated with academic achievement, while Extraversion was also sometimes negatively related to academic achievement (O & Paunonen, 2007). A very few significant positive correlations were found for Agreeableness (O & Paunonen, 2007) and negative for Emotional Stability (Chamorro-Premuzic & Furnham, 2003). According to Bidjerano and Dai (2007) positive associations of Conscientiousness, Intellect and Agreeableness with components of self-regulated learning (e.g. persistence, methodical and analytical learning, deep approach to learning, elaborative learning, etc.) have more theoretical and empirical support, while the associations of Extraversion and Emotional Stability with these components are more complex. Altogether, most of the previous research indicated that Conscientiousness and Agreeableness were positively associated with different aspects of self-regulated learning and academic achievement (Bidjerano & Dai, 2007; Fayyaz & Kamal, 2011; Komaraju et al., 2009; Larsen & Buss, 2008; Poropat, 2009; Sorić, Penezić, & Burić, 2013; McCabe et al., 2013).

### 1.3. Goal orientations and academic achievement

Achievement goal orientation has been described as integrated patterns of beliefs that help learners approach, engage in and respond to achievement-related situations (Elliot & McGregor, 2001). Researchers initially proposed a dichotomous framework that included mastery (learning) goal orientations (where learners report an intrinsic interest in gaining knowledge) and performance goal orientations (where learners report a motivational focus on grades and demonstrating their abilities to others) (Fryer & Elliot, 2008; Maehr & Zusho, 2009; Pintrich, 2000a, 2000b; Pintrich, 2003; Wosnitza & Volet, 2012). Due to earlier research, mastery goals have been associated with adaptive learning outcomes, while performance goals have been associated with maladaptive learning outcomes (Boekaerts, Smit, & Busing, 2012; Carr, 2012; Maehr & Zusho, 2009; Mattern, 2005; Wosnitza & Volet, 2012). But some recent inconsistent findings about the consequences of these orientations, especially of performance goal orientations, have led theoreticians to improve on the initial dichotomous framework. Recent theoretical advancements by Elliot and McGregor (2001) proposed a four-factor model by applying the approach-avoidance distinction to the mastery and the performance goal orientations. This model consists of mastery-approach (focus on the development of understanding and

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