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4. NON-COGNITIVE VARIABLES AND ACADEMIC ACHIEVEMENT

The Role of General and Academic Self-Efficacy and Trait Emotional Intelligence

INTRODUCTION

Mapping the individual differences that predict academic success in higher education is key within educational and vocational settings because academic performance (AP) is an indicator of prospective success and accomplishments and opens the door for job opportunities (Strenze, 2007). In educational settings, acknowledging and assessing these differences and the roles they play on academic success can be useful (e.g., when developing personalized interventions to increase academic achievement).

Early research on the predictors of AP found that intelligence (as measured by IQ and aptitude tests), as well as previous achievement (as measured by GPA), were the strongest predictors of AP (Sinha, 1966; Touron, 1987; Rohde & Thompson, 2007; Kuncell & Hezlett, 2010). However, several lines of inquiry have suggested that, in order to attain accuracy in predicting academic achievement, a heuristic approach needs to be adopted. Empirical evidence shows that non-intellective variables such as personality traits, emotion, and motivation, may directly or indirectly predict university AP (e.g., Robbins, Lauver, Le, Davis, Langley, & Carlstrom, 2004). Some of those non-cognitive factors seem to predict AP over and above intelligence (e.g., Sanchez-Ruiz, Mavroveli, & Poullis, 2013).

The present chapter focuses on some of the non-cognitive factors mentioned above that have shown to influence in academic achievement. After reviewing the empirical evidence on the role of traditional personality traits and academic motivation, we turn our focus on self-efficacy constructs, in particular academic and emotional self-efficacy, as they relate to academic achievement.

PERSONALITY TRAITS AND AP

One of the leading psychological factors that influence AP is personality (e.g., Richardson et al., 2012). Some studies have reported that personality traits show incremental validity over other variables such as cognitive ability and gender in

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the prediction of AP (e.g., Furnham, Chamorro-Premuzic, & McDougall, 2002; Richardson et al., 2012). Researchers have primarily focused on traditional personality hierarchies, namely the Five Factor Model (FFM; McCrae & Costa, 1997).

Among the five personality dimensions, conscientiousness has been the one most consistently related to AP (see Poropat, 2009, for a review) across samples and measures (Noftle & Robins, 2007). Findings from studies (e.g., Furnham et al., 2002) and meta-analyses (Richardson et al., 2012; Trapmann, Hell, Hirn, & Schuler, 2007) indicate that university AP correlates positively with conscientiousness. Furthermore, a study among undergraduates suggests that conscientiousness is the one personality trait that predicts AP consistently across the three academic years of the university degree (Sanchez-Ruiz, Pérez-González, Fayad, Filella, & Soldevila, in progress).

An explanation for these findings lies in the association between conscientiousness and effortful strategies that are beneficial to learning in educational settings, which in turn promote AP (e.g., Corker, Oswald, & Donnellan, 2012). This is in line with research indicating that being motivated to succeed, organized and disciplined, has a beneficial impact on study habits and increases academic commitment (Komarraju et al., 2011; Poropat, 2009). In addition, the abovementioned findings can be accounted for by the relationship between conscientiousness and higher-order thinking skills, such as executive function, working memory capacity, and other neurobiological underpinnings of the prefrontal cortex (e.g., DeYoung et al., 2010). In addition, a recent study found that trait conscientiousness acts as a catalyst by enhancing the relation between intelligence and AP (Di Domenico & Fournier, 2015).

Openness to experience has also been linked to AP (e.g., Komarraju et al., 2011; Propat, 2009) and has shown to be a strong predictor of SAT verbal scores (Noftle & Robins, 2007). This trait, also referred to as "intellect", affords intellectual curiosity, which is a drive for learning and can have a positive impact on academic success. In this regard, Chamorro-Premuzic and Furnham (2008) reported that students scoring high on openness have a rich vocabulary repertoire, are open to novel ideas, and think in an abstract way, all of which support the positive relation between openness and AP. Conversely, other studies have found that openness and AP are negatively correlated, possibly due to the difficulty in following rules and meeting deadlines among high-openness scorers (Chamorro-Premuzic & Furnham, 2004; Kappe & van der Flier, 2010).

Individuals high in neuroticism (low on emotional stability) tend to be more anxious, tense, vulnerable, and focus mainly on their emotional state (Costa & McCrae, 1992). Students high on neuroticism are susceptible to higher level of stress under academic demands, such as exam performance, and distraction from their academic work, both of which can lead to poorer performance. This explanation finds support in longitudinal studies reporting a negative correlation between neuroticism, exam performance, and final-project grades (Chamorro-Premuzic &

Furnham, 2003). These findings are in line with those of other studies (e.g., Furnham & Monsen, 2009; Lounsbury, Sundstrom, Loveland, & Gibson, 2003) and meta-analyses (e.g., Trapmann et al., 2007).

There are mixed findings regarding the role of extraversion in AP. Several studies have reported a positive relation between the two constructs (e.g., Chamorro-Premuzic & Furnham, 2003; Komarraju et al., 2011). A tentative explanation for this is that extraverts might have ample energy to help them endure more academic mundane tasks than their introverted counterparts. Also, extraverts might be benefitting from social support, teamwork and networking in their academic endeavors to a greater extent than introverts might.

The relationship between AP and extraversion could be moderated by the type of assessment used. For example, Furnham et al. (2004) reported extraversion to be positively correlated with final-project but not with exam grades, suggesting that the social skills used in the interaction with the supervisor could play a role. Other studies have found a negative relationship between extraversion and AP (e.g., Furnham, Nuygards, & Chamorro-Premuzic, 2013), which might be due to extraverts diverging from academic tasks and orienting more towards socializing, thus allocating little time and energy for studying.

The personality trait resulting in the most mixed results when explored in relation with AP is agreeableness. Some findings indicate a positive relationship between agreeableness and classroom behavior (Furnham, Chamorro-Premuzic, & McDougall, 2002), but not necessarily with AP. However, meta-analyses indicate a small correlation between agreeableness and AP (e.g., Poropat, 2009).

However, extraversion, openness to experience, and agreeableness have been non-significant predictors of AP in a few studies (e.g., Poropat, 2009), which contradicts previous findings. Also, in Komarajju et al. (2011), there was no significant relation between extraversion and AP and there was a positive relation between neuroticism an AP. A possible reason for the discrepancies regarding the relation between some personality traits and AP could be the potential extraneous effect of the academic major. There are numerous studies demonstrating that personality and emotion-related traits of university students vary across academic majors (e.g., Sanchez-Ruiz, Pérez-González, & Petrides, 2010), but fewer studies focus on the differential relationship between personality traits and AP by major. One such study by Vedel, Thomsen, and Larsen (2015) found that conscientiousness, followed by openness, positively predicted AP. Extraversion negatively predicted AP among psychology students only, and openness positively predicted AP among political science students only. These findings suggest that certain traits might be important for the academic success in certain disciplines and future studies would benefit from incorporating academic major into their designs.

It is worth noting that all of the above reviewed studies used self-rated personality measures (e.g., NEO-Personality Inventory Revised, Costa, & McCrae, 1992), and so scores can be influenced by social desirability. However, a recent meta-analysis

explored the relationship between personality traits rated by close individuals such as friends or family members (referred to as other-rated as opposed to self-rated traits), and AP, with results indicating that this association has a similar direction, yet stronger, than that between self-rated personality traits and AP (Poropat, 2014). Not surprisingly, in the same meta-analysis, conscientiousness was the strongest correlate of AP followed by openness (moderate correlation). The rest of the personality traits showed weak correlations with AP. Furthermore, other-rated personality traits collectively had an incremental predictive validity on AP over and above intelligence. However, while controlling for intelligence, openness had the strongest correlation (Poropat, 2014).

In sum, conscientiousness and openness to experience have been commonly associated with AP, followed by extraversion and neuroticism (e.g., Chamorro-Premuzic & Arteche, 2008). While conscientiousness has been a consistent correlate of AP throughout a wealth of studies, there are mixed findings regarding the other four traits.

ACADEMIC MOTIVATION

Old and new findings suggest that academic motivation is a prominent non-cognitive contributor to AP (Amrai, Motlagh, Zalani, & Parhon, 2011; Daoust, Vallerand, & Blais, 1988; Vecchione, Alessandri, & Marsicano, 2014), even beyond cognitive ability (Spinath, Spinath, Harlaar, & Plomin, 2006). The construct of academic motivation is grounded in the self-determination theory (SDT: Deci, Vallerand, Pelletier, & Ryan, 1991), which distinguishes the various drives toward task engagement, and suggests that individuals have an innate tendency to express their interests, activate and develop their potentials, and overcome challenges.

According to the SDT, motivation is a continuous quality rather than a static trait. This continuum ranges from intrinsic motivation, at one end, to amotivation, at the other end. In between these two poles lies extrinsic motivation, which is also considered a continuum ranging from integrated regulation (closer to intrinsic motivation), identified regulation, introjected regulation, and external regulation (closer to amotivation). Self-determination can mainly be achieved through exercising intrinsic motivation, which is engaging in an activity driven by the genuine interest in it rather than by external forces or rewards (e.g., extrinsic motivation), is the stepping stone to reaching high self-determination.

The self-determination theory identifies three basic psychological needs: (1) *Competence,* which refers to the need to gain positive feedback on performance and for perceived capability to master a task; (2) *Autonomy*, which refers to the need of one's course of action to be driven by one's own initiative and interest, and a need to be self-regulated; (3) *Relatedness,* which refers to the need for close relations and interaction with other people. There is evidence that the fulfillment of these basic needs in students promotes self-regulation for learning, AP, and ultimately, well-being (Niemiec & Ryan, 2009).

This approach has numerous applications in educational settings. Intrinsic motivation is seen as conducive to learning and performance. It is sustained by the satisfaction of two of the basic needs mentioned above (Competence and Autonomy; Niemiec & Ryan, 2009). For example, students may feel competent when they have a sense of ability to meet the challenges of academic work; and autonomous when they study willingly and not out of obligation, which might contribute to better performance. Thus, self-determination is a result of interest in and valuing of education, which are, in turn, predictive of AP (Deci et al., 1991).

On the one hand, some types of extrinsic motivation can hinder AP. External regulation (which is closest to amotivation) favors behaviors that are aiming solely at obtaining a reward (e.g., grades, or praise) or to avoid a punishment (e.g., failing, being ridiculed). Once these conditions are removed, the motivation diminishes, which might actually hinder AP. In introjected regulation, behaviors are performed in order to fulfill internal contingencies, such as self-aggrandizement. For example, a student with this kind of motivation might study to feel pride or to avoid guilt-feeling.

On the other hand, some types of extrinsic motivation can facilitate AP. Identified regulation and integrated regulation are at the most autonomous end of the spectrum, closest to intrinsic motivation. Identified regulation refers to motivation to perform behaviors because of their significance and value. In this case, students may study a subject because it is important for their future career. In integrated regulation, identified regulations are combined with other aspects of the self. For example, students may be motivated to study psychology as doing so will enable them to help others in need, which might be in accord to their personal values, interests, and traits, such as empathy. However, these influences of different types of extrinsic motivation on AP will need to be further explored in future studies as they remain under-researched.

The self-determination approach is well-supported by research, and in particular, the impact of intrinsic motivation. For example, a recent 40-year meta-analysis indicates that intrinsic motivation is a moderate-strong predictor of performance in educational and work domains (Cerasoli, Nicklin, & Ford, 2014). Additionally, intrinsic motivation positively influences the learning process and the quality of learning, while lack of motivation has been related to poor psychosocial adjustment to university life (Baker, 2004), which can, in turn, hinder AP.

SELF-EFFICACY

Another aspect of personality that is widely studied in educational psychology is perceived self-efficacy, derived from the social-cognitive theory (Bandura, 1977). Self-efficacy is closely linked to the competence domain of the SDT theory, and has been conceptualized as a compilation of self-perceptions of capabilities, skills, and competencies which function in different domains, and exert control over one's own environment and level of functioning (Bandura, 1977). The construct has been

applied in different domains of functioning including academic, emotional, and social, and is commonly measured by self-report scales. According to the theoretical framework of self-efficacy, expectancies of personal efficacy determine coping behavior, optimism or pessimism, extent of efforts exerted, and perseverance in the face of obstacles and adversities (Bandura, 1995). Self-efficacy has empirically demonstrated to influence a person's level of motivation, perseverance, adaptation, subjective well-being, and vulnerability to depression and stress (Bandura, 1997; Strobel, Tumasjan, & Spörrle, 2011).

Academic Self-Efficacy

For decades, research on perceived self-efficacy has been widely applied in educational settings. It is evidenced from early research that students who score high on self-efficacy work harder, participate and persevere more, and have less negative responses to stressors than their low self-efficacy counterparts (Bandura, 1997; Zimmerman, 2000). One of the most commonly used self-efficacy construct in educational settings is academic self-efficacy, which is defined as self-perceptions of capabilities to manage academic work and achieve, and there is solid evidence that it predicts academic outcomes (Bandura, Barbaranelli, Caprara, & Pastorelli, 1996). Studies and meta-analyses indicate a well-established positive relationship between academic self-efficacy and AP, over and above other predictors, such as cognitive ability and high school AP (Komarraju & Nadler, 2013; Lee, Lee, & Bong, 2014; Multon, Brown, & Lent, 1991; Richardson et al., 2012). Additionally, Khan (2013) studied the association between academic self-efficacy, coping strategies and AP. In particular, academic self-efficacy positively correlated with positive reinterpretation, growth, acceptance, and planning, all of which upsurge AP, and negatively with maladaptive strategies to cope with stress (e.g., substance abuse). In addition, Chemers, Hu, and Garcia (2001) longitudinally explored the relationship between academic self-efficacy and AP, commitment to remain in university, academic expectations, and perceived coping abilities in university students. Results indicate that academic self-efficacy has both direct and indirect effects on AP.

The Academic Self-efficacy Scale (ASE: Mcllroy et al., 2000) is one of the most commonly used measures of self-efficacy in educational settings. The ASE has been used in several studies exploring the relation between academic self-efficacy and AP, while showing a strong reliability score of 0.83 (Lawler, 2012).

Emotional Self-Efficacy (Trait Emotional Intelligence)

Emotion-related personality traits, such as psychological well-being, have been found to contribute to AP (e.g., Vaez & Laflamme, 2008), through the willingness to exert effort towards accomplishing academic tasks and the positive affect component (Ayyash-Abdo & Sanchez-Ruiz, 2012). However few research has systematically

studied the role of emotion-related traits, not covered by existing personality trait taxonomies, in AP. One exception is trait emotional intelligence (*trait EI* or *emotional self-efficacy*; Petrides, 2011), which is conceptualized as a constellation of emotion-related self-perceptions located at the lower level of hierarchical personality structures, and assessed through typical-performance instruments (Petrides, 2011). Trait EI can also be understood as a collection of affective dispositions linked to well-being that are useful in social interactions and thus considered adaptive (Pérez-González & Sánchez-Ruiz, 2014).

Trait EI is to be distinguished from ability EI. One of the most important distinctions between the two constructs is that trait EI provides a more comprehensive operationalization of the affect-related aspects of personality than traditional personality models (Pérez-González & Sanchez-Ruiz, 2014) and lies wholly outside the taxonomy of human cognitive ability (Carroll, 1993). In contrast, ability EI seeks to measure emotionality through maximum performance tests (Petrides, Furnham, & Mavroveli, 2007), which has shown to be problematic because of the subjective nature of emotion (Brody, 2004).

The construct of trait EI originated and developed within the field of individual differences in emotionality (e.g., Matthews, Deary, & Whiteman, 2009), while ability EI belongs to the cognitive dimension. Thus, the two constructs represent two different lines of research and distinct operationalizations (evidence of this can be found in the low correlations reported between the two—Petrides, Furnham, & Mavroveli, 2007). For more information on the ability vs. trait conceptualizations of trait EI, please see Petrides, 2011.

Trait EI plays a role in various variables in educational contexts, especially AP. The advantageous effect of trait EI has been shown in a recent meta-analysis (Perera & DiGiacomo, 2013), suggesting that the construct's influences AP moderately, and its effect depends on sample characteristics (see Mavroveli & Sanchez-Ruiz, 2011 for a comprehensive review). However, several studies have explored the relation between trait EI and AP among university students, reporting a significant association (Parker et al., 2004). In addition, trait EI has shown incremental validity over and above cognitive abilities and the Big Five personality traits in higher education (e.g., Sanchez-Ruiz et al., 2013).

Some research, however, has found weak or null correlations between trait EI and academic success (e.g., Newsome & Day, 2000). Some inconsistent findings regarding the relationship between trait EI and AP might be due to such relationship being different across academic domains. In fact, trait EI differs across domains (Sanchez-Ruiz, Perez-Gonzalez, & Petrides, 2010) and appears to be more important for academic achievement in social sciences than in other disciplines (Sanchez-Ruiz et al., 2013). Thus, more research looking into different domains needs to be conducted to further elucidate the mechanisms by which trait EI operates in particular academic contexts, such as medical education (Austin et al., 2005; Chatila et al., in progress; Fallahzadeh, 2011), whereby trait EI might have an impact in the

patient-doctor relationship. Another tentative explanation for the low correlations found is that often, indirect effects seem to be more important than direct ones in a number of studies (Perera & DiGiacomo, 2015; see following section).

Trait EI has been linked to academic variables other than AP. High trait EI university students also score higher on certain measures of creative skills (Sanchez-Ruiz, Hernández-Torrano, Pérez-González, Batey, & Petrides, 2011), which are crucial for academic and work success. Regarding primary and secondary education, absenteeism, for example, has been less reported among high trait EI students than their low trait EI counterparts, and the same is true for the number of expulsions from school due to misconduct (Mavroveli, Petrides, Shove, & Whitehead, 2008). Trait EI can have a positive impact on children's peer relations at school and decrease the likelihood of disruptive and violent behavior (Santesso, Reker, Schmidt, & Segalowitz, 2006) as well as bullying (Mavroveli & Sanchez-Ruiz, 2011).

There have been some criticisms regarding certain trait EI assessment tools (see Pérez-González, Petrides, & Furnham, 2005 for a review), due to lack of robustness of their psychometric properties or because they claim to measure ability EI when they are really assessing trait EI through self-report. One of the most reliable, valid, and widely used tools to measure trait EI is the TEIQue which has shown excellent psychometric properties across samples (e.g., Freudenthaler, Neubauer, Gabler, Scherl, & Rindermann, 2008; Mikolajczak, Luminet et al., 2007; Petrides, Pérez-González et al., 2007). This questionnaire is the result of a systematic analysis of previous models of EI and covers 15 facets encompassed in four factors, namely Well-being, Self-control, Emotionality and Sociability. There are a wide variety of versions of the test (e.g., Short form, Child form, Adolescent form, etc.) and it has been translated into more than 15 languages.

INDIRECT EFFECTS

Due to the complexity and interconnected network of the effects of various cognitive and non-cognitive determinants of AP, oftentimes the relationships between the aforementioned constructs and AP is not a direct one. To delineate the mechanisms operating in such network, indirect effects need to be considered. As such, research has tried to test models of direct and indirect effects, normally through structural equational modeling (SEM) or path analysis in order to understand how specific factors mediate the relation between another non-cognitive factor and AP.

Indirect Effects of Personality and Academic Motivation on AP

Conscientiousness has shown to have an indirect effect on AP via learning approaches, such as learning strategies (Diseth, 2013). The mediation of students' learning approaches between conscientiousness and AP is not surprising since students who engage in a strategic learning approach effectively require the organization of their work in accordance with their academic demands. In addition, openness

to experience indirectly promotes AP through other learning strategies, such as deep elaborative processing and synthesis analysis (Komarraju et al., 2011). An explanation for this relationship is that students who are open to new concepts and experiences, intellectually curious, and actively process the information provided and relate it to their personal experiences, which enhances AP.

In addition, Hazrati-Viari, Rad, and Torabi (2012) found that academic motivation mediates the effect between conscientiousness and AP, and between openness to experience and AP. This further supports the idea that personality traits promote AP through predisposing students towards academic behaviors that are conducive to performance through other constructs, such as motivation and learning approaches.

Having a clear insight about academic preferences and being confident in one's skills within a particular domain can boost motivation and promote efforts when dealing with academic demands. In fact, students high on academic self-concept (i.e., beliefs, attitudes, and perception towards their skills and performance) are more intrinsically motivated, which can enhance AP (Khalaila, 2015).

General and Academic Self-Efficacy

Yusuf (2011) reported that self-efficacy has a direct effect on the students' academic motivation and tendency to engage in self-learning, which indirectly increases their AP at university. Similarly, self-efficacy had the strongest indirect effect on AP through promoting effective studying strategies, namely deep processing, and other non-cognitive variables, such as achievement goals. Such a strong indirect contribution indicates that students' belief in their academic skills might help direct their cognition towards trying to understand complex ideas using prior knowledge and making interconnections among them (Fenollar, Roman, & Cuestas, 2007).

Students with high self-efficacy tend to be also more academic motivated (Gota, 2012), which, as discussed earlier, has a positive impact on AP. Furthermore, students who believe that they are capable of achieving are better in regulating the effort exerted for academic achievement. Also, these students tend to believe that intelligence is changeable and depends on the effort placed, contrary to students with low self-efficacy, who tend to believe that intelligence is innate and resilient to change. As such, high self-efficacy students are better at controlling natural impulses, such as being distracted or giving up, across various academic demands ranging from dull to very demanding tasks. Moreover, self-efficacy is associated with efficient goal setting, which includes engaging in challenging tasks, gaining new information, and performing better at univeristy (Komarraju & Nadler, 2013).

Putwain, Sander, and Larkin (2013) found a positive indirect effect of academic self-efficacy on AP via pleasant emotion-related constructs, such as hope, enjoyment and pride. These findings imply that academic self-efficacy may impact the student's overall well-being, and that could be a drive for them to reach academic outcomes. Academic self-efficacy was directly related to parenting styles, whereby students who perceived their parents as authoritative had higher academic self-efficacy than

those who perceived their parents as non-authoritative, which, in turn, resulted in a higher AP of the former (Gota, 2012).

Trait EI and Emotion-Related Constructs

Previous studies have shown that emotional self-efficacy has an impact on academic self-efficacy, and indirectly enhances AP (Adeyemo, 2007; Hen & Goroshit, 2014), which suggests the importance of the affective component of personality in educational contexts. A study conducted by Sanchez-Ruiz (in progress) found that trait EI indirectly predicted AP in undergraduates through procrastination (negative relationship) and major satisfaction (positive relationship).

In a study conducted by Austin et al. (2005) trait EI mediated the association between gender and exam performance among medical students. Additionally, females scored higher on trait EI, which could be a potential partial explanation of previous findings (e.g. Ferguson et al. 2002) where females performed better in medical school than males. The mediation effect of trait EI between gender and AP could act as a protective factor against academic stress. More recently, Perera and DiGiacomo (2015) reported two novel two-step pathways by which trait EI indirectly contributed to AP. In the first pathway, trait EI impacts AP through the perceived social support, which subsequently increases students' positive affect, in turn, increasing AP. In the second pathway, trait EI influences AP through adaptive academic strategies, namely active coping, positive reinterpretation, and planning, which also increased the students' academic engagement. Similar research is being carried out investigating the indirect effects of trait EI on medical AP via parental support, coping skills and academic stress (e.g., Chatila. et al., in progress).

LIMITATIONS OF THE EXISTING LITERATURE

Overemphasis on Cognitive and Traditional Personality Traits

As we have mentioned, while cognitive factors play a major role in predicting AP, there are other factors, specifically non-cognitive, which are equally or more important predictors. It may be then problematic to rely extensively on cognitive factors in predicting AP in higher education settings. This is especially the case because universities criteria for student admissions have become increasingly demanding, and thus, the selected students have high scores on intelligence and aptitude tests and a restriction of range in intelligence (Johnson, 2003). The role of intelligence in AP (as measured by IQ tests), might be more prominent for particular academic majors, such as those that require logical reasoning (Sanchez-Ruiz, Mavroveli, & Poullis, 2013).

Studies on the incremental validity of non-cognitive over cognitive factors in the prediction of AP is key, but so far it has been mainly focused on traditional personality traits. It would be advisable for future research to study how specific

constructs such as general, academic and emotional self-efficacy, perfectionism and fear of failure, can predict AP over and above cognitive variables.

In sum, future research could consider the restriction of range in cognitive abilities in higher education, the potential domain-specificity of the relationship between AP and cognitive and non-cognitive factors, and the incremental validity of specific traits.

Lack of Cross-Cultural Research

Despite the existence of some studies examining predictors of AP across different ethnic groups (e.g., Duong, Badaly, Liu, Schwartz, & McCarty, 2015; Woolf, Potts, & McManus, 2011), these studies have been mainly conducted in Western cultures. Lack of cross-cultural research limits researchers' ability to understand how AP is conceptualized and assessed across different cultures and academic systems, thus inhibiting the ability to draw generalisable conclusions about the predictors of AP.

In the first systematic cross-cultural meta-analysis of its kind, Dekker and Fischer (2008) highlighted the role of culture on academic achievement goals, which have clear repercussions on AP, and the reason behind those goals across cultures. Their findings suggest that social context has a moderately significant effect on adopting academic achievement goals. For instance, individuals in cultures that value embeddedness (i.e., social cohesion) exhibited a desire for gaining social approval through demonstrating their competence and skills. Distinctively, in egalitarian cultures, individuals demonstrate high achievement motivation due to a desire to master challenging tasks (Dekker & Fischer, 2008).

Excessive Focus on GPA

The present chapter has reviewed research studies using mainly GPA scores as indicators of AP. While GPA has been widely used as a proxy for AP, it is not free from limitations. First, there is the potential problem of grade inflation, which can also occur differentially by instructor and subject (e.g., Johnson, 2003; Young, 2003), and can result in scores not truly representing academic achievement. Also, the diversity in grading systems across various institutions (e.g., percentage grading system vs. GPA) further complicates the interpretation of results (Didier, Kreiter, Buri, & Solow, 2006).

At the individual level, using university grades as the only indicator of AP has multiple disadvantages. One disadvantage lies in the high stakes status of GPA and entry exams for the academic and work opportunities of students where pressures to pass can negatively impact their performance on these exams (Karatas, Alci, & Aydin, 2013). In addition to the stress and pressure students might feel as they are determining their future, there are environmental and internal factors that can affect performance on exams that may exist occasionally or at one point in time only, such

as, time of the exam (Burns, 2004), mood (Febrilia & Warokka, 2011), and sleep quality (Gilbert & Weaver, 2010).

In tertiary and pre-tertiary education, there is very often a major interest in preparing students for particular assessments that determine promotion (e.g., SAT exams in the US, UMAT exam for medical education in Australia and New Zealand). The focus on teaching to test, therefore, greatly limits the quality of learning experiences because the primary educational focus is almost exclusively on covering the material for the specific test (Atkinson & Geiser, 2009).

Some researchers argue that standards-based assessment, which measure skills (or competences) using particular outcomes is more informative than the GPA scores, which might simply evaluate students' recollection of what is covered in a given course or curriculum (Nicholson, 2014; Stiggins, 2005). Also, outcomes of standards-based assessments, which are framed within normative standards, are more comparable across different courses and departments than GPA scores (Tam, 2014). Additionally, it is contended that standards-based assessment promotes a sense of justice among students (Tognolini & Stanley, 2007; Wilkinson, Wells, & Bushnell, 2007); given that standards are grounded in task mastery as opposed to social norms, every student who attains these competences receives good evaluations, which is not necessarily the case for university GPA.

Still, many of the abovementioned criticisms of GPA can be applied to this type of assessment, such as the influence of students' anxiety due to pressures on exam performance, and the tendency to direct great educational efforts to help students perform well on such tests. Both GPA and standard-based tests are summative assessments. Much less effort has been put into the investigation of cognitive and non-cognitive factors involved in students' individual performance on formative assessment.

Overlooking Key Components of Learning

One way we can classify the assessment of academic performance is into summative assessment (primarily focused on "summing" up what a student has learned over the course of the curriculum) and formative assessment (primarily focused on understanding and informing the process of learning; Berry & Adamson, 2011).

Overemphasis on university GPA, entry scores and standard-based assessment can promote surface approaches to learning, or learning to mainly pass exams. When the bulk of the assessment is summative, students tend to work towards obtaining good grades, so they tend to utilize surface approaches to learning (e.g., memorization and other strategies for recitation or reproduction of knowledge) and are likely to be driven by extrinsic motivation (Marton & Säljö, 1976). In this context, grades become a very limited measure of learning that focuses on the final outcome of a complex process. Thus, the non-cognitive factors influencing grades might not be the same as those influencing different aspects of the learning process.

When the assessment is formative, namely when it aims at monitoring the learning process to be able to modify the teaching and learning experiences to promote academic success, the non-cognitive factors contributing to performance can be very different, and can be used to better understand learners' approaches to learning effectively.

Watkins, Carnell, and Lodge (2007) identified four dimensions of effective learning. The first dimension is *active learning,* which refers to a cycle of Do-Review-Learn-Apply developed by Dennison and Kirk (1990). Learners first produce work that is then reviewed with feedback on how to improve it, then they are given the opportunity to incorporate this feedback as part of their work. The second dimension is *collaborative learning* where learners produce individual or group work that can only be done with the continuous input of peers. In the third dimension, learners make choices about their learning, this is otherwise referred to as *autonomous learning*. They have a say in what they learn, how they learn it and how they think would best assess their learning. Cconsequently, motivation to learn transforms from extrinsic (i.e. grades) to intrinsic (i.e. curiosity, will to improve and discover). The fourth dimension, *meta-learning*, requires that learners monitor and review how they learn. They first reflect on what helped them learn best and the barriers that made learning difficult. Second, they think of things they can do to address the barriers and, then, take action.

However, to our knowledge, the literature relating non-cognitive factors as predictors of effective learning is scarce. Some studies have identified a link between active learning strategies and AP. For instance, Fayombo (2013) found that active learning strategies (e.g., class discussion, video clips, role-playing, five-minute reflective papers, and clarification pauses) explained 22% of the variance in AP. Other studies have illustrated the role that collaborative learning plays in academic engagement and motivation through processes such as peer support and acceptance (e.g., Wentzel & Watkins, 2002). Still, approaches to effective learning and their relationships to various non-cognitive variables (e.g., personality traits, academic motivation, and self-efficacy) remain largely unexplored. Findings on how personality and emotion-related traits influence approaches to using feedback, collaborating with other and learning about one's learning could inform teachers' approaches in supporting learners to better regulate particular traits that could be hindering their learning. The following section presents some potential future directions to be undertaken by researchers.

Future directions. Future studies could focus on the impact of extraversion and the social components of trait EI on collaborative learning. In addition, the ability of making choices while learning (i.e., autonomous learning) could be related to openness to experience and intrinsic motivation. Approaches to meta-learning might be influenced by degrees of conscientiousness. In addition, the effective learning components themselves could have an impact on some non-cognitive factors. For

example, receiving continuous feedback as part of active learning could promote self-efficacy among students.

Educational Implications

In academic settings, the assessment and understanding of individual differences in noncognitive variables is essential for the planning and implementation of emotional education initiatives (Vandervoort, 2006). Education professionals and academic and career counseling practitioners, and most importantly, students, could use the findings on personality and emotion-related factors of AP to cater for students' needs and assist them with decisions and planning, as well as dealing with problems of academic engagement and satisfaction.

As for *personality*, this chapter has reviewed some literature indicating that, for example, extraverts are more likely to underperform because of the time spent socializing. In addition, neuroticism can be associated with test anxiety, which might hinder the AP. Moreover, a possible explanation to the findings on openness is that students who score high on this trait might be more intellectually curious and seek to learn new information. Furthermore, as mentioned above, those personality traits might relate to AP differently across academic disciplines. These findings can be informative for teachers when deciding on the teaching and learning strategies that are more efficient for particular students and how to enhance their motivation in the classroom.

In the case of *academic motivation*, as reviewed earlier, according to the SDT theory, intrinsic motivation can be achieved by the satisfaction of basic needs for autonomy and competence. Education professionals have an important role in promoting self-determination by using autonomy-supportive approaches when introducing learning tasks and by fostering pleasure and satisfaction at university. However, much often, educators may minimize the role of intrinsic motivation by introducing external conditions (e.g., grades, and reinforcement) to achievement and learning, which may in turn outweigh the role of extrinsic motivation, and decrease enthusiasm and genuine interest in the process of learning.

Several intervention programs have aimed to increase students motivation through various methodologies. In fact, a meta-analysis on academic motivation enhancement interventions showed the effectiveness of such interventions (Wagner & Szamoskozi, 2012). One of the successful interventions on teachers adopted a multidisciplinary approach to enhance student's motivation and interest (Bartimote-Aufflick, Walker, Smith, Sharma, Collier, & George, 2009). Another program, *Possible Selves Program*, focused on the improvement of personal and academic motivation from elementary school through post-secondary education. By focusing on ideas on what one might become in the future, this program was effective in increasing athlete university students' motivation, performance, and retention (Hock, Deshler, & Schumaker, 2006).

As opposed to the trait approach to personality, which views personality as relatively stable and fixed across the life-span, the social-cognitive theory suggests that self-efficacy is subject to enhancement and personal development through various strategies, including repeated experiences of success, receiving encouragement from others, seeing efficacious behaviour from others, and having a healthy physical state (Bandura, 1997). In fact, an experimental study investigating the effectiveness of an individual cognitive-behavioral intervention (Bresó, Schaufeli, & Salanova, 2011) found that academic self-efficacy, as well as AP and engagement increased after the intervention. This suggests that self-efficacy can be modified to benefit educational outcomes both directly, or through its effect on other variables.

While it is widely accepted that academic motivation and self-efficacy can be enhanced among students through educational programs and interventions, the training of *trait EI* for educational purposes is somehow more controversial due to the enduring and stable nature of personality traits. However, great progress has been made regarding emotional education in general (Vandervoort, 2006), and the development of particular trait EI aspects through treatment. An intervention study reported an increase in trait EI and certain EI-related constructs, namely emotion identification and emotion management compared to a control group, who did not receive the training (e.g., Nelis, Quoidbach, Mikolajczak, & Hansenne, 2009). A similar intervention program focused on emotional competence not only showed significant increase in emotion-related aspects (e.g., identifying, understanding, expressing and managing emotions), but also showed a subsequent increase in life satisfaction, well-being, physical and mental health, global social function, and employability, as well as a decrease on neuroticism level among individuals who received the training.

It is noteworthy that extremely high trait EI can also contribute to maladaptive behaviors (see Petrides et al., under review), which should be taken into consideration by educators, who can use the trait EI approach to develop high quality relationships with students, and using previous knowledge to be able to distinctions genuine students' emotions for non-genuine ones that can also contribute to the student-teacher dynamics; thus, increasing students' performance (Roy, 2015).

In sum, educators can benefit from the growing understanding of the dynamic relationships, direct and indirect, between non-cognitive factors and AP, by developing interventions and designing curricula that empowers students as learners and enhances their intrinsic motivation, academic and emotional self-efficacy in a myriad of domains and ensure their optimal academic success. In addition, educational and career counsellors may find it useful to assess and account for the role of noncognitive factors such as academic and emotional self-efficacy when advising students on academic matters. It is important not to misuse findings on non-academic predictors of AP. The aim should not be to encourage learners to avoid certain approaches that they might find difficult or conflicting with their personal characteristics and overfocus on those that they find congruent with their traits.

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