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Unraveling the effect of personality traits on academic achievement and the mediating role of self-efficacy

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Abstract

Research has long established the link between both personality traits and self-efficacy in relation to academic achievement. In this context, using a sample of one hundred and thirty-eight Moroccan University EFL students (*N* = 138) of both undergraduate and graduate levels, this study analyzed both the predictive power and the effect of two higher-order personality factors, namely conscientiousness and extraversion, on academic achievement. Relying on the use of an integrated meditational structural model, this study also sought to examine the mediating role of general self-efficacy as a potential variable that may shape this relationship. Correlational and linear regression analyses showed a significant relationship between both conscientiousness and self-efficacy, and academic achievement. This relationship, however, did hold true for extraversion. Further, path analysis using structural equation modeling (SEM) did not reveal a link between conscientiousness and academic achievement. The results showed that self-efficacy does not

mediate the relationship between conscientiousness or extraversion with academic achievement.

Keywords: academic achievement; conscientiousness; personality traits; regression analysis; self-efficacy

1. Introduction

The present paper investigates the relationship between two personality factors namely, conscientiousness and extraversion, and academic achievement in addition to the mediating role of general self-efficacy in a Moroccan English-speaking university context. Alongside an introduction and a conclusion, the present paper consists of four major sections. The first section is devoted to a review of the literature comprising a theoretical background and an explanation of the essential key terms of the study including personality, personality factors and general self-efficacy, and then proceeds to explore what the relevant literature has to say regarding their relationship to academic achievement. The second section presents the methodology of the research project along with the description of the data-collection instruments, while the third section is concerned with the presentation of the major findings which comprise the processing of missing data, correlational and regression-based mediation and path analysis. The fourth and last section discusses the results and evaluates them in the light of the literature on this topic. Finally, some recommendations for future research are made.

2. Literature review

2.1. Personality traits and academic achievement

The term *personality* denotes a set of traits that characterize, in their entirety, a given individual in a unique way (Feist & Feist, 2008). The term *trait* on the other hand stands for a feature or a characteristic of personality associated with "consistent patterns of behavior" (Barenbaum & Winter, 2008, p. 11). Personality traits are "enduring dispositions that can be inferred from patterns of behavior" (Costa & McCrae, 1992, p. 655), and "enduring ways of reacting to our environment" (Schultz, & Schultz, 2016, p. 197). They "allow us to understand the consistency of an individual's thinking, feeling and behavior, relatively independent of the situation, context and time" (Djapo et al., 2011, p. 11). Through studies that span multiple countries, cultural backgrounds and languages, researchers have demonstrated that

personality traits or features are universal and consistent across cultures (McCrae & Terracciano, 2005), age, sex and race (Costa & McCrae, 1992a).

Multiple models of personality have been proposed over time and the Big Five Model of personality has been among the most widely spread and successful, if not the most successful (Schultz & Schultz, 2016). Cumulative evidence has shown that the Big Five Model, which organizes traits along factors or dimensions, is a robust conceptualization of personality (Costa, & McCrae, 1992a; Digman, 1989). In this model, personality traits are organized along five dimensions: openness to experience, conscientiousness, extraversion, agreeableness, and emotional stability (or neuroticism) (Buss & Hawley, 2010; Djapo et al., 2011). It should be noted here that these personality variables have been labeled using different psychological terms (e.g. introversion vs. extroversion, neuroticism vs. emotional stability; cf. Schmitt et al., 2007).

High scorers and low scorers categorized along these personality dimensions have qualities associated with them by virtue of what scientists have been able to historically identify from pre-existing set of attributes derived from language. The first dimension is *openness to experience*. Individuals with high openness, who are naturally imaginative, are also cognitively flexible and typical divergent thinkers (Hirsh & Peterson, 2008). Similarly, while individuals who score low on openness to experience have a sense of exploration in addition to a wide range of diverse interests (Dewaele, 2012), individuals who score low on openness to experience are traditional, practical and conservative (Dörnyei & Ryan, 2015) and they have limited and narrow interests (Dewaele, 2012). The second dimension is *conscientiousness*. People who score high on conscientiousness are typically organized, hard-working and self-disciplined (Hirsh & Peterson, 2008). In terms of tasks and actions, conscientious people are persistent, reliable, and goal-oriented (Dörnyei & Ryan, 2015). On the other hand, individuals who score low on conscientiousness are unreliable, negligent (Dewaele, 2012), disorganized (Costa & McCrae, 1992b), and careless (Dörnyei & Ryan, 2015). The next dimension is *extroversion*. At the other end of the spectrum lies *introversion*. Introverts by nature are reserved, quiet and withdrawn (Dörnyei & Ryan, 2015). They are also task-oriented and passive (Dörnyei & Ryan, 2015) while extroverts are typically person-oriented, fun-loving (Dewaele, 2012), assertive (Dörnyei & Ryan, 2015) and full of activity (Dewaele, 2012). Fourth, there comes *agreeableness*. Agreeable individuals are warm and empathic (Hirsh & Peterson, 2008). They are naturally cooperative (Costa & McCrae, 1992b); they are perceived by others to be friendly and modest, and they are unmistakably likable and kind (Dörnyei & Ryan, 2015). Less agreeable individuals are hostile and tough-minded (Hirsh & Peterson, 2008), antagonistic (Costa & McCrae, 1992b) and typically uncooperative. Finally, the last dimension is *neuroticism* or *emotional instability*. Whereas emotionally stable individuals are relaxed, even-

tempered, self-satisfied (Dörnyei & Ryan, 2015), calm and secure (Dewaele, 2012), and they are not easily disturbed as they naturally exhibit a high level of confidence (Hirsh & Peterson, 2008), emotionally unstable or neurotic individuals are more susceptible to emotional exhaustion.

Generally speaking, these traits as well as others make up larger dimensions and they have been shown to be linked to various life outcomes (Roberts et al., 2007). From an educational standpoint, it is widely accepted and thoroughly documented that personality traits predict academic achievement as shown through various empirical investigations (Caprara et al., 2011; Chamorro-Premuzic & Furnham, 2003a; De Feyter et al., 2012; Diseth, 2003; Hair & Graziano, 2003) as well as in systematic reviews (Poropat, 2009; Trapmann et al., 2007; Vedel, 2014;). However, it should be noted that the five personality factors do not have the same predictive capacity as far as academic achievement is concerned (Caprara et al., 2011; Chamorro-Premuzic, & Furnham, 2003b). Although the personality construct has demonstrated high reliability which accounts for its predictive power (e.g., MacCann et al., 2009; Paunonen & Ashton, 2001; Trautwein et al., 2009), both contentiousness and openness to experience in particular have typically shown the highest consistency and statistical significance with respect to predicting academic achievement (Poropat, 2009).

Having said that, it is naturally intuitively appealing to examine how all personality dimensions are linked to academic achievement. However, given time and space constraints, the scope of our investigation of personality will be limited to two factors namely, conscientiousness and extraversion, as there is variably much evidence that links both the former (Richardson et al., 2012) and the latter (Komarraju et al., 2011; Sorić et al., 2017) academic achievement. Nevertheless, it should be pointed out that systematic reviews of the literature tend to endorse the view that conscientiousness and openness are major predictors of academic achievement for adults (Poropat, 2014b) and children (Poropat, 2014a).

Incidentally, contrary to openness to experience, conscientiousness in particular has been consistently found to be a reliable predictor of academic success (De Feyter et al., 2012; De Raad, & Schouwenburg, 1996; Gough, 1953; Revelle et al., 2011; Rimfeld et al., 2016). Moreover, this personality trait has been shown to have an effect on high school grades both in an indirect (Caprara et al., 2011; McKenzie et al., 2004) and direct way (Laidra et al., 2007; Noftle, & Robins, 2007). It has been reported that it is positively associated to academic success among university students (Busato et al., 2000; Cazan & Schiopca, 2014; Chamorro-Premuzic, & Furnham, 2003b; Duff et al., 2004; Komarraju et al., 2009; Noftle, & Robins, 2007; Paunonen, & Ashton, 2001) as it is considered the most important predictor thereof (Hakimi et al., 2011; Poropat, 2009) or at least accounts for considerable variance in various other contexts (Diseth, 2003; Noftle, & Robins, 2007; Rosander et al., 2011).

In contrast, research has shown that extraversion has variably demonstrated positive, negative, as well as non-significant association with academic achievement (Caprara et al., 2011). For instance, there is evidence that extraversion correlates negatively with a broad range of academic knowledge domains (Rolfhus & Ackerman, 1999) including overall academic achievement (e.g. Zuffianò et al., 2013). In a set of related studies, researchers reported a negative correlation between extraversion and academic achievement among samples of university students (Chamorro-Premuzic, & Furnham, 2003b; Kline, 1966). Conversely, researchers have confirmed a negative link between extraversion, and both academic achievement (Bendig, 1960; Diseth, 2003; Maqsud, 1980) and university scores (De Raad, & Schouwenburg, 1996). On the other hand, extraversion was found to predict in part academic success of university college students (De Feyter et al., 2012; Rosander et al., 2011) and school children (Honess, & Kline, 1974). In a meta-analysis examining a large population from German speaking countries, Trapmann et al. (2007) showed that extraversion was a non-significant correlate of academic achievement. Contradictorily, empirical evidence also indicates non-significant positive (Ciorbea & Pasarica, 2013; Chowdhury, 2006; Geramian et al., 2012), non-significant negative (Furnham, & Mitchell, 1991; Kiany, 1998) to very low positive (McKenzie et al., 1975) and very low negative correlations (De Fruyt, & Mervielde, 1996; Furnham et al., 2005) between extraversion and achievement in some instances

2.2. Self-efficacy and academic achievement

People's beliefs in their power to change events that affect their lives is reflected in self-efficacy (Bandura, 2010). Bandura (1986) defines self-efficacy as "people's judgments of their capabilities to organize and execute courses of action required to attain designated types of performances" (p. 391). It is a manifestation of the belief in one's capabilities to perform actions (Schunk, 1991). Practically speaking, it is a manifestation of the perception of "how well one can execute courses of action required to deal with prospective situations" (Bandura, 1982, p. 122).

Self-efficacy plays various roles in multiple domains including education (Schunk & Pajares, 2009). It has been postulated to have multiple sources of which performance accomplishment is but only one single facet (Bandura, 1977). Further, it involves appraising one's performance accomplishments, and it plays a significant role in learning in the academia and in how students perceive and evaluate themselves (Schunk, 1991). Generally, self-efficacy beliefs are strong indicators of behavior and determinants of one's accomplishments (Pajares, 1996). Self-efficacy is commonly defined in a general sense but there are more nuanced definitions linked to particular domains (Dewaele, 2012). In this study, we use self-efficacy to denote general self-efficacy.

Self-efficacy has been shown to be one of the most important variables and predictors of academic achievement (Bandura et al., 2001; Caprara et al., 2008; Caprara et al., 2011; Di Giunta et al., 2013; Schunk, 1991). The relationship between self-efficacy and academic achievement appears to manifest itself invariably across multiple levels, mainly at the university level, as commonly measured using samples of undergraduate students (Afari et al., 2012; Lent et al., 2012), or in school educational contexts (Diseth et al., 2012; Hwang et al., 2016; Köseoglu, 2015; Schneider, & Preckel, 2017). Furthermore, in a meta-analytic investigation of tens of studies spanning over more than a decade, Multon et al. (1991) found consistent evidence linking self-efficacy to academic achievement. In the same vein, another important meta-analysis study based on a substantially larger sample revealed significant correlation between self-efficacy and academic achievement, as measured through various research instruments (Richardson et al., 2012).

2.3. Personality traits, self-efficacy and academic achievement

There are multiple studies showing the influence of the five dimensions of personality on self-efficacy (Stajkovic et al., 2018). In a meta-study, Judge and Ilies (2002) concluded that personality traits are related to self-efficacy showing that conscientiousness has consistently been found to be linked to self-efficacy whereas extraversion is only moderately correlated to it. In terms of the place of self-efficacy in the relationship between personality traits and academic achievement, there is substantial evidence corroborating the mediating role for the latter. For instance, researchers have argued that constructs such as self-efficacy are best conceived of as mediatory structures bridging personality and goal-directed activities (Graziano et al., 1997). In alignment with previous conceptualizations, self-efficacy was also found to mediate academic performance in the learning context (Zimmerman, 2000). Likewise, one major meta-study covering various academic contexts has shown that self-efficacy mediates the relationship between personality traits and academic performance according to different models examined, and particularly with respect to extraversion according to one model (Stajkovic et al., 2018). In a related study conducted within the military context, there is additional evidence showing that self-efficacy mediates the link between conscientiousness and academic grades (Fosse et al., 2015). Likewise, research permits the extension of the generalizability of these findings to school education achievement as well. For instance, in a longitudinal study using junior and senior students sample, results revealed that personality traits in general and conscientiousness in particular were found to affect school grades and that the relationship was mediated by self-efficacy (Caprara et al., 2011). Additionally, evidence indicates that the effect of personality traits, particularly conscientiousness, on scholastic achievement was mediated by self-efficacy (Di Giunta et al., 2013; Mammadov et al., 2018).

3. Rationale for the study

The present endeavor of investigating the relationship between contentiousness and extraversion in relation to academic achievement as well as the mediating role of self-efficacy is warranted for several reasons. On the one hand, based on the findings reported above, conscientiousness can be safely hypothesized to be linked to achievement as measured by university GPA in Morocco as there is nearly a consensus in that regard in other contexts. In addition, the mixed and often contradictory results concrning the link between extraversion and achievement raise questions as to how measurement is conducted and in what context. The relationship between the two variables deserves more attention in our view partly because no conclusive answers have been provided so far.

More than a decade ago, Trapmann et al. (2007) reported the lack of empirical investigations of the relationship between grades and personality dimensions, particularly extraversion, in Africa and the Middle East. Research has gone a long way since then and we believe there is still a long way to go in this direction particularly in parts of the world where such issues have been understudied. On the other hand, studies, as researchers show, have typically and mostly investigated the impact of constructs such as personality traits and self-efficacy separately and not interdependently (Di Giunta et al., 2013). The present study attempts to do precisely that, linking the three variables through a conceptual model and running path analysis. Everything considered, this investigation will contribute to the existing literature by providing additional evidence in an underexplored context.

4. Methodology

4.1. Hypotheses

In light of the issues that have been raised in the literature review, we propose that the following hypotheses be tested in the Moroccan context:

1. Conscientiousness correlates significantly with and predicts academic achievement.
2. Extraversion correlates significantly with and predicts academic achievement.
3. General self-efficacy correlates significantly with and predicts academic achievement.
4. Self-efficacy mediates the association between conscientiousness and academic achievement.
5. Self-efficacy mediates the relationship between extraversion and academic achievement.

4.2. Sample selection

The sample consisted of 70 (51%) male students and 68 (49%) female students of the total of 138 participants. The most recurrent age bracket was 25-or-less years of age (ca. 41%), followed by 25-30 year-old students (ca. 27%). 22 of the participants (15%) ranged between 35 and 40 years of age, while 11 (8%) and 10 (7%) students represented the 30-35 and 40-or-more age brackets, respectively. The highest grade reported was 16.00 while the lowest was 10.45. The mean GPA score was 12.81 (*SD* = 1.07). The participants completed the Big Five Inventory (extraversion and conscientiousness), the New General Self-Efficacy Scale (NGSE) and reported their GPA scores in addition to socio-biographical information.

4.3. Instruments

4.3.1. Personality traits

The *Big Five Inventory* (BFI) is a self-report trait-based personality measurement inventory based on the five factor model comprising five dimensions: extraversion, agreeableness, conscientiousness, neuroticism and openness (John et al., 1991, 2008). It consists of 44 short statements. The BFI was originally designed to be a 5-point Likert scale ranging from *disagree strongly* (1) to *agree strongly* (5). The BFI is a composite scale made of five subscales and each subscale is comprised of several items: openness (10 items), conscientiousness (9 items), extraversion (8 items), agreeableness (9 items) and neuroticism (8 items). All items consist of short phrases (e.g., "is full of energy," "is talkative," "has few artistic interests"). The BFI has shown good (John & Srivastava, 1999) or moderate reliability and validity depending on context (e.g., Worrell & Cross, 2004).

4.3.2. Self-efficacy

The *New General Self-efficacy* (NGSE) is a self-report self-efficacy scale. According to its authors, the NSGE demonstrated high reliability and construct validity (Chen et al., 2001). Unlike its predecessors, the ten-item General Self-Efficacy Scale (GSE) (Schwarzer & Jerusalem, 1995) and the seventeen-item SGSE (Sherer et al., 1982), the NGSE is an eight-item instrument, and it is comprised of statements such as "I will be able to successfully overcome many challenges" or "Even when things are tough, I can perform quite well." The responses are provided on a 5-point Likert-scale ranging from *strongly disagree* (1) to *strongly agree* (5) (Chen et al., 2001).

4.3.3. Academic achievement

Academic achievement is a composite measure, a grade-point average (GPA) consisting of the grades of all preparatory modules for classical English as a foreign language program, including intermediate to advanced grammar, advanced reading and composition, history and geography of the English-speaking Anglo-Saxon countries (e.g., USA, UK) and public speaking skills in addition to the study of linguistics, English literature and cultural studies. The program is a two-year cycle of preparatory courses that culminates in a certificate from one of Morocco's universities.

4.4. Administration procedures

Before administering the research instrument to the participants, we explained the aim of the study and requested their consent to complete the inventory. We also reassured the participants that the data they would provide would be confidential. The participants were willing to participate in the current study. Data was gathered through electronic questionnaires administered to students from different universities in the Rabat-Sale-Kenitra and Beni Mellal-Khenifra regions for lack of conditions to conduct classroom administration under the restrictions imposed by the Corona-virus pandemic. Data was processed through Microsoft Word, Excel (2007), SPSS (20) and AMOS (24).

5. Results

5.1. Data preparation

We conducted missing data analysis which revealed twelve missing data points in the 138 GPA records. Having met the prerequisite of Little's test of Missing Completely at Random (MCAR) test (1988, cited in Peugh & Enders, 2004), we performed an expectation-maximization algorithm-based operation (Graham et al., 1996; Cox, McIntosh et al., 2014) to replace the missing GPA values.

5.2. Correlational and regression analyses

Based on the Spearman rank-order correlation coefficient, the results showed a positive relationship between conscientiousness and GPA (r = .25, p = .01), general self-efficacy and GPA (r = .17, p = .05), and an insignificant association between extraversion and GPA (r = .07, p = .05). GSE was also found to be correlated with conscientiousness (r = .59, p = .01), and extraversion (r = .39, p = .01) (see Table 1).

Table 1 Descriptive statistics and correlations for conscientiousness, extraversion, GPA, self-efficacy and key socio-biographical variables (i.e., age and gender) (*N* = 138)

	Variables	1	2	3	4	5	6	*M*	*Min*	*Max*	*SD*
1	Conscientiousness	—						33.79	21	45	5.63
2	Extraversion	30**	—					5.83	10	39	5.58
3	GPA	25**	.07	—				12.81	10.45	16	1.07
4	General Self-efficacy	59**	.39**	.17*	—			34.27	13	40	4.97
5	Age [a]	28**	.14	.06	12	—		—	25-or-less	40-or-more	—
6	Gender [b]	11	.02	.24**	20*	.17*	—	—	—	—	—

Note. Age [a]: 1 = 25 or less, 2 = 25-30, 3 = 30-35, 4 = 35-40, 5 = 40 or more; Gender [b]: 0 = male, 1 = female.
**p* = .05. ***p* = .01.

Simple linear regression was conducted to tap the predictive power of conscientiousness, general self-efficacy, and extraversion in relation to GPA scores (see Figure 1). With a significant standardized regression coefficient *β* = .27, conscientiousness was found to predict GPA scores *β* = .05, *t* = 3.27, *p* = .001; R^2 = .07, *F*(1, 138) = 10.70, p = .001. Similarly, general self-efficacy also predicted GPA score by an acceptable margin *β* =.01, *t* = 2.17, *p* = .032; R^2 = .004, *F* (1, 138) = 4.70, *p* = .032 as the corresponding results revealed a significant standardized regression coefficient of *β* = .18. Conversely, extraversion did not predict GPA scores by any significant margin with *β* =.04, *t* = .70, *p* = .480; R^2 = .004, *F* (1, 138) = .50, *p* = .480, having yielded an insignificant standardized regression coefficient of β = .06.

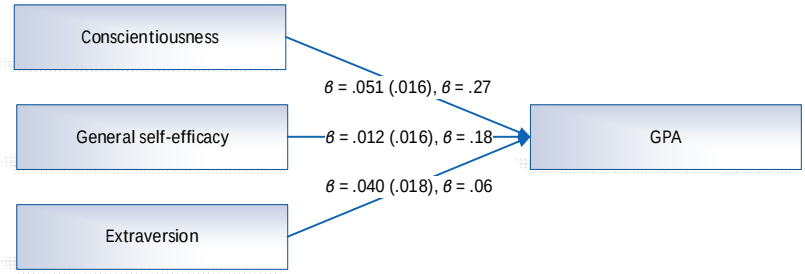

Figure 1 Simple linear regression model: Unstandardized and standardized regression coefficients of the conscientiousness, extraverion and general self-efficacy predicting GPA

5.3. Mediation analysis

Following correlation and simple linear regression, we tested for the direct effect of conscientiousness and extraversion on GPA through path analysis. We constructed an integrated model where the first part linked conscientiousness to GPA and the second part linked extraversion to GPA (Figure 1) where both predictors were correlated, while on the other hand, the first model was reproduced

and reconfigured in such a way that both conscientiousness and extraversion were mediated by general self-efficacy (Figure 2). The results are shown in Table 2 and 3, respectively. Similar to the results obtained from the simple regression model (Figure 1), the direct effect model (Figure 2) showed that conscientiousness significantly predicted GPA: *b* =.05, *p* = .001 with a standardized coefficient of *b* = .28, whereas extraversion failed to predict GPA: *b* = -.004, *p* = .812, with a coefficient of β = -.020 (see Table 2).

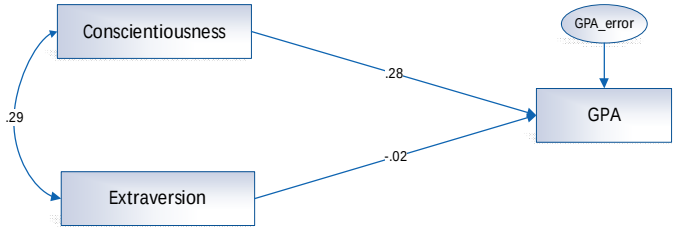

Figure 2 Statistical model of the direct effect of conscientiousness and extraversion on GPA

Table 2 Path analysis results for the direct effect of conscientiousness and extraversion on GPA scores

Effect			*b*	β	SE	CR	*p*
Conscientiousness	-->	GPA	.053	.276	.016	3,21	.001
Extraversion	-->	GPA	-.004	-.020	.017	-.238	.812

Note. SE: standard error; CR: critical value; *b* = unstandardized estimate; β = standardized estimate.

Comparative analysis between the direct effect model (Figure 2) and the mediation model (Figure 3) revealed that direct effect of conscientiousness on GPA was only marginally lowered from *b* = .28 to .25, and while its direct effect on GSE was significant with *b* = .51, its mediated effect on GPA was clearly insignificant with *b* = .05. Conversely, the direct effect of extraversion on GPA increased marginally from *b* = -.02 to -.03 and as its direct effect on GSE was significant with *b* = .21, its mediated effect on GPA was equally insignificant with *b* = .05.

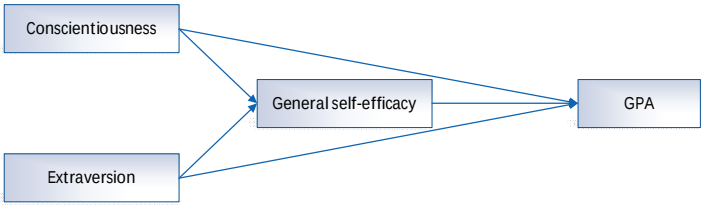

Figure 3 Conceptual path analysis model of conscientiousness and extraversion predicting GPA, mediated by general self-efficacy

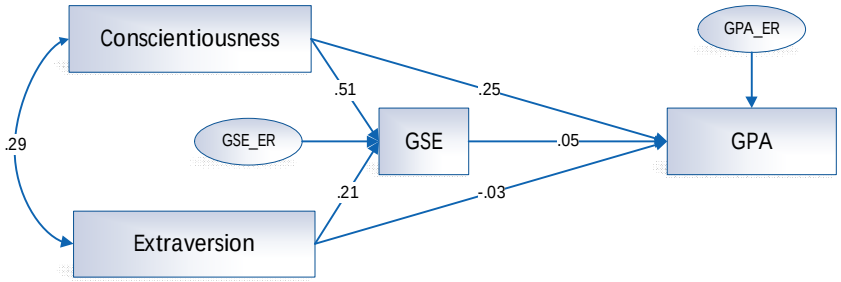

Figure 4 Statistical path analysis model of conscientiousness and extraversion predicting GPA, mediated by general self-efficacy

Table 3 Path analysis results for the relationship between personality factors and GPA scores, mediated by general self-efficacy

Effect		*B*	β	SE	CR	*p*
Conscientiousness	--> GSE	.452	.513	.063	7.207	***
Conscientiousness	--> GPA	.048	.25	.019	2.479	.013
Extraversion	--> GSE	.183	.206	.063	2.89	.004
Extraversion	--> GPA	-.006	-.031	.017	-.349	.727
GSE	--> GPA	.011	.051	.022	.49	.624

Note. SE: standard error; CR: critical value; *B* = unstandardized estimate; β = standardized estimate.

In addition to the preceding mediation analysis, according to the Sobel test based on the model in (Figure 2) and the corresponding regression weights in Table 3, analyses the results showed that general self-efficacy was found to mediate neither the effect of conscientiousness on GPA scores, *S(b)* = .498, *p* = .617, *z* = .49 nor the effect of extraversion on GPA scores, *S(b)* = .492, *p* = .622, *z* = .49.

Furthermore, using bootstrapping based on 2000 samples and a 95 percentile, we assessed the significance of the point estimate by looking at the 95% confidence interval for the effect. In the case of conscientiousness, with the 95% CI for the indirect effect (lower bound: -.013, upper bound: .021) and using the conventional threshold of $p \leq .05$, the indirect of effect on GPA was .590, which was not significant. Similarly, for extraversion, with the 95% CI for the indirect effect (lower bound: -.005, upper bound: .010) and using a threshold of $p \leq .05$, the indirect of effect on GPA is .515, which was also not statistically significant (see Table 4).

Table 4 Two tailed significance indirect effects of conscientiousness and extraversion on GPA mediated by general self-efficacy

	Extraversion	Conscientiousness
GSE		
GPA	.515	.590

6. Discussion

6.1. Correlational and regression analyses

Based on the Spearman rank-order correlation coefficient, the results indicated a positive correlation between conscientiousness, extraversion and GPA. The correlation between conscientiousness and GPA was $r = .25$, $p = .01$ and while the correlation between general self-efficacy and GPA was $r = .17$, $p = .05$, accounting for 6% and 2% of the variance, respectively. General self-efficacy was also found to be correlated with conscientiousness ($r = .59$, $p = .01$) and extraversion ($r = .39$, $p = .01$), with 34% and 15% of the variance being explained. Simple regression analysis demonstrated that conscientiousness predicted GPA scores with $\beta = .05$, $t = 3.27$, $p = .001$; $R^2 = .07$, F (1, 138) = 10.70, $p = .001$. The analysis also showed that general self-efficacy also predicted GPA scores with $\beta = .04$, $t = 2.17$, $p = .032$; $R^2 = .004$, F (1, 138) = 4.70, $p = .032$ as well as a significant standardized regression coefficient of $\beta = .18$. Conversely, extraversion did not predict GPA scores by any significant margin with $\beta = .04$, $t = .70$, $p = .480$; $R^2 = .004$, $F(1, 138) = .50$, $p = .480$ and an insignificant standardized regression value of $\beta = .06$. These results thus confirm H1 and H3 and disconfirm H2.

As far as previous research findings are concerned, the relationship between conscientiousness and GPA has been unequivocally established in multiple contexts, both with the help of correlational analysis and regression analysis (e.g., Poropat, 2009, 2014a, 2014b; Richardson et al., 2012). Our results thus corroborate what previous research has uncovered. On the other hand, it was found that the link between extraversion and academic achievement was negative, but not significant. This is in line with several studies that have reported similar results (e.g., Furnham & Mitchell, 1991; Kiany, 1998). Similarly, self-efficacy was revealed to significantly predict academic achievement among the Moroccan university students, which resonates with the outcomes of previous studies (e.g., Afari et al., 2012; Bandura et al., 2001; Caprara et al., 2011; Multon et al., 1991; Yip, 2012).

6.2. Mediation analysis

While both conscientiousness and general self-efficacy significantly predicted GPA scores, extraversion did not. In addition, self-efficacy did not mediate the relationship between conscientiousness and achievement, which is in contrast to what has been reported in the relevant literature (e.g., Fosse et al., 2015; Stajkovic et al., 2018). The same was true for the mediating effect of self-efficacy in the relationship between extraversion and academic achievement, which, once again, contradicts previous findings (e.g., Caprara et al., 2011). In this case, however, the result can be explained by the fact that extraversion exhibits varying outcomes in

different contexts, which makes it very hard to maintain consistent results in its relations to other variables. Additionally, the bootstrapping-based path analysis of indirect effects and the Sobel mediation test ndicated that general self-efficacy did not partially mediate the effect of conscientiousness or extraversion on GPA scores. These results thus allow us to disconfirm H4 and H5.

7. Limitations

There are a number of ways in which this study could be improved. In terms of methodology, looking at the sampling, one apparent measure that can be taken is to make the sample more representative of the target population in terms of size. Since the larger the sample, the more representative it is recommended to include multiple student cohorts across many levels in order to stretch hypothesis testing and evaluation to its limits. This would be conducive to reaching more reliable conclusions as generalizability of the results can be further substantiated. The study could also be extended by replicating design configurations of existing mediating models used in previous studies in which self-efficacy served as moderating variable across all five personality dimensions. In our view, this will pave the way for better understanding of the dynamics of personality and self-efficacy and enable researchers to situate each variable with its corresponding magnitude, weight and direction on the affective dimension-academic achievement map.

8. Implications

It is argued that personality traits and self-efficacy are crucial for academic success. Based on this preliminary study, it should be noted that learners' personality should be taken into account in both teaching and learning. The current empirical investigation brings with it important implications for language teachers as they are best positioned to empower learners and make them aware of the importance of taking responsibility for their own learning and self-regulating this process. Being self-efficacious is likely to motivate learners to invest much more effort and also to positively influence their peers, with the effect of enhancing the chances of success. Seen from a different angle, while it has been shown that personality traits are fairly stable over time and thus not lending themselves to pedagogic intervention, teachers can surely take steps to enhance learners' self-efficacy. Moreover, since, in view of the finding that consciousness and self-efficacy are related but self-efficacy does not mediate the relationship between consciousness and achievement, self-efficacy can be a priori enhanced despite low levels of conscientiousness in order to achieve desirable academic outcomes.

9. Conclusion and recommendations for future research

Through the present empirical investigation, we were able to demonstrate that two major personality factors, namely, conscientiousness and extraversion alongside one constituent of the self, that is, general self-efficacy, correlate with one another, and that, with the exception of extraversion, they predict GPA scores. We also showed that self-efficacy, although related to conscientiousness and extraversion, does not mediate the effect of these personality traits on GPA scores. Future research could seek to examine larger, more diverse samples in other contexts to establish whether such findings are generalizable. Therefore, we strongly suggest that the study be replicated outside of the Moroccan educational setting. We also recommend including all personality traits in order to capture the intricate links between personality, self-efficacy and academic achievement.

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