Pakistan Journal of Social and Clinical Psychology
2010, Vol. 8, No. 1, 54 - 65

TRAIT-EMOTIONAL INTELLIGENCE AS PREDICTOR OF ACADEMIC PERFORMANCE

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The present study aimed to find the relationship among scholastic achievement, personality factors and emotional intelligence and to estimate how well trait-emotional intelligence predicts college grades over and above personality. Two hundred and sixty-nine undergraduate students (139 humanities and 130 sciences) from Pakistan were administered EQ-i (Bar-On model) and the Big Five. Marks secured in the Higher Secondary School Certificate (HSSC) and the First Year College degree program GPA was obtained from the college record. The results showed that self report emotional intelligence and the Big Five personality dimensions overlapped significantly. Previous HSSC marks appeared as a major predictor of college GPA followed by trait-emotional intelligence scores, more for the humanities than for sciences. The five personality dimensions did not significantly predict GPA, however, when personality dimensions were statistically controlled the trait-emotional intelligence lost predictive significance in relation to GPA. Thus only high school scholastic achievement, i.e., HSSC predicted college GPA not the affective variables, i.e., personality traits or emotional intelligence which shared covariance between themselves significantly. It appears from the results that trait-emotional intelligence is not a distinct construct from that of personality traits.

Keywords: emotional intelligence, college grades, the Big Five, incremental validity

Social and emotional skills are helpful to meet several challenges of life including that of getting a college degree. The role of affective variables, e.g., personality, motivation, emotions as predictors of successful performance has been observed in many studies (Brown, 1994; Farsides & Woodfield, 2003). For example, role of personality characteristics such as mental health, well being, emotional and social adjustment in relation to academic achievement have been undertaken across several studies (Eysenck & Ey senck, 1985; Kline & Gale, 1971; Heaven, Mak, Barry, & Ciarrochi, 2002). Recently, Di Fabio and Palazzeschi (2009) found that personality traits Extraversion, Neuroticism and Psychotocism added incremental variance to fluid intelligence (Advanced Progressive Matrices) in predicting scholastic success defined as the average score obtained in principal subjects taught in high schools.

A related area of recent interest is that of emotional intelligence (EI) and a number of studies have supported the existence of a relationship between emotional intelligence and scholastic success (Petrides, Frederickson & Furnham, 2004; Parker, Hogan, Majeski, & Bond, 2004). A few studies showed incremental validity of EI

The study was supported by a research grant from the GC University for the year 2008.

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above the traditional measure of intelligence and personality in explaining variance in academic performance (Di Fabio & Busani, 2007; Di Fabio & Palazzeschi, 2009; Van der Zee, Thijs, & Schakel, 2002). However, several other studies conflict with such findings (Amelang & Steinmayr, 2006; Mayer & Salovey, 1997). Thus the controversy about emotional intelligence as predictor of scholastic performance continued in the last decade (Amelang & Steinmayr, 2006; Rooy, Wiswesvaran, & Pluta, 2004). Across such studies' results hinge on the particular shade or composition of index of scholastic performance used in a study as well as specific conceptualization and measure of emotional intelligence and different personality tests used in individual studies. For example, relationship between EI and academic performance at school has been higher because of uniform academic courses in school than in a college or university where a variety of courses are offered to a heterogeneous student population. A broad interest in such studies has been to explain scholastic achievement in terms of both intellect and emotions. The search to tap the latter has engaged personality and motivation researchers in particular (Brown, 1994; Di Fabio & Busani, 2007; Nicholls, 1984). Quite early, Wechsler (1940) had emphasised the role of non-intellective factors such as anxiety, impulsivity and preservation etc. that either facilitated or inhibited intelligent behaviour.

Research in psychological theory has advanced our understanding of emotions and cognitions as interacting and inter-dependent phenomena that jointly influence performance in academics. Salovey and Mayer (2004) took emotions as 'organized responses, crossing the boundaries of physiological, cognitive, motivational and experiential systems' (p.2). According to Mayer, Salovey, and Caruso (2002), there are three fundamental classes of mental operations which include emotions, motivation and cognition and they are interconnected in any human enterprise. Emotions and cognition are furthermore complementary as well and they give rise to 'emotional intelligence' (as cited in Mayer, 2001). Self awareness, self esteem, motivation, moods, anxiety, emotions and peer interaction mechanisms are very important for learning processes as they drive attention, memory, mental processing culminating in learning.

As a concept, EI has been investigated broadly in two streams: one, that EI is an ability to think intelligently about emotions (Mayer & Salovey,1997) and two, that EI is a set of self perceived skills and characteristics such as optimism, motivation and the capacity to engage in relationships (Bar-On & Parker, 2000). The latter is a more popularized conceptualization led by Bar-On (1997) who defines EI as an array of emotional, personal and social skills that influence an individual's ability to cope effectively with environmental demands and pressures of daily life. Bar-On (1997) developed Emotion Quotient Inventory (EQ-i.). Critics found that EI measures developed after this model cross load on personality factors. For example, Mayer, Caruso, and Salovey (2000) viewed Bar-On model of EI synonymous with motivation, personality traits and global personal and social

functioning. To them, Bar-On presents a conglomeration of personal traits and characteristics in his EQ-i. Likewise, Davies, Stankov, and Roberts (1998), reviewing several trait-EI scales found them as significantly overlapping with major personality dimensions. On a more critical note, they viewed trait-EI as just a 're-packed' personality trait lacking discriminant validity. On the other hand, Parker et al. (2004) contended that personality dimensions accounted for relatively small amount of variability in EQ-i scores (R^2 =.19 for interpersonal scale, .29 for intrapersonal, .16 for adaptability and .28 for stress management scales) therefore EI was a useful construct. Other proponents of trait model of EI further argue that this concept is distinct from traditional personality dimensions in that, unlike stable personality characteristics, EI is malleable characteristic which can be improved (Bar-On, 2002; Mayer et al., 2002) and gainfully employed to explain specific human behaviours. For instance, Bar-On (2003) suggested that EI increases continuously from childhood till the end of fourth decade of life. In a local study, emotional intelligence was found to significantly increase with year of education in a cross-sectional sample of 80 students of 4 years B.A. / B.Sc. (Hons) program in GC University, Lahore (Aslam, 2009).

Despite differences on EI models as conceptualized in different EI measures, all intuitively agree that EI is a way of thinking, feeling and behaving relevant to successes in life. Researches in educational settings have explored role of EI in explaining both academic success or course grades and emotional adjustment in school (see e.g., Parker et al., 2004; Romasz, Kantor, & Elias, 2004). The correlation between IQ or aptitude and scholastic achievement has been found .50 in a review of several studies made by Donald (2004). It explained, on average, 25-30% of variance in college GPA. To account for the remaining variance, psychologists have explored other factors such as emotional intelligence, personality, demographics etc. Persistence in work, interest, aspirations, and having skills to adjust with peers and teachers have been theorised to influence difference in educational outcome. A similar EI scale known as SREIT (Self Report Emotional Intelligence Scale; Schutte et al., 1998) has been reported as successfully predictive of managerial effectiveness of telecom engineers over the 16 PF (Ahmad & Yousuf, 2007).

This investigation underscores the assumption that emotional intelligence can explain unique variance in academic performance after a more related variable of cognitive ability such as previous course grades i.e., HSSC or SAT scores that account for major variance. It is further contended that personality, such as the Big Five traits, will not significantly account for academic performance. Since findings are inconsistent across studies regarding efficacy of EI as predictor of academic achievement, researchers argue that level of course grades (college or school), nature of discipline (humanities or sciences) and particular EL measure (based on trait or ability conceptualization of EI) used in a particular study are some of the conditions or context factors that might

have influenced prediction results. This study was, therefore, designed mindful of these factors. More specifically, the main purpose of this study is to estimate how distinctly trait-EI accounts for the end of the year college grades, i.e., GPA among Pakistani students, after the effect of previous scholastic capability indexed as HSSC marks is accounted for. HSSC marks denote scholastic capability of students at the end of 12 years of education. Further, it is expected that variance of EI will be over and above the personality dimension in predicting college grades.

Hypotheses

1. Trait- emotional intelligence is a construct distinct from that of personality trait.
2. Personality traits would not be a significant predictor of scholastic achievement.
3. Trait-emotional intelligence would be a significant predictor of college GPA, next to high school marks, even on controlling for personality traits.

Method

Sample

A sample of 269 students (67% females) of B.A. / B.Sc. (Hons.) program volunteered to participate in the study during the middle of their first year in the university. They comprised 27 % and 28 % of the B.Sc. and B.A. student population, respectively. Their ages ranged between 18 - 19 years and a half, and were enrolled in GC University, Lahore.

Instruments

1. Emotion Quotient Inventory EQ-i (Bar-On, 1997)

The inventory has 125 items. Examples: “I tend to cling to others”, “It is hard for me to describe my feelings”. The responses range from ‘very true of me’ (5) to ‘very untrue of me’ (1). Higher the score, the more positive the prediction for meeting daily demands and challenges of life. Low EQ scores suggest inability to be effective and possible existence of emotional, social and behavioural problems. In an earlier study, Aslam (2009) indicated alpha values for the composite scales of EQ-i as ranging between .57 - .85 on 531 undergraduate students from Pakistan.

The inventory gives a total score (Emotional Quotient) and individual score on four EI dimensions: Intrapersonal, associated to awareness of one’s own emotions and feelings; Interpersonal, establishing cooperative, useful and satisfying relationships; Stress Management, using emotions to one’s benefit; and Adaptability, handling daily problems with flexibility.

2. NEO-Five Factors Model (Costa & McCrae, 1992)

It measures five global dimensions of personality through 60 items. Examples: “My life is fast spaced.” “I never seem to be able to get organized.” The scales assess the extent to which participants rate themselves on five point scale (strongly agree = 5, strongly disagree = 1).The alpha value

for the five factors were reported by Costa and McCrae (1992) as .85 (neuroticism), .87 (extraversion), .74 (openness), .75 (agreeableness) and .91 (conscientiousness) in the American standardization sample. Correlation among the scales ranged from .249 to .541 indicating them as related scales in the current data.

3. Grade Point Average (GPA)

To evaluate academic achievement, students' GPA was used. GPA indicated performance on 9 courses of 3 credit hours each in the first-year of a degree program. Marks in a course are obtained on a mid-term and final term examinations as well as a 'semester-work' component comprising a term paper, quizzes and assignments. Marks are then curved for relative grading for each course. Relative grades across courses in a year combine to form GPA of a student. The first-year GPA had a mean of 2.58 and a SD of 0.53 for B.A. and a mean of 2.77 and a SD of 0.31 for B.Sc. students of this study. The range of GPA and skew was 2.14 – 3.52, and .55 for humanities and 2.39 – 3.77, and .34, respectively, for the science students, in this study. Maximum possible GPA could be 4.00.

4. Higher Secondary School Certificate (HSSC) Performance

HSSC is a certification examination for two years of education after matriculation. It was used in the study as a cognitive predictor of First Year College degree program GPA. Certain percentage of HSSC marks serves as the eligibility condition for seeking admission in a college or university for a first degree program. As a base measure to college studies, it is hypothesized as a strong predictor of student performance in college studies.

Procedure

The research team visited the students in their regular classes asking them to volunteer for taking part in half an hour psychological testing on 'personality and academic achievement' project. Those who consented to take tests and actually reported on specified days and time were tested after a short briefing on the research project. The EQ-i and The Big Five short version were administered to them in order, according to the standard instructions. Students' HSSC marks that served the basis for admission in a university program were collected from the university office. First year college GPA was also obtained from the university office.

Results

The reliability of EQ-i and the NEO-FFI was satisfactory on the present data. Alpha values for the composite scales of the former were .73 (intrapersonal), .80 (interpersonal), .41 (adaptability), .62 (stress management), .80 (general mood) and .89 (overall). The same for the latter were moderate for neuroticism (.67) and conscientiousness (.65), low for extraversion (.39) and openness (.39) and weak for agreeableness (.19). Correlation between the Big Five and EQ-i dimensions presents convergent validities of which those of neuro-

Table 1

Relationship between NEO-FFI and EQ-i Dimensions (N = 269)

	EQ Dimensions				
Variables	Inter-P	Intra-P	Adapt	Stress-M	EQ-tot
Neuroticism	-.379**	-.052	- .500**	-.334**	-.397**
Extraversion	.110	.035	.077	.026	.057
Openness	.023	.122**	.145**	.099	.088
Agreeableness	.116*	.103	.104	.059	.153**
Conscientiousness	.253**	.265**	.194**	.225**	.316**
R	.589	.415	.518	.671	.676
GPA	.177**	.211**	.073	.197**	.213**

* $p < .05$. ** $p < .01$.

Note: Inter-P = Interpersonal, Intra-P = Intrapersonal, Adapt = Adaptability, Stress-M = Stress Management, EQ-tot = EQ-i total score.

ticism and conscientiousness traits are consistently strong with all the four dimensions of EQ scores (Table 1). Extraversion and openness traits did not, however, relate with the EQ dimensions. Thus empirically, EQ-i appears to be closer to intrapersonal than interpersonal domain of personality contrary to a general and a theoretical expectation. In other words, well being and adjustment, rather than interpersonal relations, underlie the EI construct as measured through EQ-i. Further, the five personality traits together strongly correlated with the overall EQ-i score (R = .676) indicating 34% common variance. The Big Five as a whole related strongly with EQ-i dimensions; (R = .589, interpersonal; R = .415, intrapersonal; R = .518, adaptability, and R = .671 stress-management dimensions).Thus EQ-i and the Big Five strongly cross load on each other and it leads to the inference that trait-EI concept is rooted in personality. Thus the first hypothesis that emotional intelligence is a construct distinct from personality trait could not be supported. On the other hand, the EQ-i correlated moderately with the First Year College GPA (r =.213). The correlation of the four EQ dimensions to GPA was also in the low range (.07 - .21). GPA, therefore, appeared as quite a distinct construct than EQ-i.

To find how well GPA is predicted by variables of interest in this study, hierarchical regression analysis was carried out. HSSC performance was entered in the first step as the most relevant and cognitive predictor

Table 2
Incremental Validity of EQ-i and NEO-FFI in Predicting Academic Achievement: Hierarchical Regression Results

	Humanities (*n*=139)			Sciences (*n*=130)		
Variables Entered	β	R^2	ΔR^2	*B*	R^2	ΔR^2
Step 1		.350			.159	
HSSC	.592**			.399**		
Step 2		.398	.048*		.167	.008
HSSC	.533**			.401**		
EQ	.226*			.088		
Step 2a		.382	.032		.193	.034
HSSC	.561**			.398**		
N	.061			.029		
E	.056			.026		
O	.008			-.151		
A	.051			.053		
C	.091			.130		
Step 2b		.402	.052*		.196	.037
HSSC	.534**			.403**		
N	-.004			.062		
E	-.040			.020		
O	-.015			-.155		
A	.032			.040		
C	.038			.106		
EI	.178			.072		

* $p < .05$. ** $p < .01$.
Note: HSSC = Higher Secondary School Certificate, EI = Emotional Intelligence, N = Neuroticism, E = Extraversion, O = Openness to experiences, A = Agreeableness, C = Conscientiousness.

of college GPA. Results in Table 2 indicate that HSSC marks predicted GPA significantly, more so in the humanities than in the sciences (R^2 = .350 & R^2 = .159, respectively). Separate regression analyses were run for humanities and sciences because B.A. and B.Sc. programs are different in

disciplinary contents and methods. Moreover, these programs demand different admission standards in terms of HSSC marks. Thus, these factors are likely to bear differently on GPA for the two disciplines.

In Hierarchical Regression Analysis, when EI scores were added to the regression equation (step 2) it raised prediction of GPA by about 5 percent in humanities and the model was significant, F (2, 251) = 3.25, $p < .01$, analogous to the finding in the literature (Furnham & Chamorro-Premusic, 2004; Lounsbury, Sundstrom, Loveland & Gibson, 2003). Such an increase did not appear for the science students.

To test how well personality dimensions predicted college grades, the Big Five scores replaced those of EQ-i (step 2a). An insignificant effect was found both in the humanities and the sciences (3.2% and 3.4%, respectively) supporting the hypothesis that personality traits do not explain sufficient variance in GPA scores. Finally, personality effects were statistically controlled to estimate if EI still had an effect on GPA, after HSSC marks (step 2b) were regressed. Interestingly, the model was still significantly predictive, F (2, 251) = 3.02, $p < .02$ wherein the controlled personality variables and EI together showed nearly the same incremental validity, ΔR^2 = 5.2, as without personality control, ΔR^2 = 4.8, for the humanities. However, regression weight of EI dropped in significance (from β = .226, $p < .05$ to β = .178, p = ns).The results were consistently poor and insignificant for the science students.

The expectation that trait-EI would significantly explain variance in college grades could not be statistically supported in the presence of personality; however, EI had a moderate advantage over personality; as predictor of scholastic success. While examining these results, the prediction criterion of scholastic performance or GPA also merits reflection in that the GPA range was restricted having a skew of -.52 for the humanities and .87 for the science. This might have artificially depressed correlation coefficient of GPA with other measures of the study.

Discussion

The Big Five traits together correlated strongly with the overall EQ-i score. This led to the inference that emotional intelligence conceptualization of Bar-On (1997) is rooted in personality. The EQ-i is, therefore, rightly labelled as ‘a trait-EI’ measure and it can not be said to be measuring something different than personality. On the other hand, GPA is recognised as a different construct than EQ since their correlation was relatively low.

Regarding relationship of EQ to GPA, it was found that the intrapersonal EQ dimension including subscales of self regard, self awareness, assertiveness, independence and self actualization were relatively more associated with GPA indicating that grades go with sense of industry, autonomy and will to achieve. Academic achievement is a variable of great social and personal value and several studies have investigated this relationship across diverse samples (Barchard, 2003; Brackett & Mayer, 2003).

The fact that GPA is predicted the most by performance on HSSC was meaningful as well as expected. Since B.A. and B.Sc. programs were different in contents and disciplinary methodologies and they demand different admission criterion in terms of HSSC marks, therefore, separate regression analyses were run for humanities and sciences. The two programs could, therefore, bear differently on GPA for the two disciplines. Another reason for running separate regressions was that college students are heterogeneous population interested in different courses that involve specific disciplinary discourse, marking conventions, format of examination, etc. Combining grades from disparate courses within sciences and humanities into a single grade point average is likely to undermine reliability of the composite GPA scores as the criterion measure. This can potentially cause discrepant rate of prediction of GPA across studies involving different nature / discipline and levels of courses. Several studies guided us in considering program differences. For example, Petrides et al. (2004) reported that trait-EI while having no influence on maths and science performance, moderated the effect of ability on English and overall GCSC performance (compulsory education at16 years in UK).

Both EI and personality could not predict college grades significantly. EI had a moderate advantage over personality as predictor of scholastic success though. Trait-EI could not significantly explain variance in college grades in the presence of personality factors. The restricted range of GPA as the criterion variable could also have depressed the efficacy of EI as a predictor (Pearson, 1903). When the range of a variable is curtailed such as admitting college students very competitively from a pool of applicants and when subsequently they compete closely among peers, their index of academic achievement follows a narrow range. This can depress the correlation of scholastic index with other variables such as EQ.

In short, both personality and EI scores could not predict college grades independently. Together, they predicted for the humanities only ($p < .05$). Second, trait-EI heavily overlapped with personality. When personality was controlled, the Beta weight of EI was reduced. Thus EI can be said to be lacking in construct validity. Third, the expectation that college grades would be predicted by trait-EI next to previous scholastic record / HSSE was not clearly supported. However, the prediction was relatively stronger for humanities than for the science students. Overall, the results portray fragility of the self report approach of assessing emotional intelligence. This strengthens the critics who argue that trait- EI approach is not efficacious enough for predicting college performance compared to ability-EI approach (O' Connor & Little, 2003).

Notwithstanding the results of this study which confirm earlier results of Barchard (2003), an implication of this study is specificity of the academic disciplines (science vs. humanities) in predicting academic achievement. Even the high school marks (HSSC) did not relate with GPA in the same degree for humani-

ties as for the sciences.

Conclusions

Emotional intelligence continues to be a complex construct and Bar-On trait measure of EI is confirmed in this study as a redundant concept overlapping with personality, particularly with the trait of conscientiousness. Second, EI via trait conceptualization has appeared to relate more to intrapersonal, e.g., low neuroticism and conscientiousness than to interpersonal dimensions of personality such as agreeableness, extraversion and openness. Only high school scholastic performance was found as a significant predictor of college grades Both EI and personality did not demonstrate significant additional variance explaining college GPA.

Limitations and Suggestions

GPA had been spread over a narrow range in a top class college like GCU where seeking admission is very competitive. This stifles results. A broad spread GPA could be more useful in the future researches where common core courses and fewer optional ones clearly define the context of scholarship.

Second, as a study in other national context, i.e., Pakistan, the study needs to be replicated to confirm results, possibly on a larger sample and with different academic programs such as medical, engineering and other educational programs. EI concept is only two decades old in the West, and the research is still at an early stage to arrive at something conclusive, more so in other national context.

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Received February 2009
Revision Received November 2009