EQ-nomics: Understanding the relationship between individual differences in Trait Emotional Intelligence and entrepreneurship

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ABSTRACT

Past studies highlight the importance of Trait Emotional Intelligence (EI) in the prediction of career success. Given the evidence that trait EI predicts job performance and job satisfaction, it is reasonable to expect this construct to also predict other forms of career success. In this study, we examine whether EI predicts entrepreneurship; that is, whether higher trait EI is linked to entrepreneurial behaviours and entrepreneurial success, and whether any effects of trait EI on entrepreneurship are independent of the personality trait of Core Self-Evaluations, demographic variables, and individual differences in entrepreneurial personality. Results show that trait EI predicts only some entrepreneurial outcomes beyond other variables examined, and with small effect sizes. This suggests that individual differences in entrepreneurship result only in part from inter-personal differences in trait EI. Implications for research and practice are discussed.

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1. Introduction

Trait Emotional Intelligence (EI) (Petrides & Furnham, 2001) has increasingly been argued to be a highly useful concept in career success (O'Boyle, Humphrey, Pollack, Hawver, & Story, 2010). Indeed, it was initially suggested that EI, in this respect, may even be more important than IQ (e.g. Goleman, 1995). Whilst empirical evidence does not support the latter argument (e.g. Van Rooy & Viswesvaran, 2004), there is certainly evidence to show that EI predicts career related performance outcomes. Indeed, emerging evidence suggests that trait EI is a proxy for emotion-related self perceptions that are directly relevant to organisational variables such as job satisfaction and performance. Two recent meta-analyses (O'Boyle et al., 2010; Van Rooy & Viswesvaran, 2004) showed that EI predicts a range of performance outcomes, even after controlling for IQ and the Big Five factors of personality.

Whilst the above mentioned studies have focused mainly on job satisfaction and performance there is reason to expect that EI also predicts other forms of career success and outcomes. Indeed, more recently, several authors have argued that EI can be an important factor in the prediction of entrepreneurial outcomes (e.g. Chell, 2008; Zampetakis, Beldekos, & Moustakis, 2008). Theoretically, there is good reason to believe EI to be a useful concept for entrepreneurship (see below). However, despite increased interest in this area, and the popularity of EI concept in general, research examining the relationship between EI and entrepreneurship is near to non-existent.

1.1. Entrepreneurship

The definition of entrepreneurship has notoriously been problematic (Busenitz et al., 2003). Indeed, the one issue that entrepreneurship scholars do agree on is that the definition of entrepreneurship and the nature of the activities that constitute entrepreneurial behaviour remain elusive (Chell, 2008; Hisrich, Langan-Fox, & Grant, 2007). Whilst entrepreneurship has commonly been conceptualised as the creation of business (see Gartner, 1988; Shane, 2008), this conceptualisation hardly captures the full scope of entrepreneurship. Indeed, numerous authors have criticised this definition for narrowing and de-contextualising (c.f. McKenzie, Ugbah, & Smothers, 2007). Correspondingly, Kuratko (2007) maintains that entrepreneurial activity can occur also outside organisations (e.g. a student organising events for alternative income), or within organisations (i.e. corporate entrepreneurship; Morris, Kuratko, & Covin, 2008), and does not necessarily have to involve business activities (e.g. social entrepreneurship; Mair & Marti, 2006). Thus, whilst the creation of business may be one aspect of entrepreneurship, it is neither necessary nor sufficient for entrepreneurship (McKenzie et al., 2007). Rather, entrepreneurship refers to a set of activities or behaviours. Although numerous perspectives of entrepreneurial activity/behaviour have

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been presented, the only recurrent themes in the literature are *recognition* and *exploitation of opportunities*, *innovation/change*, and *value creation* (Gartner, 1988; Kuratko, 2007; McKenzie et al., 2007; Shane & Venkataraman, 2000). Importantly, this view of entrepreneurship asserts that entrepreneurial activity (i.e. the recognition and exploitation of opportunities, innovation, and value creation) is *a function of* individuals' personality (Kuratko, 2007; McKenzie et al., 2007).

1.2. Entrepreneurship and EI

Given that entrepreneurial behaviour is a function of individual differences, personality and ability factors should predict entrepreneurial activity and success (c.f. Rauch & Frese, 2007; Zhao & Seibert, 2006). One candidate construct to predict individual differences in entrepreneurship is trait EI. In simple terms, trait EI may be interpreted as a person's self-perceived ability to understand and manage his or her own and other people's emotions (Chamorro-Premuzic, 2007). Given the social nature of entrepreneurial activities, EI has been hypothesised to be an extremely important factor for predicting entrepreneurial success. Indeed, several authors have suggested that the ability to interact effectively with other people, which is associated with higher trait EI, may often be *necessary* for individuals attempting to exploit opportunities and innovations (Chell & Baines, 2000).

Despite the increasing academic and business interest on EI as a key index for career success (O'Boyle et al., 2010), however, surprisingly little research has explored the relationship between trait EI and individual differences in entrepreneurship; even fewer studies have looked at this relationship taking into account a broader conceptualisation of entrepreneurship, beyond business start-ups (Zampetakis et al., 2008). A rare exception is a recent study conducted by Zampetakis et al. (2008), which examined the role of EI in entrepreneurial behaviour *within* organisations. The researchers found a significant relationship between EI and entrepreneurial behaviour, highlighting that EI may be a useful concept for the prediction of entrepreneurial outcomes.

However, Zampetakis et al. only examined *corporate* entrepreneurship and focused exclusively on managers' entrepreneurial behaviour on subordinates, which is only one of many aspects of entrepreneurship (Kuratko, 2007). As mentioned above, entrepreneurship as a broader concept can occur within as well as outside organisations, including in non-business related activity (Kuratko, 2007). Finally, Zampetakis et al. (2008) did not include other personality variables in their study. Given that trait EI is related to a wide range of self-constructs (Chamorro-Premuzic & Furnham, 2010), it would be important to demonstrate its incremental validity over other individual differences. Accordingly, the aim of the current study was to extend Zampetakis et al. research by (a) including a more comprehensive measure of entrepreneurial activity, and (b) by including two relevant personality measures, namely, Core Self-Evaluations (CSE; Judge, Erez, Bono, & Thoresen, 2003) and a Measure of Entrepreneurial Tendencies and Abilities (META; Ahmetoglu & Chamorro-Premuzic, 2010).

CSE is a broad personality trait reflecting the most general and fundamental beliefs individuals hold about themselves (Judge & Bono, 2001). In addition to Neuroticism, and Self-esteem, CSE includes the characteristics of Self-Efficacy and Locus of Control (Judge et al., 2003), both of which have been related to entrepreneurial activities (Rauch & Frese, 2007; Zhao, Seibert, & Hills, 2005). Indeed, Shane (2003) argued that CSE is likely to influence the discovery of opportunities as well as the individuals' decision and ability to pursue and exploit these opportunities. However, whilst CSE is potentially an important construct for entrepreneurship, little research has directly examined this hypothesis; CSE remains an important individual difference variable that has not

been empirically related to entrepreneurship. Thus, an additional aim of the current study is to fill this gap in the literature. Furthermore, previous research has found a strong link between EI and CSE (e.g. .78, Kluemper, 2008); even stronger than that traditionally found between EI and the Big Five (Chamorro-Premuzic & Furnham, 2010). It may therefore be argued that CSE is even a bigger hurdle to EI than the traditional personality obstacle of the Big Five (Chamorro-Premuzic & Furnham, 2010). Thus, by including the construct of CSE in this study, we wanted to investigate whether EI indeed incrementally predicts entrepreneurship beyond CSE.

Finally, the present study also attempted to assess the incremental validity of trait EI beyond entrepreneurial personality traits. To this end, we included the META (Ahmetoglu & Chamorro-Premuzic, 2010), which assesses individual differences in the ability to recognise and exploit opportunities, innovate and create change (Kuratko, 2007; Shane & Venkataraman, 2000). This inventory is based on the premise that entrepreneurship constitutes a set of activities or behaviours, and that individuals are more or less entrepreneurial, depending on their tendency and ability to engage in these activities or behaviours. As this measure was designed specifically to predict entrepreneurial outcomes, it was deemed useful for the task of assessing the incremental validity of trait EI.

Based on the arguments presented above, therefore, the hypotheses of the study were as follows:

- H1: Trait EI will positively predict entrepreneurial activity and achievement.
- H2: CSE will positively predict entrepreneurial activity and achievement.
- H3: META will positively predict entrepreneurial activity and achievement.
- H4: Trait EI will show incremental validity in the prediction of entrepreneurial activity and achievement even after accounting for scores on CSE and META.

2. Method

2.1. Participants

In all, 528 (288 males) participants, most from the UK, completed this study. Their ages ranged from 16–84 years (M = 31.1, SD = 13.0); 77% were aged over 18 or under 44, with 3.8% aged 18 or below, and 19.2% being 44 or above. With regard to participants' occupational status 4.4% indicated that they were unemployed; 47.7% were students, 33% employed, and 25.9% were self-employed (note that participants were allowed to select more than one option, so they could, for instance, indicate that they were students as well as self-employed).

2.2. Measures

2.2.1. Trait Emotional Intelligence questionnaire – Short form (TEIQue-SF; Petrides & Furnham, 2006)
The TEIQUE-Short form is a self-report scale that consists of 30 items designed to measure a *global* trait EI. Example items include "Expressing my emotions with words is not a problem for me" and "I usually find it difficult to regulate my emotions". Respondents are instructed to use a 7-point Likert scale that ranges from completely disagree (1) to completely agree (7).

2.2.2. Core Self-evaluation scale (CSES; Judge et al., 2003)
This is a 12-item inventory that measures a single factor, i.e. CSE. Items involve statements about typical thoughts/feelings ("Overall, I am satisfied with myself") and behaviours ("I complete

tasks successfully"), which are answered on a five-point Likert scale, ranging from "strongly disagree" to "strongly agree".

2.2.3. Entrepreneurial outcomes

In order to assess individual differences in entrepreneurial success, we included a range of items relating to past (biographical) and current entrepreneurial achievements and activities. The items were rationally generated based on the most common themes in the literature (e.g. Shane, 2008; Shane & Venkataraman, 2000; Shumpeter, 1911). The scale comprised a total of 18 items developed to measure entrepreneurial achievements and activity both outside and within organisations. All items assessed actual outcomes rather than preferences or tendencies, and items were rationally keyed into (a) entrepreneurial behaviours to generate income (outside ones main job; e.g. organising events, selling things), (b) corporate entrepreneurship, (c) social entrepreneurship, (d) entrepreneurial activity during school/college, and (e) entrepreneurship through innovation/invention (this is in line with Carson, Peterson, & Higgins, 2005 Creative Achievement Questionnaire). Responses were rated on a multiple choice and participants could select more than one option. A Principal Component Analysis (PCA) revealed five factors with Eigenvalues above 1, which comprised the hypothesised entrepreneurship factors (outlined above). Inspection of the screeplot test revealed one dominant factor which accounted for 22% of the variance. Finally, we also included two additional items relating to the more common operation of entrepreneurship in past research, namely, "Number of businesses started" and "Income".

2.2.4. Measure of Entrepreneurial Tendencies and Abilities (META; Ahmetoglu & Chamorro-Premuzic, 2010)

This is a self-report scale that consists of 61 items. It assesses four aspects of entrepreneurial personality, namely, Entrepreneurial awareness (EA; e.g. "I am quick to spot profitable opportunities"), Entrepreneurial creativity (EC; "In groups, I usually have the most innovative ideas"), Opportunism (O; "I try to take advantage of every profitable opportunity I see"), and Vision (V; "I want to make a difference in the world"). It also gives participants an overall "Total Entrepreneurial Potential Score", obtained by adding together the scores of all individual facets. Respondents are instructed to use a 5-point Likert scale that ranges from completely disagree (1) to completely agree (5). PCA revealed four oblique factors corresponding to EA, EC, O, and V.

2.3. Procedure

Participants completed the survey on-line, through a website that was advertised through various social-media websites (Facebook, LinkedIN, and Twitter) as well as e-mails. After completing the survey, participants were thanked for taking part in this study and given feedback on their personality profiles (META scores).

3. Results

Descriptive statistics and inter-correlations for all measures are presented in Table 1. As shown, all personality scales had good internal consistency (Cronbach's alpha). As expected, trait EI correlated with all entrepreneurial outcomes and was also substantially correlated with CSE. There were also significant correlations between trait EI and the dimensions of META. Moderate correlations were, in addition, observed between the META facets, as well as between most of the outcome measures (with the exception of income). Given these results we proceeded to test the *incremental* validity of EI in the prediction of entrepreneurship beyond that of other personality measures.

3.1. Structural equation modelling

Structural equation modelling (SEM) was carried out using AMOS 5.0 (Arbuckle, 2003). Two competing models were tested. Given the inter-correlations between the META facets and the inter-correlations between the outcome measures, we first tested a parsimonious latent model where a total META score as well as a latent Total Entrepreneurial Activity (TEA) factor (where all outcomes were loaded on a latent factor) were specified. Secondly, we tested a facet level model where both the META facets and the outcome variables were treated independently, as correlated factors.

In both models, the variables included were divided into three subgroups, whereby age and gender were exogenous or covariates, personality variables (i.e. EI, CSE, and META) were mediators, and the various entrepreneurial outcomes were endogenous. With the exception of the latent TEA factor, variables were entered as observed covariates in the model. The directionality of the model is conceptual rather than causal and can be justified on the basis that personality constructs are less affected by situational variables than are entrepreneurial activities, and that age and sex in turn are less affected by environmental factors than are personality constructs.

The model's goodness of fit was assessed via the χ^2 statistic (Bollen, 1989), the goodness of fit index (GFI; Tanaka & Huba, 1985; values close to 1 indicate good fit), the comparative fit index (CFI; Bentler's, 1990; values above .96 are acceptable); the root mean square residual (RMSEA; Browne & Cudeck, 1993; values below .06 indicate good fit); and the expected cross-validation index (ECVI; Browne & Cudeck, 1989; smaller values indicate better fit). In the latent model, saturated paths from the covariates to the mediators and the DV (i.e. TEA factor), and from the mediators to the DV were added. This model, which included 11 paths between exogenous and endogenous variables, did not fit the data well: $\chi^2 = (37 \ df, \ p < .01) \ 189.48$, GFI = .94, CFI = .91, RMSEA = .09, ECVI = .52. Accordingly, the next step was to investigate the sources of misfit in the model. Modifications were based on the AMOS modification indices, expected parameter change statistics, and standardised residuals, and parameters were added only if they made substantive sense. On an inspection of parameter estimates, three observed variables, Income, Student Entrepreneurship, and Alternative Entrepreneurship, were found to be poor indicators of their latent TEA factor. These paths were subsequently freed. Based on the modification indices and expected parameter change, seven direct paths were added to the model; these were from META to Income, Student Entrepreneurship, and Alternative Entrepreneurship, from Age to Income, Student Entrepreneurship, and Invention Entrepreneurship, and from trait EI to Invention Entrepreneurship. These paths were added one at a time, and all other path coefficients and fit statistics were examined after each addition to determine its effect on these values. In addition, several paths were found to have non-significant values and were subsequently removed from the model one parameter at a time, starting with the lowest *t*-value. The modified model, shown in Fig. 1., fitted the data well: $\chi^2 = (34 \ df, \ p < .01) \ 42.19$, GFI = .99, CFI = .99, RMSEA = .02, ECVI = .25.

As shown in Fig. 1, whilst EI displayed significant correlations with all entrepreneurship outcomes, when other relevant personality and demographic variables were included in the SEM model, only one significant path, between EI and Invention Entrepreneurship, remained. Similarly, whilst CSE was significantly correlated to all entrepreneurial outcomes, the only significant path remaining once other variables were taken into account was between CSE and the latent TEA factor – and this relationship was weak. The strongest personality predictor of entrepreneurial outcomes was META. Specifically, the total META score significantly predicted all

Table 1
Descriptive statistics, alpha coefficients, and bivariate correlations between EI, CSE, META, and entrepreneurial activities and achievements.

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	M	SD	α
1. EI	–																142.1	14.9	.89
2. CSE	.74**																42.8	7.2	.83
3. EA	.34**	.41**															35.7	7.3	.85
4. EC	.53**	.43**	.61**														44.0	7.1	.81
5. O	.45**	.51**	.58**	.50**													57.7	9.0	.79
6. V	.40**	.41**	.58**	.55**	.56**												75.3	12.7	.91
7. META_total	.52**	.53**	.82**	.77**	.80**	.87**											212.7	29.7	.94
8. Income	.12**	.13**	.10*	.11**	.07	.06	.10*										4.1	4.4	
9. #Businesses	.15**	.14**	.33**	.27**	.25**	.13**	.28**	.27**									1.6	0.7	
10. Alternative_E	.16**	.12**	.34**	.27**	.28**	.11*	.40**	.08	.40**								1.1	0.9	
11. Student_E	.16**	.12**	.28**	.25**	.24**	.18**	.20**	.05	.20**	.28**							1.4	1.4	
12. Corporate_E	.22**	.13**	.31**	.25**	.37**	.20**	.35**	.25**	.35**	.26**	.29**						1.1	0.9	
13. Invention_E	.12*	.13**	.35**	.32**	.36**	.28**	.40**	.11*	.40*	.27**	.28**	.38**					0.4	0.5	
14. Social_E	.21**	.18*	.30**	.24**	.37**	.19**	.31**	.17**	.31**	.27**	.32**	.33**	.36**				0.2	0.3	
16. Total_E	.26**	.20**	.47**	.40**	.49**	.30**	.50**	.17**	.50**	.60**	.63**	.68**	.74**	.68**			6.3	3.5	

Note: EI = Emotional Intelligence, CSE = Core Self-Evaluations, EA = Entrepreneurial Awareness, EC = Entrepreneurial Creativity, O = Opportunism, V = Vision, _E = Entrepreneurship. Income was scored 1–15 where 1 = £0, 2 = £1–5000, 3 = £5000–20,000, with a £10,000 increase until 12 = £100,000–150,000, 13 = £150,000–200,000, 14 = £200,000–300,000, 15 = over 300,000.
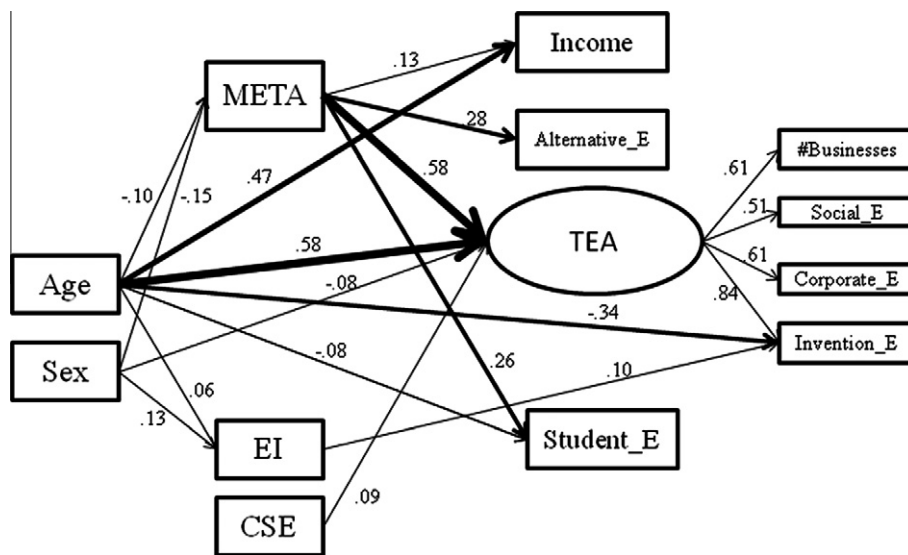# Businesses was scored 1–5 where 1 = 0, 2 = 1–2, 3 = 3–5, 4 = 6–9, 5 = 10+.

Fig. 1. The modified model. The thicknesses of the lines are directly proportionate to the strength of the weights.

entrepreneurial outcomes and the weights of the paths ranged from modest (.13 with Income) to strong (.58 with latent TEA factor). Age significantly predicted all entrepreneurship outcomes with the exception of Alternative Entrepreneurship. Sex was related to the latent TEA factor, with females engaging in less entrepreneurial activities than males, although this relationship was weak.

Looking at AMOS-squared multiple correlations we found that, in combination, the relevant predictors accounted for 23% of the variance in Income, 58% in the latent TEA factor, 8% in Alternative Entrepreneurship, and .8% in Student Entrepreneurship.

Next we tested the facet level model, to investigate the comparative goodness of fit. Although the fit statistics of this second model were comparable to the latent model: $\chi^2 = (44\ df, p < .01)\ 56.20$, GFI = .99, CFI = .99, RMSEA = .02, ECVI = .40, the ECVI value indicates that a more parsimonious solution is reached with the latent model. Thus, Model 1 was deemed to have better fit to the data.

4. Discussion

Our results showed that EI correlated significantly with all entrepreneurship outcomes examined, though only one association

remained significant after the variance of other personality factors was accounted for. This finding is important in two ways. First, it stresses the importance of considering other relevant personality variables in EI research, and specifically, the need to examine *incremental* validity in addition to concurrent validly. Indeed, whilst a recent study (Zampetakis et al., 2008) found EI to predict entrepreneurial behaviour within organisations, the research did not account for other personality variables in their analysis.

Second, the current results demonstrate that EI has incremental validity in the prediction of some entrepreneurial activities, beyond that of other relevant personality and demographic variables, even if the effects are weak. Specifically, our results suggest that more emotionally intelligent individuals are more likely to engage in innovative entrepreneurial activities - a finding which is in line with previous research suggesting that individuals high in EI tend to have higher affectivity, informing creative dispositions and thus facilitating innovation (Amabile, Barsade, Mueller, & Staw, 2005). The fact that innovation is a key aspect of entrepreneurship (Kuratko, 2007; Shumpeter, 1911) renders this an important finding from an applied perspective, despite the small effect sizes.

In addition to the EI-entrepreneurship link, the current study showed that other personality variables, not previously examined,

are also important to explain individual differences in entrepreneurial success. First, CSE was found to be a significant predictor of the latent TEA factor. Although this relationship was weak, it indicates that CSE may well be a concept worthy of increased attention in future entrepreneurship research.

Second, the strongest personality predictor of entrepreneurship outcomes in the current study was the META. This measure was specifically developed to assess entrepreneurial personality traits; hence its associations with entrepreneurship makes theoretical sense. Nevertheless, considering the extant literature on personality and entrepreneurship, in which there remain serious debates about the usefulness of personality as a variable in the prediction of entrepreneurial outcomes (c.f. Chell, 2008; Hisrich et al., 2007), the current results may have substantial practical implications. Specifically, whilst critics of the "trait approach" in entrepreneurship have generally pointed to the mixed and perhaps modest associations found in the literature (Hisrich et al., 2007), META was found to be a consistent and (generally) moderate to strong predictor of most entrepreneurship outcomes.

4.1. Limitations and future research

Limitations of this study included the use of self-reports as criteria. Though not uncommon, future studies using objective measures in addition to self-report of the various outcomes are necessary to assert the predictive validity of the independent variables. Studies should also include longitudinal designs to disentangle the causal order between personality and entrepreneurship. Future research could also assess incremental validity beyond the Big Five and IQ.

4.2. Implications

Our results have important implications. Most notably, they show that trait EI is a significant predictor of entrepreneurial activity, but that its impact may be limited when other personality variables are taken into account. They further demonstrate the importance of CSE and, especially, META in explaining individual differences in entrepreneurship.

In practical terms, there are several avenues which the results of the current study can inform. The first is personnel selection. Thus, selecting individuals who score high on EI, CSE, and META may be of significant interest to organisations, as this may act as a foundation for increased competitive advantage. Indeed, growing evidence suggests that large companies that employ individuals that act entrepreneurially, tend to gain and retain competitive advantage in their respective markets (e.g. Lumpkin, 2007). Second, governmental bodies that encourage entrepreneurial activity and venture creation may want to use these personality measures to decide the most appropriate candidates for financial (and non-financial) assistance.

A third avenue is vocational guidance. Thus, providing vocational guidance programmes for young individuals high on the personality characteristics examined in the current study may also be important in terms of nurturing future entrepreneurial activity. Finally, relevant personality profiling could be used as placement tool in private and public sector organisations, where individuals are promoted or relocated into roles where entrepreneurial commotion and thinking is beneficial, or necessary.

5. Conclusion

Entrepreneurship is thought to be a major source of employment, economic growth, and technological progress (Kuratko, 2003; Reynolds, Bygrave, & Autio, 2004). In order to understand and

facilitate this process we clearly need to see entrepreneurship as more than the mere creation of organisations. Entrepreneurship can occur both outside organisations and within them. It involves the recognition and exploitation of opportunities, innovation, and creation of value. Importantly, it is a function of individuals' behaviour and actions. This means that people will differ in their tendencies and abilities to engage in entrepreneurial activity. Several individual differences in personality and ability may influence this process. The current study looked at differences in EI, CSE and META and showed that these are important contributors to entrepreneurship.

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