

Entrepreneurial intentions

The role of personality traits in perspective of theory of planned behaviour

Role of
personality
traits

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Abstract

Purpose – This study aims to inculcate personality traits in theory of planned behaviour (TPB) and analyze mediation of perceived behavior control (PBC) and attitude toward entrepreneurship.

Design/methodology/approach – Data were collected with the help of a structured questionnaire from students at four universities located in capital city of Pakistan. SmartPLS has been used to run structural equation modeling technique.

Findings – Findings of PLS analysis revealed that the relationship between entrepreneurial intentions (EI) and personality traits was mediated by PBC and attitude toward entrepreneurship.

Originality/value – This study contributes toward the understanding of EI of students in Pakistan – a developing economy. More specifically, it sheds light on the vitality of personality traits in determining the antecedents of EI. Leaning on TPB and intention models, the study incorporated personality traits to unveil a unique and testable multidimensional model of EI, which supports the notion that external factors such as personality characteristics can indirectly affect EI. This research also supports the incorporation of personality traits in TPB and suggests that these socio cognitive theories should concede the indirect effect of personality on intention and behavior.

Keywords Entrepreneurial intentions, Theory of planned behaviour, Personality traits

Paper type Research paper



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Introduction

From the previous few years, entrepreneurship has become a national priority for various governments (Mamun and Rajennnd, 2018) It has been affiliated with enhancement of innovation, productivity boost, employment prospects and economical gains (Farrukh *et al.*, 2017; Kirkley, 2017; Park, 2017). Thus, it is imperative to investigate the factors which might affect the entrepreneurial intentions (EI) in a sound theoretical model to develop and apply effective policies. In current era, plethora of researcher has been endeavoring to explore the factors of EI.

The early researches have indicated personality attributes as the only determinants for EI. Prior research mainly focused on predating EI with the help of certain personality traits; however, later on, the inclusion of individual difference (such as achievement motivation) came forth to investigate the EI through cognitive and social psychological models such as theory of planned behavior (TPB) (Fayolle *et al.*, 2014; Krueger, 2017). This has initiated the debate that prediction of EI through personality trait is subject to some mediating variable such as perceptual and motivational factors (Baum *et al.*, 2001). However, the role of mediating factors for entrepreneurship has remained undisclosed in the literature (Rauch and Frese, 2007).

In the past research on personality traits, perceptual and motivation factors in determining EI had been conducted independently. To date, there are rare studies which integrated these factors in some social cognitive framework such as TPB. In other words, TPB components have scarcely been recognized as a mediating factor for the relation of EI with personality attributes, under the research sphere of entrepreneurship in Pakistani context.

Study of literature showed that despite the importance of entrepreneurship in economic development, most of the past research was inclined to western countries, there is a little empirical research on entrepreneurial motivation, attitude and intentions of students in developing countries such as Pakistan. The present study is an attempt to fill the highlighted gaps and develop a model for assessing the effects of personality traits on EI in perspective of TPB in the context of a developing country.

Literature and theoretical framework

Theory of planned behaviour

Past literature showed; intentions have been recognized as the best forecaster for planned behaviors. This is found highly true if behaviors are infrequent, hard to recognize and scarce (Krueger *et al.*, 2000). These attributes are also one of the characteristics of entrepreneurship, which is considered as an intended and deliberated behavior (Bird, 1988).

In the context of entrepreneurship, intention (EI) can be defined as a “self-acknowledged conviction” by any individual that he/she is willing to initiate new business enterprise, and he/she continuously plans to accomplish this in future (Ridha and Wahyu, 2017; Thompson, 2009). The EI is considered as first step toward initiating new business (Kautonen, Van Gelderen and Tornikoski, 2013). Thus, it is very important to understand EI to undermine the concept of entrepreneurship (Krueger and Carsrud, 1993). Literature indicates that individual differences have an impact on EI (Zhao and Seibert, 2006). Consequently, personality traits have been well explored by previous researchers (Karabulut, 2016; Leutner *et al.*, 2014; Mustafa *et al.*, 2016). However, studies directed toward trait-based approaches had many limitations which had been criticized for meager explanatory nature (Hisrich *et al.*, 2007; Krueger *et al.*, 2000).

Although personality traits have been shown to have statistical relation with entrepreneurship, its predictive value has remained limited in previous works (Reynolds, 1997). Consequently, the research direction moved toward cognitive models to depict the influence on entrepreneurial behavior (Scheier *et al.*, 1994). Thus, it was found that through cognitive perspective that the proximal constructs, including perceived behavioral controls (PBC) and attitudes have higher predictive values toward EI (Karimi *et al.*, 2013).

The social-cognitive model of TPB, introduced by Ajzen (1988, 1991), consists of such proximal constructs. According to TPB model, three constituents are influential for behavioral intentions, including personal assessment of behavior and its outcomes, which is termed as attitude toward the behavior (Ajzen, 1991), alleged social pressure toward a behavior termed as subjective norms (SN) in TPB and the apparent difficulty toward completing behavior. It has been indicated that SN, PBC and favorable attitude toward behavior works together to enhance the intention of completing the behavior, that is known as PBC (Urban and Ratsimanetrimanana, 2015).

The TPB model has been successfully applied on students' EI to predict entrepreneurship attitudes, PBC and SN toward EI. This is found true for both developing and developed countries (Iakovleva *et al.* 2011). According to Karimi *et al.* (2012, 2013a), ATE, SN and PBC have high impact on EI of students. These findings justify Ajzen's (1991) affirmation regarding the significance of discussed three factors. However, their importance and degree of impact may vary according to condition and country. Therefore, it is asserted that all three factors pointed out by Ajzen should be considered while assessing EI. TPB received a strong empirical support in prediction of EI in past studies. Plethora of past studies found a significant contribution of attitude toward behavior, SN and PBC in EI.

H1. There is positive association between Attitude toward entrepreneurship and EI.

H2. There is a positive relationship between SN and EI.

H3. There is a positive impact of perceived behavioral control on EI.

Personality traits and entrepreneurial intentions

Personality traits play a vital role in determining behavior of an individual (Tran and Von Korflesch, 2016). Literature provides supports for personality traits has been a tinted but imperfect predictor of many aspect of entrepreneurship such as intention to start a venture (Khan and Ahmed, 2011) and being an entrepreneur in the existing organizations (Farrukh *et al.*, 2016a, 2016b). Theory of career choice explains that the individual's career choice is the expression of his/her personality. Prior researchers have also found a positive association of personality traits and EI (Zhao and Seibert, 2006). Here it is notable that findings of previous researchers have been found inconsistent. For example some studies found personality traits as strong indicator of EI (Michael Crant, 1991; Zhao and Seibert, 2006). These studies showed that the individuals who choose entrepreneurship as career are different in personality traits than those who choose employment in organization (Kolvereid, 1996). However, few studies also showed the use of personality characteristics to determine the EI give a small predictive validity, explanatory power and inconsistent results (Krueger *et al.*, 2000).

Most commonly used personality traits are risk taking propensity, need for achievement and *locus* of control. Individual having high need for achievement personality traits are not easily satisfied with their performance and achievement and they keep on striving to gain more. A considerable no of studies have shown that individuals having high need for achievement are more inclined toward entrepreneurship that those who have less need for achievement (Begley and Boyd, 1987; DeCarlo and Lyons, 1979; Hornaday and Aboud, 1971; Entrialgo *et al.*, 2000).

Another important personality trait is *locus* of control which is described as the perceived ability of an individual to influence his/her life events (Hisrich and Peters, 1998). Locus of control is conceptualized in two forms, internal and external, former is concerned to the self-efficacy of an individual to influence the outcomes and later talks about the influence of external determinants of the outcomes. Research shows that internal *locus* of control plays a vital role in decision to start a new venture (Mazzarol *et al.*, 1999; Entrialgo *et al.*, 2000).

Propensity to take risk is another important personality trait which is used in this research, it is described as the tendency of an individual to get involve in a risky event, and entrepreneurship is one of those risky events. Empirical findings showed that individual having high risk taking propensity had a stronger urge to involve in entrepreneurship (Hmieleski and Corbett, 2006). Thus, based on the basis of the given arguments, we postulate following hypotheses:

H4. There is a positive association between need for achievement and EI.

H5. There is a positive association between locus of control and EI.

H6. There is a positive association between risk taking propensity and EI.

Theory of planned behaviour and personality characteristics

Under TPB, it is evident that external factors, including personality traits can have an impact on a person's intentions. Chell (2008) has labeled the need for achievement, risk taking tendency and *locus* of control as "The Big Three". These three factors are attributed to personality of new business enterprise initiators. Moreover, they have also been related to desire of becoming entrepreneur (Brockhaus, 1982; Ahmed, 1985; Robinson *et al.*, 1991; Shaver and Scott, 1991; Koh, 1996; Reimers-Hild, 2005; Gurel *et al.*, 2010; Frank *et al.*, 2007).

Motivation toward achievement or need for achievement can be defined as probability of performing something in a better way as compared to others or one's own previous performances (Hansemark, 2003). The people who have need for achievement are mostly hard working, ambitious and competitive. They always try to enhance their social position and gain better achievements (McClelland, 1961). Risk taking can be defined as the probability of an individual's exposure toward the risk factors (Rauch and Frese, 2007a). In other words, the individual who score high on risk taking personality are inclined toward pursuing actions or decision that are uncertain and accompany chances of failure (Jackson, 1994). This factor can be used to differentiate between entrepreneurs and non-entrepreneurs (Ahmed, 1985; Shane, 1996; Stewart and Roth, 2001). Locus of control reflects a person's conceptualization toward the reason of happenings in one's life. The internal *locus* of control implements that an individual has control over happenings in his life, whereas external *locus* of control reflects the believe that the happenings of one's life are under the influence of external factors (Rotter, 1966; Shook *et al.*, 2003).

The people who have an internal *locus* of control are more inclined toward the risks of initiating a new business (Mueller and Thomas, 2001). Consequently, internal *locus* of control is highly prevalent among entrepreneurs (Beugelsdijk and Noorderhaven, 2005; Lee and Tsang, 2001; Nelson, 1991; Perry *et al.*, 1986). Thus, the present study examines these three personality traits in detail. Additionally, ATE and PBC are thought to have a stronger relation to intentions (Liñan and Chen, 2009; Karimi *et al.*, 2013a) and personality (Fini *et al.*, 2012; Obschonka *et al.*, 2010; Zhao *et al.*, 2005).

Personality characteristics and attitudes toward entrepreneurship

Fini *et al.* (2012) asserted that motivational and emotional forces, that are conceptualized as psychological characteristics, has been found as central point to three major theoretical traditions:

- the cognitive consistency perspective;
- functional perspective; and
- reinforcement perspective.

These theoretical traditions assert that when people feel they are going to expose to some event they get involved in a cognitive process to evaluate their ability to cope up with these events by alternating their attitudes (Rogers, 1975) and develop a favorable or unfavorable behavior toward these events same as described by the TPB.

Various previous researchers have linked internal *locus* of control, achievement and internal personal control with entrepreneurial attitudes (Hatten and Ruhland, 1995; Luthje and Franke, 2003; Robinson *et al.*, 1991). Moreover, internal locus of control has also been affiliated with a person's aspiration of becoming an entrepreneur (Bonnert and Furnham 1991; Herron and Robinson, 1993). The tendency to take risk and *locus* of control has been reported to show indirect influence on a person's EI through Attitude toward Entrepreneurship (ATE) (Luthje and Franke, 2003). Consequently, it was also found that ATE has mediating effect on the relation of risk taking tendency with EI (Fini *et al.*, 2012). Thus, on the basis of these verdicts, it is hypothesized that ATE has mediating role in the relation of personality traits and EI. This indicates an increase in entrepreneurial behavior and EI with the enhancement of risk taking tendency, desire for achievement and internal *locus* of control. Hence:

- H7. Relationship between EI and need for achievement will be mediated by attitude toward entrepreneurship.
- H8. Relationship between EI and risk taking propensity will be mediated by attitude toward entrepreneurship.
- H9. Relationship between EI and locus of control will be mediated by attitude toward entrepreneurship.

Personality characteristics and perceived behavioral control

On the first hand, it is expected that the personality traits will have an impact on PBC and EI through PBC while on the other hand, need for achievement increases self-confidence and capability to cope against difficult situations (McClelland, 1965; Slocum *et al.*, 2002). Hence, it is asserted that increase in motivation toward achievement will result in an increase of

confidence in one's capabilities to initiate new business endeavor, which will lead toward higher EI. Till date, there is no research work which has pointed out the influence of need for achievement on PBC. Consequently, [Kiviluoto et al. \(2011\)](#) have appealed for research on relation of need for achievement with entrepreneurial self-efficacy. The *locus* of control reflects an individual's perception about one's control over life's situations (Rotter, 1966). The people who are proponents of external *locus* of control have less self-efficacy and perceive actions taken to be useless ([Bandura, 1977](#)).

Consequently, *locus* of control has been affiliated with self-efficacy. Similarly, the concept of one's control over environment is also associated with increased self-efficacy ([Phillips and Gully, 1997](#); [Wood and Bandura, 1989](#)). Thus, it is evident that people who perceive *locus* of control to be internal tend to have higher self-efficacy ([Phillips and Gully, 1997](#)).

[Bandura \(1986\)](#) pointed out that a person's self-judgment about their physiological states can be considered as a depiction of their self-efficacy. Some studies have also indicated that *locus* of control exhibits the anxiety factor in situations with high uncertainty (Ray and Katahn, 1968; Archer, 1979).

From general observation it is found that for a person thinking to start a new business as he/she thinks that he/she can control the environment through hihe/sher capabilities and the result of his decisions will depend only on his abilities. Hence, the people having perception of internal *locus* of control tend to be less anxious and more confident to complete their desired action such as establishing a new business. Although to a limited extent, association of risk taking with PBC has been explored in the literature of entrepreneurship.

According to [Zhao et al. \(2005\)](#), risk taking tendency depends on perception of an individual regarding his own psychological condition. The individuals having more tendencies toward risk taking are more likely to cope with risky situation such as establishing a new entrepreneurial start-up. Consequently, they have less probability of suffering from anxiety, carries a sense of control, and expect positive outcomes. This leads to high self-efficacy ([Zhao et al., 2005](#)). A previous study, conducted on students from five universities in USA has shown that risk tendency has an association with EI through the factor of self-efficacy. Thus, it is assumed that PBC can have a mediating role in relating personality traits with EI. It can also be said that these personality attributes boost up PBC factors of a student, which helps in enhancing behavioral intentions, such as initiating a new business. According to [Obschonka et al.\(2010\)](#), personality can indirectly influence EI through PBC. Thus, in accordance with the above arguments, it is hypothesized that:

H10. Relationship between EI and need for achievement will be mediated by PBC.

H11. Relationship between EI and risk taking will be mediated by PBC.

H12. Relationship between EI and locus of control will be mediated by PBC.

Methodology

Data collection

Data were collected from 1,350 final semester students (bachelors and masters) with an assumption that they would be more likely to start their own business as they were in their last semester with clearer future plans. In total 1175 questionnaire were received which made response rate 87 per cent. The sample was made up of humanities students (27.2 per cent), computer engineering students (10.8 per cent) engineering students (29 per cent) and

business studies 33 per cent. The total number of male students was 646 (which represents 55 per cent), and there were 529 female students (which represents 45 per cent).

Measure of the study

All the items of variables were adopted from the previous studies and a five-point Likert scale point was used. Table I shows the sources of the questionnaire items.

Statistical tools and methods

To test the study model, partial least square method is used, which is a second generation multivariate technique (Hair et al., 2014). This technique can simultaneously assess the measurement model and structural model by minimizing the error variance (Hair et al., 2014). SmartPLS version 3 was used to analyze the developed model. Bootstrapping function (5000 resample) was used to assess the significance level of path. The partial least squares technique is a powerful component-based method widely used in prior studies (Farrukh et al., 2017; Farrukh et al., 2016a, 2016b; Farrukh et al., 2017; Hussain and Endut, 2018; Kazumi and Kawai, 2017). Figure 1 shows the graphical representation of the measurement model.

Evaluation of measurement model

All the exogenous and endogenous variables were conceptualized a first order reflective construct. Essentially, an important aspect in PLS model evaluation is the presentation of measurement model results, which focuses on ascertaining of individual item reliability, internal consistency reliability, convergent validity and discriminant validity of the measures used to represent each construct (Chin, 2010b; Hair et al., 2014; Hair et al., 2011; Henseler et al., 2009). Table II shows the results of measurement model evaluation.

Discriminant validity. To establish discriminant validity in this study, Fornell and Larcker’s (1981) criterion was implemented by comparing the correlations among the latent constructs with square roots of average variance extracted as presented in Table III. Furthermore, as a rule of thumb for establishing discriminant validity, Fornell and Larcker (1981) suggested that the square root of the AVE should exceed the correlations among latent constructs.

As presented in Table III, the correlations among the latent constructs were compared with the square root of the average variances extracted (Chin, 1998, 2010a; Fornell and Larcker, 1981; Hair et al., 2014; Henseler et al., 2009). Table further indicated that each of the square root of the average variances extracted has exceeded the correlations among latent constructs. Hence, this suggests that adequate discriminant validity has been achieved.

Construct	Research reference
EI	Linan and Chen (2009)
Attitude toward Entrepreneurship	Linan and Chen (2009)
SN	Kolvereid and Isakson (2006)
PBC	Linan and Chen (2009)
Need for achievement	Cassidy and Lynn (1989)
Risk taking propensity	Gomez-Mejia and Balkin (1989)
Locus of control	Rotter (1966)

Table I.
Source of
questionnaire items

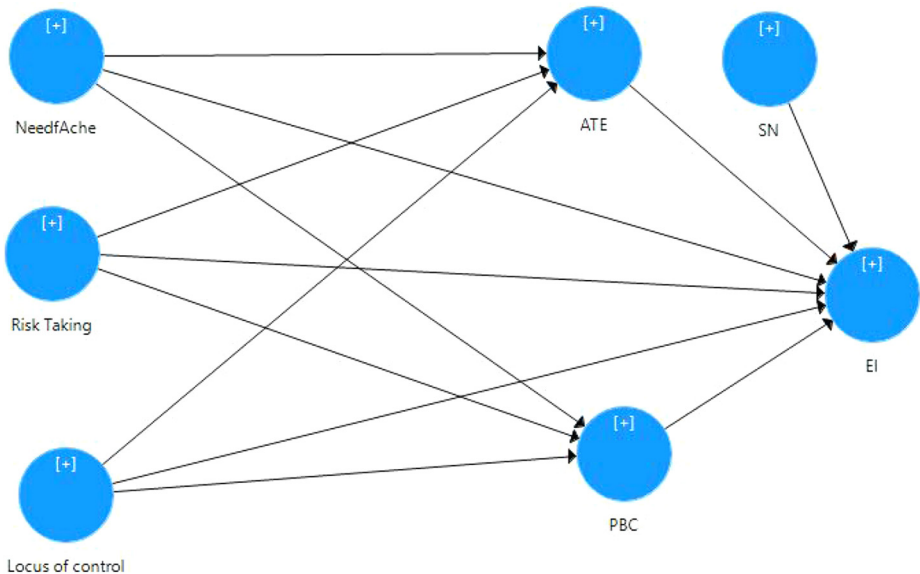


Figure 1.
Graphical
representation of the
study factors

Assessment of significance of the structural model

After establishing the reliability and validity of the measurement model, the results of the structural model are then presented. In the current study, a bootstrap resampling method has been applied based on 5000 replicates and 295 cases to assess significance of the path coefficients (Hair *et al.*, 2014; Hair *et al.*, 2011; Hair *et al.*, 2012b; Henseler *et al.*, 2009; Preacher and Hayes, 2008). R^2 measures the predictive accuracy of the model (Ang *et al.*, 2015) and represents the percentage of variance in the dependent variables as explained by the independent variables in the model (Hair *et al.*, 2010), whereas path coefficients indicate the degree of change in the dependent variable occurred in accordance for each independent variable (Hair *et al.*, 2010; Hair *et al.*, 2006; Pallant, 2007). Table IV shows the results of bootstrapping and decision taken for each hypothesis.

Mediation analysis

To measure the mediation effect of the variables, this study followed the procedures suggested by Hair *et al.* (2016). Results of bootstrapping in Table V show that factors of TPB fully mediate the relationship between personality traits and EI.

Discussion

The present study has explored the effects of personality on EI with respect to TPB along with mediating effect of attitude and PBC. Such a relation is found true when entrepreneur is considered desirable and the mentors around the student are encouraging. In such a situation, chances for student to establish new business are more. Thus, it can be said that intention relies on three motivational sources. However, the significance for each source may vary in perspective of intention and PBC has shown to have a stronger affiliation with EI. These findings are in accordance with the work earlier done by Krueger *et al.* (2000), Autio *et al.* (2001) and Karimi *et al.* (2013a).

Table II.

Measurement model
quality criteria

Latent variable	Factor loading	Composite reliability	AVE
EI		0.84	0.62
EI1	0.751		
EI2	0.756		
E3	0.775		
EI4	0.745		
EI5	0.685		
Attitudes toward entrepreneurship		0.82	0.55
ATE1	0.757		
ATE2	0.638		
ATE3	0.854		
ATE4	0.897		
SN		0.78	0.54
SN1	0.733		
SN2	0.865		
SN3	0.811		
PBC		0.88	0.60
PBC1	0.773		
PBC2	0.903		
PBC3	0.774		
PBC4	0.726		
PBC5	0.697		
Need for achievement		0.72	0.56
NAch1	0.749		
NAch2	0.795		
NAch3	0.737		
Risk taking propensity		0.80	0.65
RskProp1	0.758		
RskProp2	0.882		
RskProp3	0.870		
RskProp4	0.873		
Locus of control		0.80	0.551
LC1	0.864		
LC2	0.777		
LC3	0.772		
LC4	0.865		

Table III.

Fornell and larcker
criteria for
discriminant validity

Variable	1	2	3	4	5	6	7
1. EI	<i>0.78</i>						
2. Attitudes toward entrepreneurship	0.43	<i>0.74</i>					
3. SN	0.33	0.18	<i>0.73</i>				
4. PBC	0.62	0.26	0.27	<i>0.77</i>			
5. Need for Achievement	0.34	0.32	0.06	0.36	<i>0.74</i>		
6. Risk taking propensity	0.21	0.13	-0.09	0.18	0.13	<i>0.80</i>	
7. Locus of control	0.23	0.30	0.12	0.24	0.38	0.05	<i>0.74</i>

Note: Correlations and square roots of AVE estimates in iatalic on the diagonal for all variables

Table IV.
Results of hypothesis testing via bootstrapping

Path	Path coefficient	SE	t-statistics	Decision
ATE → EI	0.3407	0.1582	2.41	Supported
SN → EI	0.2508	0.1979	2.71	Supported
PBC → EI	0.3434	0.1609	4.51	Supported
LC → ATE	0.2091	0.275	2.36	Supported
LC → PBC	0.2589	0.2915	2.54	Supported
NfaH → ATE	0.2290	0.1419	2.07	Supported
NfaH → PBC	0.2611	0.1852	2.86	Supported
RISK TAKING → ATE	-0.0384	0.201	0.19	Not Supported
RISL TAKING → PBC	0.2095	0.173	2.21	Supported
LC → EI	0.2114	0.110	2.56	Supported
NfaH → EI	0.2242	0.1420	2.76	Supported
RISL TAKING → EI	0.2911	0.1231	3.12	Supported

Note: Results of analysis in Table show that all hypothesis have been supported except relationship between risk taking and attitude toward entrepreneurship

Table V.
Mediation analysis

Indirect path	Path coefficient	t-statistics (O/STDEV)	p-values
LC → ATE→EI	0.336	5.03	0.00
NfaH → ATE→EI	0.231	4.55	0.00
RISL TAKING → ATE→EI	0.330	4.20	0.00
LC → PBC→EI	0.298	3.12	0.00
NfaH → PBC→EI	0.312	4.01	0.00
RISL TAKING → PBC→EI	0.278	2.34	0.00

The mediating effects of attitudes and PBC on the relation of personality attributes with entrepreneurial intentions have been proven by the formulated model of present study. This implies that a person having characteristics of need for achievement, risk taking tendency and internal *locus* of control will start a new business only if he/she has confidence, and finds the task worthy. These findings are found in line with the earlier work done by [Conner and Abraham \(2001\)](#) and [Wilkinson and Abraham \(2004\)](#). Both of these studies have emphasized on inclusion of personality traits in social cognitive models relating to behaviors and intentions.

Findings showed no association between attitude toward entrepreneurship and risk taking propensity. Effects of risk taking propensity in entrepreneurship has been controversial area of research. Some past studies showed that this relation has been subject to cultural context as well ([Zahra, 2005](#)). While on the other hand, [Rauch and Frese \(2007\)](#) argued that using different measures of risk taking propensity produces different effect size. [Karimi et al. \(2012\)](#) asserted that weak predictive value of risk taking propensity is because, different individuals perceive risk differently.

To clarify this controversial relation future research might consider a subjective judgment of risk inherited in certain situation, which is accepted as a better predictor of risk than risk propensity by many researchers ([Keh et al., 2002](#); [Simon et al., 2000](#)). In sum, this study supports the existing assumptions and theories by illustrating that personality traits effect the entrepreneurial intentions, In addition, these personality traits expert their effects through some proximal variables such as cognitive and motivational factor of TPB.

Implications

The present study has some theoretical and practical implications for researchers and policy makers respectively, who wants to provoke the stimulus of entrepreneurship among the students. Moreover, these implications are highly applicable in the context of a developing country. By Drawing on intentions and TPB models, new predictors for EI has been devised by the present study. This is achieved by integrating factor of personality in the proposed model, to validate it. This study theoretically implies that personality attributes has indirect impact on EI (Fishbein and Ajzen, 1975). Moreover, these results provide evidence that personality characteristics can be useful determinants of students' perceptions and beliefs. Furthermore, it can said that personality attributes can determine students' beliefs and attitudes. Thus, personality attributes are important part for EI (Herron and Sapienza, 1992; Johnson, 1990).

Specifically, the findings of this research supported for an integration of social cognitive theory-TPB and personality traits. It also suggests that these social cognitive theories should take consideration of indirect effect of personality traits on behavioral outcomes. Thus, this study makes a significant contribution by empirically testing the mediational role of PBC factors between personality and EI.

The findings also showed that PBC has contributed the most in EI prediction. Therefore, the study suggests some practical interventions and strategies to aim PBC of students, some prior studies showed that entrepreneurial education can effect self-efficacy or PBC.

Thus, entrepreneurial role models should be considered while designing the curriculum, as they can increase confidence level in students regarding their capabilities to initiate a new business by rendering them high experience (Karimi *et al.*, 2013b, 2013c). The personality traits have been found to impact on students' EI through attitudes and PBC. Thus, these factors should be considered by policy makers when designing strategies of increasing students' EI and behaviors. It is recommended that the focus should be laid on developing these characteristics in students. According to some researchers, the characteristics such as need for achievement and risk-taking propensity can be developed and change to some extent over a time span (McClelland and Winter, 1969; Miron and McClelland, 1979) (Hansemark, 1998). Entrepreneurship education can enhance *locus* of control and need for achievement. Similarly, in another study, Castro-Torres *et al.* (2013) found a positive association between entrepreneurship education and risk taking propensity.

Most of the entrepreneurial characteristics can be stimulated in students. However, for this purpose traditional teaching methods cannot be used (Kirby, 2004). The method of teaching is very important. In Pakistan, methods and content related to EI has not been implied. Resultantly, the curriculum of Pakistan has failed to develop entrepreneurial competencies among students (Yaghoubi, 2010). According to Yaghoubi (2010), important hindrance toward entrepreneurship motivation is caused by improper teaching methods, content, curriculum and evaluation system. Thus, new teaching methods should be applied to stimulate students with EI and competencies.

Limitations and future research

There were some limitations present in the present study. Because of the cross-sectional nature of study, reliable results were not obtained. This study cannot depict a clear picture of EI for Pakistani students (Maxwell and Cole, 2007; MacKinnon *et al.*, 2011). Thus, a stronger relation can be found existing between EI and entrepreneurship attitudes. The same is found true for the association between entrepreneurship attitudes and personality characteristics. Although the relation between personality attributes and behavioral

intentions has a strong theoretical basis, the casual paths has been reversed in the model. However, the results for original model is more applicable. Moreover, this can be explained on stable and unstable nature of personality characteristics and EI, respectively (Caliendo *et al.*, 2013). Thus, longitudinal research design is required to show relation of personality with EI and TPB. Such a research design would help in understanding EI and the resulting entrepreneurial behavior. Although the relation of intention and behavior has vital significant, it has remained undiscussed in the literature. This research gap can only be filled by a longitudinal approach.

It is recommended that findings of the present study should be tested in other settings. Moreover, the relation of other personality and contextual attributes with EI should also be assessed. According to Caliendo *et al.* (2013), personality characteristics have an impact on various entrepreneurial tasks. Thus, future researches should assess the influence of personality attributes within the context of TPB.

The model of present study was mediation based where distal variables influence with the help of proximal variables (Fishbein and Ajzen, 1975; Lüthje and Franke, 2003; Rauch and Frese, 2007a). Anyhow, moderation model can also be used to relate proximal variables with their respective outcomes. This research angle should be focused by future researchers.

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