# FOSTERING ENTREPRENEURIAL INTENTIONS THROUGH ENTREPRENEURIAL SELF-EFFICACY ENHANCEMENT: AN INTERVENTION-BASED INVESTIGATION

## Doctoral Thesis

by

**Ankita Mishra**
**(2018hsz0011)**

DEPARTMENT OF HUMANITIES AND SOCIAL SCIENCES

**INDIAN INSTITUTE OF TECHNOLOGY ROPAR**

**June, 2024**

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In Partial Fulfilment of the Requirements

for the Degree of

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DEDICATED

TO

FAMILY & FRIENDS

# Declaration of Originality

I hereby declare that this work entitled **"Fostering Entrepreneurial Intentions through Entrepreneurial Self-efficacy Enhancement: An Intervention-based Investigation"** has not previously been accepted in substance for any degree and is not being simultaneously submitted in candidature for any other degree. This thesis is the result of my own independent investigation/research, except where otherwise stated. I have acknowledged all the other sources by stating the references explicitly. Further, due credit has been attributed to the relevant state-of-the-art and collaborations with appropriate citations and acknowledgements, in line with established ethical norms and practices. I also declare that any idea/data/fact/source stated in my thesis has not been fabricated/falsified/misrepresented. All the principles of academic honesty and integrity have been followed. I fully understand that if the thesis is found to be unoriginal, fabricated, or plagiarized, the Institute reserves the right to withdraw the thesis from its archive and revoke the associated degree conferred. Additionally, the institute also reserves the right to appraise all concerned sections of society of the matter for their information and necessary action. I hereby give consent for my thesis, if accepted, to be available online in the Institute's Open Access repository and for inter-library loan, and for the title and abstract to be made available to outside organizations.

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# Certificate

This is to certify that the thesis entitled "**Fostering Entrepreneurial Intentions through Entrepreneurial Self-efficacy nhancement: An intervention-based Investigation**", submitted by **Ankita Mishra (2018hsz0011)** for the award of the degree of **Doctor of Philosophy** of Indian Institute of Technology Ropar, is a record of bonafide research work carried out under my guidance and supervision. To the best of my knowledge and belief, the work presented in this thesis is original and has not been submitted, either in part or full, for the award of any other degree, diploma, fellowship, associateship or similar title of any university or institution.

In my opinion, the thesis has reached the standard fulfilling the requirements of the regulations relating to the Degree.

Signature of the Supervisor

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# Lay Summary

Entrepreneurship is of paramount importance to society and the economy as it drives innovation, job creation and economic growth. Developed nations substantiate the idea that entrepreneurship is an essential factor leading to economic development. Acknowledging its vital importance, deliberate efforts have been made to encourage and instill entrepreneurial behaviour among young individuals. Among other factors, Entrepreneurial Intentions (EI) has been identified as the crucial determinant that leads to entrepreneurial behaviour. Previous research has focused on exploring the dynamics of EI to craft effective intervention programs. Keeping this in mind, the main goal of the present research work was to design an intervention to increase an individual's intentions to embark on entrepreneurial ventures. To achieve this goal, it was first necessary to identify the most important factor that influences an individual's intentions to pursue entrepreneurship. Three studies were conducted to fulfil the specific objectives of this research work. The first study explored the association of certain psychological attributes such as entrepreneurial self-efficacy (self-confidence in business skills), emotional intelligence (understand and manage emotions appropriately), cognitive flexibility (ability to think about multiple concepts simultaneously), locus of control (belief in controlling outcomes), conscientiousness (tendency to be responsible, hardworking and organized), risk propensity (ability to take risks) and self-regulation (ability to bring oneself into alignment with one's standards and goals) and the intention to embark on entrepreneurial ventures. For testing the primary hypotheses, 769 engineering students were selected and assessed with the help of standardized questionnaires. The data were subjected to appropriate statistical analysis. To validate the findings of study I, another study was conducted wherein 83 budding entrepreneurs —students who have submitted start-up proposals or have initiated early entrepreneurial activities— were selected. With the aim of exploring the distinct psychological attributes, budding entrepreneurs were assessed on selected constructs with the help of standardized questionnaires. As per the findings of studies I and II, entrepreneurial self-efficacy was the most crucial factor influencing EI among students and hence, an intervention was devised to improve entrepreneurial self-efficacy and tested in study III. Out of 769 participants assessed in study I of the research work, individuals with low interest in entrepreneurship were identified and categorized into three homogenous groups. Experimental group I (EG-I) received the main intervention, i.e., the Entrepreneurial Self-efficacy Booster Program (*ESEBP*). The experimental group II (EG-II) received basic entrepreneurship education, and the control group received no entrepreneurship training. The overall analysis showed the effectiveness of the intervention to foster EI in an educational setting. The findings demonstrated that the ESEBP, designed to enhance self-confidence among students, significantly increased their confidence and interest in entrepreneurship. The study emphasized that providing basic entrepreneurship education to engineering students might not be enough to increase their confidence and interest in starting a new venture. However, when combined with programs that boost their confidence in entrepreneurial skills can significantly improve their interest and preparedness for entrepreneurial activities. These findings are critical for educators and policymakers interested in encouraging engineering students to be entrepreneurs.

# Abstract

Entrepreneurship plays a pivotal role in driving economic growth, primarily through facilitating job creation. Recognizing its importance for the nation's development, policymakers and educators are increasingly focusing on fostering entrepreneurship among young individuals. Among other factors, Entrepreneurial Intentions (EI) has been identified as the most crucial factor influencing entrepreneurial behaviour. Researchers have been trying to understand the dynamics and factors influencing EI to design effective training programs. The present research follows a similar trajectory. The primary aim of the research work was to design and test the efficacy of a customized intervention in fostering EI among undergraduate engineering students. To attain the primary aim, a few preliminary studies were essential to identify the most influential factor that, when targeted or manipulated, could affect an individual's intentions to engage in entrepreneurship. Broadly, three separate studies were conducted to fulfil the specific objectives of this research work. The first study explored the association between individual-level psychological attributes such as entrepreneurial self-efficacy (ESE), emotional intelligence, cognitive flexibility, internal locus of control, conscientiousness, risk-propensity, self-regulation and EI. For testing the primary hypotheses, 769 students were selected and assessed with the help of standardized questionnaires. The data were subjected to mediation analysis using Preacher and Hayes' approach. To substantiate the findings of study I, another study was conducted wherein 83 budding entrepreneurs —students who have submitted start-up proposals or have initiated early entrepreneurial activities— were selected. With the aim of exploring the distinct psychological attributes, budding entrepreneurs were assessed and compared with the students —who did not show any interest in early entrepreneurial activities— on selected constructs with the help of standardized questionnaires. The data were subjected to correlation, regression and independent sample t-test. As per the results of studies I and II, ESE was the most crucial factor influencing EI among students. Based on the findings of both the studies and following Bandura's self-efficacy theory, an intervention was devised to improve ESE and tested in study III. Out of 769 participants assessed in study I of the research work, individuals low on EI were identified and categorized into three homogenous groups. Experimental group I (EG-I) received the main intervention, i.e., the Entrepreneurial Self-efficacy Booster Program (*ESEBP*). The experimental group II (EG-II) received basic entrepreneurship education. The control group received no entrepreneurship training; however, they underwent sessions on study and time management. Pre-post control group design was used, and a mixed (2×3) repeated measure ANOVA was applied to test the hypotheses. The overall results showed the effectiveness of the intervention to foster ESE and EI in an educational setting. Educators, researchers and policymakers in the field of entrepreneurship promotion may take these outcomes into consideration and promote the use of such interventions for boosting ESE and EI among engineering students. The study also emphasized that providing basic entrepreneurship education alone is not sufficient for increasing ESE among engineering students. However, when combined with self-efficacy booster modules, it can yield more promising results.



***Keywords:*** entrepreneurship; entrepreneurial intentions; entrepreneurial self-efficacy; intervention; budding entrepreneurs; cognitive flexibility; risk propensity; self-regulation; locus of control; emotional intelligence; conscientiousness.

# List of Publications and Conference Presentations

## Journal

### *Published*

1. Singh, P., & **Mishra, A.** (2024). Convergence and Contrast: An Investigation into the Psychological Attributes of Budding Entrepreneurs. *Journal of the Knowledge Economy*, 1-31. https://doi.org/10.1007/s13132-024-01921-0
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## Conference Presentations

1. Mishra, A., & Singh, P. (2019). Presented a Poster titled "Understanding Entrepreneurial Intentions: Implications for the Future" during the 29th Annual Convention of National Academy of Psychology (NAOP), India (20th-22nd December, 2019), Organized by Department of Applied Psychology, Pondicherry University, Puducherry, India.
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# Table of Contents

# List of Figures

# List of Tables

# Notations and Abbreviations

| | |
|---|---|
| **ANOVA** | Analysis of Variance |
| **CF** | Cognitive Flexibility |
| **CFI** | Comparative Fit Index |
| **CFQ** | Cognitive Flexibility Questionnaire |
| **Cronbach's Alpha** | Reliability coefficient |
| **CMIE** | Centre for Monitoring Indian Economy |
| **Cohen's d** | Estimate of effect size |
| **df** | Degree of freedom |
| **EG-I** | Experimental Group I |
| **EG-II** | Experimental Group II |
| **EI** | Entrepreneurial Intentions |
| **EIQ** | Entrepreneurial Intentions Questionnaire |
| **ELOC** | External Locus of Control |
| **EQ** | Emotional Intelligence |
| **ESE** | Entrepreneurial Self-efficacy |
| **ESEBP** | Entrepreneurial Self-efficacy Booster Program |
| **ESEQ** | Entrepreneurial Self-efficacy Questionnaire |
| **f-test** | Statistical test for comparison of the variance between two or more groups |
| **GFI** | Good of Fit Indices |
| **ILOC** | Internal Locus of Control |
| **LFM** | Luthje & Franke Model |
| **LOCS** | Locus of Control Scale |
| **$M_{age}$** | Mean Age |
| **MS** | Mean Squares |
| **NEO-FFI** | NEO Five-Factor Inventory |
| **r** | Correlation Coefficient |
| **$R^2$** | A statistical measure that determines the proportion of variance in the dependent variable that can be explained by the independent variable |
| **RFQ** | Regulatory Focus Questionnaire |
| **RMSEA** | Root Mean Square Error of Approximation |
| **RP** | Risk-Propensity |
| **SCCT** | Social Cognitive Career Theory |
| **SCT** | Social Cognitive Theory |

# Notations and Abbreviations

| | |
|---|---|
| **SD** | Standard Deviation |
| **SEE** | Shapero's Entrepreneurial Event |
| **SPSS** | Statistical Package for Social Sciences |
| **SRMR** | Standardized Root Mean Square Residual |
| **SS** | Sum of Squares |
| **TEE** | Traditional Entrepreneurship Education |
| **TLI** | Tucker-Lewis's index |
| **TPB** | Theory of Planned Behaviour |
| **TRA** | Theory of Reasoned Action |
| **t-test** | Statistical test to see the significant difference between the means of two groups |
| $\mathbf{x^2}$ | Chi-square |
| **β** | Regression Coefficient |
| **η2** | Partial eta square (estimate of effect size) |

# Chapter 1

# Introduction

## 1.0 A Brief Overview of the Chapter

This chapter serves as an introduction to the present research, outlining the need, significance, design, and objectives of the study. The research's primary goal is to design and assess the efficacy of an intervention fostering entrepreneurial intentions among undergraduate engineering students, recognizing these intentions as crucial predictors of entrepreneurship. This chapter presents a detailed description of the key variable targeted in this research, i.e., Entrepreneurial Intentions (EI), including associated factors and possible explanations for its development and maintenance. The chapter begins with an overview of entrepreneurship's need and significance in the Indian context, conceptualization of entrepreneurship, and a detailed description of EI, followed by the overview of the present study, motivation and primary objectives. The last section presents the conceptual definitions of the variables explored in this research work.

## 1.1 Need and significance of entrepreneurship

Entrepreneurship is a powerful driver of economic growth and prosperity (Global Entrepreneurship Monitor Report, 2018). Most of the developed nations endorse the idea that entrepreneurship is a necessary precondition for economic progress. It is seen as a key strategy to combat the worsening unemployment crisis and other socio-economic concerns (Tiwari et al., 2017; Karimi et al., 2017; Mukesh et al., 2021). The concern for unemployment and poverty in a developing economy has been a persistent challenge. Countries with a rapidly growing population, such as India are experiencing a significant imbalance between the number of employment opportunities and the number of people willing to join the workforce. By 2027, India will have the world's largest workforce along

with numerous challenges concerning job creation and employment (Global Entrepreneurship Monitor Report, 2018; The Economic Times, 2018). Unemployment among educated youth is an even more severe issue which is constantly rising, especially in India (“Is the job scene”, 2019; Gupta & Pushkar, 2019). In a survey by the Centre for Monitoring Indian Economy (CMIE, 2021), it was found that individuals with a graduate degree had the highest unemployment rate in India. In 2023, employability among Indian engineering graduates was about 57, indicating that 43 per cent were still seeking employment opportunities (Rathore, 2023; The New Indian Express, 2022). A study released by Azim Premji University's Centre for Sustainable Employment revealed that the unemployment rate among highly educated individuals is three times higher than the national average. Approximately 55 million people in the workforce hold at least a graduate degree, with an estimated nine million individuals facing unemployment.

The observations mentioned above raise concerns about unemployment and economic development which need immediate attention. Entrepreneurship appears to be a viable option for addressing both the current and future employment crises. Various opportunities and benefits arise from embracing an entrepreneurial mindset and exploring innovative ventures. Several nations have initiated efforts to promote awareness of entrepreneurship and nurture a positive attitude toward it. The Indian government has also taken proactive measures to boost entrepreneurship, introducing schemes like Start-up India, Make in India, and Atal Innovation Mission. Technical institutes have also begun to promote the startup culture and their well-established entrepreneurship cells are providing students with expertise and access to resources for launching new ventures. Additionally, associated ministries are promoting skill development through short-term training programs for youth which may help them in various occupational fields.

The growing population and the decline in the number of jobs available in India make it crucial to foster entrepreneurship (Audretsch, 2012; Shane & Venkataraman, 2000). Although the government is promoting entrepreneurship, there is still a prevailing inclination among students to pursue traditional employment rather than venturing into entrepreneurship; the enthusiasm towards entrepreneurship among youth is yet to be realized (Kusumojanto et al. 2021; Shah, 2023). Considering India's population, traditional jobs offered by the government or the private sector may not be sufficient (International Labour Organization, 2020). It is high time to realize that the government alone can't provide the youth with stable employment and an increased standard of living. Instead, it is imperative to foster a culture of creativity, innovation, and determination, empowering them to proactively shape their future.

Entrepreneurship is one of the critical factors in overcoming the prevailing unemployment issue and enabling youth to enter the labour market and promote job creation (Biswas & Dey, 2021; Stoica et al., 2020). Entrepreneurship is significant for the economic, social and political development of a nation. For instance, the Commission of European Communities (2005) reported that entrepreneurship is essential for future economic development as it creates job opportunities, and drives innovation through various new technologies and services in the market (Galindo-Martin et al., 2019). Innovation and the addition of new services in the economy increase overall GDP and per capita income. Research has shown that regions with higher rates of invention and innovation tend to have better economic performance (Gonzalez-Pernía et al., 2012; Neumann, 2021). The growing impact of entrepreneurship also raises living standards, reduces income disparity, eliminates poverty and encourages optimal use of resources leading towards regional development (Rupasingha & Goetz, 2013). Also, studies indicate that entrepreneurship positively impacts elements essential for a country's institutional and political stability (Dutta et al., 2013). Political stability means the absence of social unrest, revolutions, crises, problems, hardships,

and/or terrorism, along with the competency of the government to control the nation under any circumstances. Political stability obliges people to act in coalition with the government to better understand how to promote public and private partnerships.

Since entrepreneurship is significant in political and economic domains; academia too has pursued it avidly. Researchers are exploring several questions, including why some individuals choose to pursue entrepreneurship while others do not, what factors influence the success of certain entrepreneurs while the majority face failures, and why some individuals excel in recognizing profitable opportunities for new products or services. They are also investigating the specific skills, knowledge, personal characteristics, motives, goals, and cognitive assets that distinguish successful entrepreneurs from their unsuccessful counterparts. Answering these questions involves identifying the factors responsible for these contrasting outcomes. Hence, researchers in the entrepreneurship field have explored various factors that facilitate the creation of a new venture. Despite a plethora of research in this field (Linan & Fayolle, 2015; Krueger et al., 2000; Karimi et al., 2017), understanding of such factors is limited, especially in developing economies (Nabi & Linan, 2017; Tiwari et al., 2017a; Hassan et al., 2020). Individual, societal, cultural, and environmental factors influence entrepreneurial behaviour differently in various economies (Ozaralli & Rivenburgh, 2016; Sharma & Madan, 2014). Thus, it is vital to gain insights into the precursors that determine entrepreneurial behaviour in a particular context (Tuan et al., 2019). Keeping its importance in mind, one phase of the present research work aims to highlight the factors that influence an individual decision to pursue entrepreneurship as a career in the Indian context.

## 1.2 Overview of Entrepreneurship

The word 'entrepreneurship' originates from *entreprendre*, which means 'to do something' or 'to undertake'. '*Entrepreneur'* word was used to refer to someone who undertakes a business venture. Entrepreneurship is a multi-level phenomenon, and hence

there is no consensus on a single definition of entrepreneurship. Entrepreneurship, as a concept, emerged in 1732 with the work of Richard Cantillon. He defined entrepreneurship as a process of searching for the best opportunity of using resources for high commercial gain while assuming 'the risk of enterprise'. Schumpeter (1942) emphasized the role of the entrepreneur as the ‘creative destruction’, i.e., launching new combinations/new industries while replacing the old process and industries. Finding new combinations of factors of production is the process of entrepreneurial discovery that drives economic development.

Shane and Venkataraman (2000) provided an integrative framework for the entrepreneurship field where they defined entrepreneurship as the scholarly examination of how, by whom, and what effects opportunities to create future products and services are discovered, evaluated, and exploited. They emphasized significant domains within the entrepreneurship field, covering research into the origins of opportunities, processes involved in discovering, evaluating, and capitalizing on opportunities, as well as the individuals responsible for identifying, assessing, and exploiting them. Entrepreneurship refers primarily to an economic function carried out by individuals, acting independently or within organizations. It encompasses the identification and pursuit of new opportunities, allowing the introduction of innovative ideas into the market amid uncertain conditions. It includes making decisions about location, product design, resource use, institutions, and reward systems. The socioeconomic environment influences entrepreneurial activity and ventures, ultimately resulting in economic growth and human welfare (Carlsson et al., 2013). Global Entrepreneurship Monitor (GEM) defines entrepreneurship as any attempt at new business or new venture creation, such as self-employment, a new business organization, or the expansion of an existing business, by an individual, a team of individuals, or an established business (Angulo-Guerrero et al., 2017).

### 1.2.1 What determines entrepreneurial behaviour?

Research in different domains has highlighted different factors associated with entrepreneurial activities. According to economists, factors such as finance, land, labour and capital can affect entrepreneurship behaviour. Environmental factors such as government policies, diverse customer preferences, financial support, administrative complexities, technological advancements, intellectual property rights, labour market regulation, urbanization rate, unemployment rates, industrial structure, and living standards influence entrepreneurial behaviour in a country (Grilo & Irigoyen, 2006; Sherman, 2018; Singh et al., 2011). Socio-cultural aspects, e.g., family background, education, religion, ethnicity, beliefs and values, also play a crucial role in determining entrepreneurial activity and motivation (Thornton et al., 2011; Hofstede et al., 2004). Max Weber's socio-cultural systems theory (1947) posits that culture and social structures, such as family and groups, play a pivotal role in shaping an individual's thinking. Societal values and norms, as highlighted by Meek et al. (2010), influence decisions related to entrepreneurial activities. Therefore, the literature supports the idea that culture not only impacts economic behaviour and business success, as emphasized by Shapero and Sokol (1982) and Shane (2003), but also interacts with political, social, technical, and economic factors.

### 1.2.2 Role of Psychological Determinants

Despite significant contributions, it has been observed that economic and sociological factors could not fully explain the engagement of individuals in entrepreneurial behaviour. Despite sharing identical environmental and contextual preconditions, some people decide to become entrepreneurs while others do not. This illustrates the need for a more micro-level analysis to fully comprehend the dynamics of entrepreneurial behaviour. McClelland (1967) described a need-based motivational model highlighting the psychological perspectives in understanding entrepreneurial behaviour. The psychological perspective considers the role of human

attributes in understanding entrepreneurial behaviour. For example, McClelland emphasized achievement motivation, among other factors as one of the important psychological attributes of entrepreneurs. Thereafter, a great deal of research turned into investigating the personal characteristics in differentiating entrepreneurs and managers, as well as successful and unsuccessful entrepreneurs. Among other characteristics, cognitive processes are considered a significant precursor of entrepreneurial decision-making (Krueger, 2003). Among other factors, one significant psychological variable that drives entrepreneurship behaviour is Intention**.**

#### *1.2.2.1 Intention*

In a broader sense, intention is a mental state that represents a commitment to act in the future (Bird, 1988; Thompson, 2009). Intention involves mental activities such as planning and foresight. The intention to perform a behaviour has been described as the best single predictor of an individual's actual behaviour (Ajzen, 1991; Zhao et al., 2010).

Humans are active agents in society and do not involve themselves in entrepreneurial activities accidentally. Rather, they do so intentionally by making choices deliberately and consciously (Krueger, 2007) toward some planned entrepreneurial behaviour (Bird, 1988). Meta-analyses on the intentions-behaviour/action tend to consistently show that up to 39-45% of the variance in actual behaviour can be explained by intentions (Armitage & Conner, 2001; Sheeran, 2002). In the existing literature, numerous theories and models of intentions highlighted the influence of different components (such as personal, social, and contextual factors) in the formation of intentions. Among various theories, the Theory of Reasoned Action and the Theory of Planned Behaviour are the two most extensively researched theories. The *Theory of Reasoned Action* (TRA; Fishbein & Ajzen, 1977) was proposed to predict and help others recognize voluntary behaviours. This theory emphasizes that humans are active agents in society and perform any behaviour purposefully. People are aware of the

information present in their surroundings and analyze the consequences of the behaviour in question. The central element of this theory is the intention which drives actions. TRA posits that behaviour is shaped by intention, which, in turn, is influenced by one's attitude toward the behaviour and subjective norms (Fishbein & Ajzen, 1975). Consequently, attitudes and subjective norms may jointly determine one's intentions and, subsequently, guide their behaviours.

As an extension of the theory of reasoned behaviour, Ajzen (1991) proposed another theory, i.e., the Theory of Planned Behaviour (TPB). This theory added another factor which significantly influences intention, i.e., perceived behavioural control. The TPB assumes that individuals act in accordance with their attitudes, subjective norms and perceived behavioural control. Here, attitude towards the behaviour reflects a favourable or unfavourable evaluation of the behaviour in question (Ajzen, 1991). Subjective norms refer to the perception of acceptability of the behaviour by others. It means the perceived approval of the decision to become an entrepreneur by significant others (Ajzen, 2002). Therefore, an individual's belief in the social acceptance or rejection of the outcome plays a pivotal role in shaping intentions to engage in behaviour. Perceived behavioural control refers to people's perceived ease or difficulty in performing a given behaviour. Perceived behavioural control overlaps with Bandura's (1986) view of perceived self-efficacy (Ajzen 1985). Similar to Ajzen's (1991) perceived behavioural control, Bandura (1986) explained self-efficacy in his theory as an individual's assessment of their capacity to overcome adverse conditions and belief that future actions will be successful (Bandura, 1986, 1997). These terms (perceived behavioural control and self-efficacy) are interchangeably used in entrepreneurship literature (Linan et al., 2011; Krueger & Brazeal, 1994; Boyd & Vozikis, 1994).

## 1.3 Entrepreneurial Intentions

It is important to view intentions in the light of a specific domain to explore its association with a particular behaviour. The intention in an entrepreneurial context is defined as the *self-acknowledged conviction by a person to set up a new business venture and consciously plan to do so at some point in the future* (Thompson, 2009). EI can be seen as a reflection of an individual's state of mind, which leads them to be an entrepreneur instead of motivating them to pursue a traditional job (Karimi et al., 2016). The stronger the intention to engage in entrepreneurial behaviour, the more likely the individuals will perform business activities or indulge in entrepreneurial careers in the future. EI demonstrates the psychological preparedness of an individual to participate in business activities. The literature indicates that identifying the antecedents and examining the dynamics of EI may provide valuable insights to researchers to understand the entrepreneurial process and subsequently predict entrepreneurial activities (Krueger et al., 2000; Peterman & Kennedy, 2003; Krueger, 2007). Researchers proposed and tested some fundamental models and identified various factors that affect EI (Peterman & Kennedy, 2003; Bandura,1997; Krueger et al., 2000). Some of the models are discussed in the following section.

### 1.3.1 The Expectancy Theory (1964) and entrepreneurial intentions

The Expectancy Theory, also known as the Theory of Motivation or Rational Intention Theory, was proposed by Vroom (1964) and posits that individuals consciously choose behaviours to maximize satisfaction and minimize adversity. Within this framework, motivation is conceptualized as a product of three key components: expectancy, instrumentality, and valence. Expectancy refers to the belief that greater effort will lead to improved performance, instrumentality involves the expectation of receiving specific outcomes as a result of effort exertion, and valence pertains to the degree of importance or desirability attached to these outcomes. Additionally, it was concluded that motivation could

augment an individual's EI, independent of their abilities and aptitudes (Maheshwari et al., 2023; Barba-Sánchez & Atienza-Sahuquillo, 2018).

### 1.3.2 Shapero's Model of the Entrepreneurial Event (SEE)

SEE is the theoretical model formulated specifically for the entrepreneurship domain. It considers social and cultural factors as significant contributors influencing one's decision to start a new venture (Shapero & Sokol, 1982). According to this model, EI depends on three factors, namely, perceived feasibility, perceived desirability and propensity to act. Perceived feasibility is the extent to which one feels personally capable of starting a new venture. Various factors such as the presence of role models or partners, obstacles, financial and social support, education, confidence in one's ability to perform entrepreneurial tasks, or perceived availability of resources needed to create a business, affect perceived feasibility (Gasse & Tremblay, 2006). On the other hand, perceived desirability is the attractiveness of the idea of embarking on a new business venture (Shapero & Sokol, 1982). This perception is significantly influenced by cultural norms, family influence, peer opinions, interactions with coworkers, and guidance from mentors. Perceived desirability roughly corresponds to the Ajzen-Fishbein model's attitudinal antecedent of intentions. The propensity to act is the disposition to act on one's decisions, particularly when there is a promising opportunity. This reflects the volitional aspects of intentions indicating a proactive approach towards realizing one's entrepreneurial goals (Mwange, 2018). According to this model, the choice of behaviour depends on the relative "credibility" of alternative behaviours plus some "propensity to act" (without which significant action may not be taken). Credibility requires a behaviour to be seen as desirable and feasible. Entrepreneurial events thus require the potential to start a business (credibility and propensity to act) to exist before the displacement and a propensity to act afterwards (Shapero & Sokol, 1982).

### 1.3.3 Bird's Entrepreneurial Event Model (1988)

Bird's model of EI is grounded in a cognitive psychology theory that attempts to explain human behaviour. According to this framework, EI guides an individual's goal setting, communications, commitment, and other kinds of behaviour. EI is affected by a combination of personal and contextual factors. Personal factors such as prior experience as an entrepreneur, personality characteristics and abilities, and background factors influence the propensity of the individual to start a new venture. The broader context affecting entrepreneurship includes social, political, and economic elements like market shifts, government policies, and societal changes. Intentions are further structured by both rational analytic thinking (goal-directed behaviour) and intuitive/holistic thinking (vision).

### 1.3.4 Theory of planned behaviour (1991) and entrepreneurial intentions

There are extensive empirical investigations wherein TPB was taken as a base model to understand EI (Al-Mamary & Alraja; 2022; Kautonen et al., 2013; Van Gelderen et al., 2008). The findings of these studies reveal a positive influence of TPB components- attitude, subjective norms, and perceived behavioural control—on the decision to embrace entrepreneurship in the future, with variations depending on cultural contexts (Autio et al., 2001; Karimi et al., 2017; Joensuu et al., 2013).

### 1.3.5 Boyd and Vozikis (1994) model of entrepreneurial intentionality

This model represents the extension of Bird's model of EI suggesting an integration of motivational aspects, i.e., self-efficacy. The concept of self-efficacy is similar to the perceived behavioural control component of Ajzen's theory of planned behaviour (Ajzen, 1987). Both constructs reflect perceptual factors that aid the attainment of goal-directed behaviour. Self-efficacy, however, appears to be a broader construct than the perceived behavioural control component as it provides insight into sources of efficacy judgments that subsequently influence behaviour and goal attainment (Boyd & Vozikis, 1994). The term

self-efficacy is derived from Bandura's (1977) social learning theory and refers to a person's belief in his or her capacity to perform a given task. The modification of Bird's model by integrating self-efficacy provides valuable insights into the cognitive process that guides the development of EI. Self-efficacy is a valuable construct for understanding both dynamic assessment and choice of EI development and consequently engaging in the actual behaviour.

### 1.3.6 Krueger's Integrated Model (2000)

Krueger et al. (2000) integrated the theories of TPB and SEE to understand the process of EI. He proposed that intention is a function of desirability and feasibility, which in turn is a function of attitudes, subjective norms and perceived behavioural control. Desirability-feasibility intermediates the association between EI and attitudes, subjective norms and perceived behavioural control. In one of the studies, Krueger et al. (2000) compared both TPB and SEE models among university business students as the subjects who were facing imminent career decisions. This study highlighted the applicability of integrated models in understanding EI and behaviours.

### 1.3.7 The structural model of entrepreneurial intention from Luthje and Franke (LFM, 2003)

This model of EI covers a combination of personality traits and contextual factors (support and barriers). In contrast to the SEE model and the TPB, the LFM considers exogenous factors which directly affect EI. The model highlights that personality variables have an impact on attitudes towards entrepreneurship. In addition to personality factors, contextual factors such as government support, funding for new ventures, administrative policies etc. also play a significant role in motivating individuals to pursue entrepreneurship as a career.

Thus, these models provide valuable frameworks for understanding the intricate interplay of individual beliefs, social influences, and contextual factors in shaping EI.

## 1.4 Factors Influencing Entrepreneurial Intentions

### 1.4.1 Demographic factors

Gender, age, educational background, and previous entrepreneurial experience have been found to be more significant predictors of EI and behaviour, among other demographic factors. A large body of literature has underlined that younger people have greater EI than older ones (Obschonka et al., 2010; Ferreira et al., 2017; Israr & Saleem, 2018). Family characteristics also have a significant effect on the decision to start a new venture (Nguyen, 2018; Georgescu & Herman, 2020). Concerning the role of gender, Diaz-Garcia and Moreno (2010) reported that there was a significant difference between male and female business students in the levels of EI. They found that males expressed a higher EI compared to females. Gupta et al. (2009) also highlighted the role of gender and demonstrated that entrepreneurs were perceived to have predominantly masculine characteristics. Those who perceived themselves as more similar to males had higher EI than those who saw themselves as less similar to males. Previous business experience is also a significant factor that helps develop EI (Krueger, 1993; Romero-Martínez & Milone, 2016; Nguyen, 2018). A study by Wu and Wu (2008) highlighted that educational background also plays a crucial role in enhancing EI among students. In their research, it was observed that students majoring in engineering exhibited greater EI compared to students in other academic disciplines. Another study by Hassan and Wafa (2012) demonstrated that students in the field of science displayed higher EI than those with an arts background.

### 1.4.2 Socio-environmental factors

Existing literature acknowledges the impact of social, political, cultural and economic context on EI. Some of the factors covering this domain include finances for starting a new venture, government policies and regulations, initiatives taken by the government to promote entrepreneurship, internal market dynamics, physical infrastructure, entrepreneurship

education, and social norms (Luthje & Franke, 2003; Tiwari et al., 2017a). Turker and Selcuk (2009) conducted a study investigating the influence of contextual factors on EI. Their findings underscore the significant impact of supportive university environments and structural support factors on shaping the EI of students. This emphasizes the pivotal role of external influences and institutional support in moulding individuals' propensity towards entrepreneurship. Another study (Luthje & Franke, 2003) reflected that students' EI is directly affected by perceived contextual barriers and social support. Regardless of relatively unfavourable attitudes towards business, the individual may be willing to establish a company when they perceive conditions as favourable. On the other hand, even individuals with a positive approach towards new ventures cannot decide to start their businesses due to negative perceptions regarding environmental conditions for entrepreneurs.

### 1.4.3 Psychological Factors

The most significant psychological factors associated with new venture creation are given below:

***1.4.3.1 Achievement motivation.*** Researchers have found a positive relationship between the need for achievement and EI (Sanchez et al., 2005; Akhtar et al., 2020; Bağış et al., 2023). The need for achievement drives an individual to do something better or faster than others and his/her earlier accomplishments (McClelland, 1961). Bao and Zhou (2017) found that entrepreneurs with high achievement motivation build more extensive social capital which can influence their self-efficacy.

***1.4.3.2 Autonomy.*** In view of Niemiec et al. (2006), the need for autonomy involves experiencing a sense of will, choice, and control in initiating, maintaining and terminating behavioural engagement. Researchers explored the direct influence of autonomy on intentions (Baluku et al., 2018). It is found that autonomy is an influential predictor of EI, but not directly, rather through its proximal determinants. The relationship between autonomy

and intention has been found to be fully mediated by attitude, subjective norms and perceived behavioural control (AI-Jubari et.al., 2017).

***1.4.3.3 Big-five personality traits.*** The Big Five personality traits include Openness, Conscientiousness, Extraversion, Agreeableness, and Neuroticism. Openness can be defined as the degree to which an individual is creative, original, and tries to do new things. Conscientiousness pertains to one's level of efficiency, organization, and systematic approach to tasks and responsibilities. Extraversion characterizes individuals who are outgoing, sociable, and energetic, with a propensity for positive interactions and a contagious optimism that encourages others. Agreeableness measures a person's capacity for forgiveness, altruism, and consideration for others, often earning trust and fostering harmonious relationships. Whereas, neuroticism denotes the extent to which an individual experiences negative emotions such as anxiety, moodiness, and worry, often influencing their overall emotional stability. These traits have been found to affect career choice and particularly entrepreneurial activities (Brandstatter, 2011; Costa & McCrae, 1992; Zhao et al., 2010) showed that conscientiousness was positively related to EI. Other studies showed a positive association of EI with extraversion (Luc, 2022; Zhao et al., 2010), conscientiousness (Awwad et al., 2020; Biswas & Verma, 2021), Openness to experience (Murugesan & Jayavelu, 2017; AI-Ghazzalli et al., 2022), agreeableness (Antoncic et al., 2015; Laouiti et al., 2022). Neuroticism has been found to be negatively associated with EI (Biswas & Verma, 2021; Salameh et al., 2022).

***1.4.3.4 Internal Locus of Control (ILOC).*** Individuals high on ILOC believe that they possess the capacity to influence and manage their surroundings (Rotter, 1996). Previous studies have observed a positive link between ILOC and engagement in entrepreneurial activities (Shapero, 1975; Shaver & Scott, 1991). Individuals who were more inclined towards entrepreneurship had a higher ILOC (Gurol & Atsan, 2006; Baldegger et al., 2017).

Caliendo et al. (2014) stated that ILOC is among the personality traits that best predict entrepreneurial behaviour.

***1.4.3.5 Proactive personality*.** Bateman and Crant (1993) defined proactive personality as the extent to which individuals initiate actions to influence their environment. Proactive personality is one of the key contributors to EI as they are directly linked to opportunity recognition (Hansen et al., 2011). A proactive personality has been found to be a significant predictor of EI (Ahmed et al., 2010; Kumar & Shukla, 2022; Zhang et al., 2022; Luo et al., 2022).

***1.4.3.6 Other Psychological Factors.*** In addition to the above-mentioned factors, various other psychological attributes have also been positively linked to EI. For instance, entrepreneurial alertness (Nguyen et al., 2022), psychological capital, i.e., hope, optimism, resilience (Mahama et al., 2023; Welter & Scrimpshire, 2021), innovativeness & creativity (Wathanakom et al., 2020; Pandit et al., 2018; Murugesen & Dominic, 2013; Biswas & Verma, 2021; Ugwueze et al., ·2022), entrepreneurial passion (Li et al., 2022a), resilience (Bullough et al., 2014; Steinbrink & Strohle, 2023).

Literature suggests that, though numerous studies have been conducted, the discussion continues regarding the psychological attributes that exert the most significant influence on EI. There is a need to fill this void by exploring the psychological domain (Majid et al., 2017; Yalcintas et.al., 2019; Hassan et al., 2020; Salameh, 2022). In addition, the mediating mechanisms that link psychological attributes to greater EI are still not fully understood (Barba-Sánchez & Atienza-Sahuquillo, 2017; Miao et al., 2015; Tiwari et al., 2020; Naz et al., 2020).

**Research Questions and Objectives**

Based on the existing literature on the association between these psychological attributes and EI and the identified research gaps, the following research question and broad objectives have been formulated for the present research.

***Research Question***: Does entrepreneurial self-efficacy play a mediating role in the relationship between selected psychological attributes and EI among engineering students? What psychological attributes significantly influence EI among budding entrepreneurs? Do budding entrepreneurs differ in psychological attributes from students less inclined towards entrepreneurship? Which of these factors contributes most significantly to the variance in EI? Can enhancing entrepreneurial self-efficacy lead to an increase in EI among students?

***Broad Objective:*** The primary aim of the research work was to design and test the efficacy of an intervention to foster entrepreneurial intentions among undergraduate engineering students. To attain the primary aim, a few preliminary studies were essential to identify the most influential factors that, when targeted or manipulated, could affect an individual's intentions to engage in entrepreneurial activities. Three separate studies were conducted to fulfil the main objective of the present research work and the details are provided in the next section.

## 1.5 The Present Study

As mentioned earlier, entrepreneurship plays an essential role in driving economic growth by facilitating job creation. Recognizing its significant contribution to national development, policymakers and educators have increasingly focused on nurturing entrepreneurship among young individuals. Among other determinants of entrepreneurship, EI has been considered a significant direct predictor of engagement in entrepreneurial activities. Considering its relevance, researchers have been trying to understand the dynamics and factors influencing EI in order to design effective training programs targeting

entrepreneurial behaviour. The present research follows a similar trajectory. The primary aim of the research work was to design and test the efficacy of an intervention to foster EI among undergraduate engineering students. To attain the primary aim, a few preliminary studies were essential to identify the most influential factors that, when targeted or manipulated, could affect an individual's intentions to engage in entrepreneurial activities. Three separate studies were conducted to fulfil the objective of the present research work. In the first study, the association between EI and individual-level psychological attributes (Entrepreneurial self-efficacy, Emotional Intelligence, Cognitive Flexibility, Internal Locus of Control, Conscientiousness, Risk Propensity, and Self-regulation) was explored. The main hypothesis posited that Entrepreneurial Self-Efficacy (ESE) would act as a mediator in this relationship. A sample of 769 students was assessed using standardized questionnaires, and data were analyzed using mediation analysis based on the Preacher and Hayes' approach.

To substantiate the findings of study I, another study was conducted wherein 83 budding entrepreneurs —students who have submitted startup proposals or have initiated early entrepreneurial activities— were selected and assessed with the help of standardized questionnaires. It was hypothesized that there would be a positive and significant association among the studied psychological attributes and EI among budding entrepreneurs. Additionally, it was expected that budding entrepreneurs would score high on the selected psychological attributes compared to the students who have not shown interest in entrepreneurial activities. The data were subjected to correlation, regression and independent sample t-test.

Based on the insights from Studies I and II, and drawing from Bandura's self-efficacy theory, an intervention was developed and tested. Among the 769 participants from Study I, those with low EI were identified and categorized into three groups. Experimental Group I received an Entrepreneurial Self-Efficacy Booster Program (ESEBP), Experimental Group II

received basic entrepreneurship education, and the Control Group had no entrepreneurship training but underwent sessions on study and time management. It was hypothesized that Experimental Group I would exhibit significantly higher scores on ESE and EI post-intervention. A pre-post control group design was adopted, and a mixed (2×3) repeated measure ANOVA was applied for analysis.

## 1.6 Motivation for the Present Study and Research Gaps

The motivation behind the present research work stems from multiple sources. Worsening unemployment crisis in India, potential significance of entrepreneurship in addressing unemployment related issues, and the identification of specific research gaps after a comprehensive review of existing literature provided motivation for the present study; Key observations that propelled the design of this study are given below:

- Entrepreneurship is receiving significant promotional efforts, however, despite the efforts, students continue to exhibit limited interest in pursuing entrepreneurial paths.
- While states have been endeavouring to enhance the accessibility of physical resources for potential entrepreneurs, there has been a lack of rigorous focus on the psychological resources necessary to facilitate entrepreneurial behaviour.
- The existing studies exploring the psychological attributes of entrepreneurs showed inconsistent findings (Ojiaku et al., 2018; Nunfam et al., 2022).
- The majority of studies explored a direct relationship between psychological attributes and EI (Rauch & Frese, 2007; Zhao & Seibert, 2006), with overall findings inconclusive (Ojiaku et al., 2018; Sharma, 2019; Rosique-Blasco et al., 2018).
- The underlying processes that mediate the relationship between psychological attributes and EI are still largely unexplored (Miao, 2015; Mei et al., 2017; Tsai et al., 2016; Biraglia & Kadile, 2017; Sahin et al., 2019; Naz et al., 2020).

- Researchers argued that it is important to understand the psychological characteristics of the individuals to deliver education and training programs successfully for prospective entrepreneurs (Ndoferepi, 2020; Newman et al., 2019).

- Existing literature showed that most of the research conducted so far studied student samples to understand EI and its correlates; very few tried to explore EI among budding entrepreneurs (González-López et al., 2021; Tiwari et al., 2020).

- Only a few studies have evaluated whether targeted interventions can influence an entrepreneurial mindset (Bachmann et al., 2021; Burnette et al., 2020). The share of experimental/interventional research in entrepreneurial education is very limited, meaning its importance and possible impact are currently undervalued (Fellnhofer & Kraus, 2015; Ferreira et al., 2022; Englis et al., 2023).

- While existing interventional studies have primarily focused on imparting fundamental entrepreneurial knowledge through conventional classroom methods; less emphasis has been directed towards incorporating psychological aspects into entrepreneurship education.

- Recent research underscores the need for upcoming efforts centred on interventions explicitly designed to boost psychological attributes that foster a strong inclination towards entrepreneurship (Burnette et al., 2020; Englis et al., 2023).

In alignment with the above observations and considering research gaps in entrepreneurship studies, the present research endeavours to contribute substantively to the extant body of knowledge in the field of entrepreneurship. It sought to understand certain psychological factors that influence the intention of an individual to pursue entrepreneurship, in the Indian setting. The current research work advances the existing knowledge by undertaking an exploration of the underlying indirect mechanisms, thereby elucidating the

intricate dynamics of EI. Furthermore, it extends its reach into the practical domain of entrepreneurship education by designing and assessing the effectiveness of an intervention to foster EI among students. In essence, it seeks to bridge the gap between theory and practice in the context of entrepreneurship education, aiming to foster EI among potential entrepreneurs. Setting the stage for the presentation of study designs, methodologies, and findings, it becomes imperative to establish clear definitions for the variables under exploration—both conceptual and operational. The subsequent sections will articulate the conceptual definitions, with the operational definitions reserved for presentation within the context of the individual studies.

### 1.6.1 Definition of the constructs studied in the present research work.

***1.6.1.1 Entrepreneurial Self-Efficacy (ESE):*** Among other associated factors, ESE is one of the most crucial factors influencing an individual's intention to start a new venture. *ESE may be defined as the extent to which entrepreneurs are confident about their entrepreneurial skills to complete various tasks and projects* (Boyd & Vozikis, 1994; Krueger et al., 2000). The existing literature has highlighted that people with high ESE are more inclined towards entrepreneurship (Mishra & Singh, 2022a). People with high self-efficacy choose challenging tasks and can overcome obstacles while pursuing tasks fraught with uncertainties and complexities. These people who perceive themselves to be confident can endure pressure, and emotional exhaustion and avoid burnout (Wei et al., 2020). People with high self-efficacy take calculated risks and handle the situation appropriately. ESE can be viewed as a motivating agent that directs people to carry out various entrepreneurial roles and tasks appropriately considering all the positive and negative repercussions. Previous research has highlighted that investigating ESE as a mediator and moderator between the association of personality traits and EI would be of greater importance in understanding EI (Zhao et al., 2006; Tsai et al., 2014; Norena-Chavez, 2022; Gao & Qin, 2022) and devising interventions.

***1.6.1.2 Cognitive Flexibility (CF)*:** CF *refers to our ability to switch between different mental sets, tasks, or strategies* (Martin & Rubin, 1995; Diamond, 2013). In recent research, CF has been found to have a significant positive relationship with EI (Lenortwiz & Dheer, 2017, 2019; Gill et al., 2021). CF involves the application of critical knowledge flexibly and the innovative use of essential knowledge in a variety of real-life situations (Spiro et al., 2003; Barbey et al., 2013). Individuals with high CF tend to showcase creativity and innovation, making them more adaptable to entrepreneurial ideas; hence, they perceive themselves to be fit for the entrepreneurial career (Dolarslan et al., 2017).

***1.6.1.3 Emotional Intelligence (EQ):*** Emotional intelligence is another crucial and recently explored factor in the context of EI. People who can manage their emotions and understand emotion dynamics are more likely to sail through the tough phases. Entrepreneurial activities can be difficult and demanding, necessitating drastic changes while controlling one's emotions, and those who score high on EQ are better equipped to deal with these emotional and stressful situations (Mortan et al., 2014; Zampetakis et al., 2009; Rhee & White, 2007). From the commencement of the endeavour through its establishment, there is significant tension and worry, such as being unable to obtain the necessary resources/funding or experiencing fierce market competition. Individuals with high EQ employ several coping methods to deal with stressful situations and burnout. Hence, these pre-requisite skills make an individual more inclined to entrepreneurship, as they perceive themselves to be fit for an entrepreneurial career.

***1.6.1.4 Self-regulation:*** Karoly (1993) defined self-*regulation as internal and/or transactional processes that enable individuals to guide their goal-directed activities over time and across changing circumstances, or contexts*. A well-known self-regulation theory (Higgins, 1997, 1998) lays out two distinct mindsets: promotion and prevention. Promotion-oriented individuals thrive on pursuing success and channeling commitment to achieve their goals. Their focus centres on personal aspirations, growth, and self-actualization needs. On the flip side,

prevention-oriented individuals tread carefully, aiming to avoid failures and mistakes. They prioritize meeting others' expectations, fulfilling obligations, and harbor strong security needs. Literature has indicated that people with a promotion-focused approach are more inclined towards entrepreneurship than their counterparts. It is so because promotion-focused people tend to be open-minded, search more carefully and take a wide variety of ideas into account and hence, can identify opportunities in the environment (Tumasjan & Braun, 2012).

They excel in creating new markets, exploring innovative alternatives, and enhancing entrepreneurial landscapes (Brockner et al., 2004). This drive fuels their desire to establish a business. Moreover, promotion-focused individuals exhibit higher persistence, even in novel and challenging situations like entrepreneurship (Crowe & Higgins, 1997; Markman & Baron, 2003). Their tenacity becomes a driving force in the entrepreneurial journey, showcasing resilience in the face of unpredictability.

***1.6.1.5 Risk-Propensity (RP):*** *Risk propensity refers to an individual's inclination to participate in behaviours that carry potential risks or harms, often accompanied by corresponding benefits.* Risk-taking was regarded as the distinguishing property of the entrepreneur (Hisrich, 1986). According to Raab et al. (2005), risk tolerance is essential for entrepreneurial thinking and entrepreneurship. The authors assert that people who want to start their businesses confront risks and uncertainty. When entrepreneurs build new companies, they embrace various forms of risk (psychological, social and financial) and people who can take calculated risks are more confident in dealing with complex scenarios and extracting beneficial outcomes. Compared to risk-averse individuals, risk seekers —individuals with high-risk propensity— are more likely to attend to positive outcomes, overestimate opportunities, and underestimate threats; thus, risk seekers are relatively more self-efficacious (Barbosa et al., 2007) and hence they can cope with the challenges during the entrepreneurial activities.

***1.6.1.6 Internal Locus of Control (ILOC):*** Another important trait identified in entrepreneurship literature is the ILOC. *The ILOC indicates the belief that one has control over events in his or her life. In contrast, the external locus of control reflects the belief that events in one's life are influenced by other external forces* (Shook et al., 2003). Individuals high on ILOC are more self-determined and committed which enables them to cope with the upcoming environmental hurdles while pursuing their goals. These individuals have favourable attitudes and a high possibility of completing entrepreneurial tasks (Lefcourt, 2014). Previous research has established the positive link of ILOC to the possibility of engaging in entrepreneurial behaviour (Shapero, 1975; Shaver & Scott, 1992).

***1.6.1.7 Conscientiousness:*** According to Zhao et al. (2010), *conscientiousness defines a person's planning, organizational skills, job motivation, sense of obligation toward others and perseverance*. Given that entrepreneurship demands perseverance, hard work, and a clear set of objectives, conscientious individuals align well with these requirements. According to Barrick et al. (2001), conscientious persons are goal-oriented, resolute and highly motivated. They possess a keen awareness of opportunities and changes required within a specific context (Awwad et al., 2021). It suggests that conscientious individuals are naturally drawn to entrepreneurship, driven by the belief that their personality aligns with the roles and demands inherent in entrepreneurial activities.

To summarize, this chapter has presented the motivation behind the present study and its broader objectives. Various variables linked to EI studied in the present research have been defined, setting the stage for the detailed presentation of the findings from three separate studies. A separate chapter has been devoted to an individual study, each chapter presents review of relevant literature, specific methodologies used, the main findings, and discussion.

# Chapter 2

## Study I
## The relationship between psychological attributes and entrepreneurial intentions: Mediating role of entrepreneurial self-efficacy

### 2.0 A Brief Overview of the Chapter

Research in entrepreneurship is receiving significant attention, however, there has been a lack of rigorous focus on the psychological resources necessary to facilitate entrepreneurial behaviour. Moreover, the existing studies that explain the psychological attributes of entrepreneurs showed inconsistent findings. Taking note of the existing scenario, the present research work was designed and aimed to understand the dynamics of Entrepreneurial Intentions (EI) with the main emphasis on 1) investigating psychological attributes associated with EI and 2) testing the efficacy of an intervention to enhance EI. This chapter presents the findings of the first study among the three conducted to achieve the primary objectives of this research work. The primary focus of Study I was on comprehending the dynamics of EI and exploring its correlation with identified psychological attributes. More specifically, it explored the direct relationship between EI and emotional intelligence (EQ), cognitive flexibility (CF), risk propensity (RP), internal locus of control (ILOC), conscientiousness, and self-regulation. In addition to the direct effects, this study aimed to explore the mediating role of entrepreneurial self-efficacy between above mentioned psychological attributes and EI. A cross-sectional survey was conducted on 769 individuals to collect the required data ($M_{age}$=19.50, $SD_{age}$=1.37). The hypotheses were tested using mediation analysis. This study provides evidence concerning the association between some less-studied psychological attributes and EI. Additionally, the study highlights the role of ESE as a mediator in the relationship between those psychological attributes and EI.

## 2.1 Introduction

While extensive research has examined the direct link between individual psychological attributes and EI, there is an ongoing discussion to explore the underlying mechanism through which psychological attributes influence EI and subsequent behaviours (Mukesh et al., 2021; Karimi et al., 2016; Biswas & Verma, 2021; Tiwari et al., 2017). Though there are many contextual as well as individual factors that may influence EI, the role of *Entrepreneurial Self-Efficacy* (ESE) has been considered a key factor (Boyd & Vozikis, 1994; Krueger & Brazeal, 1994). ESE is one's belief in their ability to be an entrepreneur. Based on the existing literature on ESE, it is expected that ESE can have a significant impact on an individual's EI both directly and indirectly, and changes in ESE may lead to an increase in EI (Oyugi, 2015; Kristiansen & Indarti, 2004). Enhancing ESE requires a comprehensive understanding of its own dynamics. With this notion in mind, the study-I of the present research initially explored the association of psychological attributes with EI among engineering students in the Indian context. However, the primary aim of the present study was to explore the mediating role of ESE between above mentioned psychological attributes and EI. Before presenting the findings of the study, it is important to understand the core constructs explored in the study and the existing literature on their relationship with ESE and EI. In the following sections, all the selected variables and how they relate to an individual's intentions to engage in entrepreneurial activities have been presented in detail.

### 2.1.1 Entrepreneurial Self-Efficacy

Before understanding ESE, it is essential to provide an in-depth introduction to the root construct, namely self-efficacy. *Self-efficacy, a foundational psychological concept, refers to an individual's belief in their ability to successfully execute specific tasks and attain desired goals.* Self-efficacy has been derived from the broader framework of Social Cognitive Theory (SCT) postulated by Bandura (1986). The theory states how cognitive, behavioural, personal,

and environmental factors interact to determine motivation and behaviour. It states that individuals play a role in driving their own motivation, behaviour, and development through a network of reciprocally interacting influences (Bandura, 1999). The SCT also takes into account a person's past experiences, which influence reinforcements and expectations, all of which determine whether a person will engage in a specific behaviour or not.

Self-efficacy beliefs are people's judgements of their capabilities to organize and execute courses of action which are required to attain the desired level of performance (Bandura, 1986). Unless people believe that their actions will result in a successful outcome, they do not feel motivated to act to attain that outcome (Oyugi, 2015; Wilson et al., 2007). Researchers have demonstrated the positive effects of self-efficacy on effort, persistence, goal setting, and performance (Shunk & Pajares, 2009). Thus, self-efficacy beliefs influence what challenges to undertake, how much effort to expend on those endeavours and how long to persevere in the face of difficulties.

Bandura (1977) proposed that individuals' self-efficacy can be enhanced through verbal persuasion, mastery experiences, role models, and emotional and physiological experiences. Encouragement and discouragement from the external source on an individual's performance outcomes could influence their efficacy to perform, so verbal persuasion is quite significant (Redmond, 2010). For instance, when a person receives positive encouragement like "You can do it" or "I have confidence in you," it can boost their confidence and belief in their abilities to accomplish tasks. Conversely, discouraging statements like "You can't finish this project" can generate self-doubt and undermine their perceived capability. Additionally, it reflects that the individual being persuaded through various information develops positivity with self-affirmation thoughts that help in skill development and learning (Jourden et al.,1991).

Another source which fosters self-efficacy is mastery experiences. When individuals complete small goals, they perceive that they can face upcoming challenges and complexities in the same domain. Creating a situation in which people can experience a 'small win' might induce mastery experiences. Vicarious experience implies that an individual's personal efficacy is influenced by the performance and achievement of similar others (Bandura,1977; Bosma et al., 2012). Exposure to role models either by directly interacting with or by observing others may influence the intention to pursue entrepreneurship as a career (Scherer et al., 1989; Linan & Fayolle, 2015; Nowinski & Hodoud, 2019). Perception of one's physiological arousal and emotions can also influence self-efficacy. Optimal emotional arousal facilitates positive beliefs about one's capability. Imaginal experiences or positive visualization, as suggested by James Maddux (2013), can also induce self-efficacy beliefs. Exercises that allow individuals to visualize their future accomplishments will help them believe that they can succeed.

All these sources of self-efficacy are believed to enhance self-efficacy in different domains (Bandura, 1989). Building on the foundation of the broader SCT developed by Bandura (1986), the more recent Social Cognitive Career Theory (SCCT) proposed by Lent and his colleagues (2000) is centred on how individuals make decisions regarding their careers. This theory highlights the influence of certain factors, both individual and contextual, in shaping an individual's career choices. These factors encompass self-efficacy, outcome expectations, and personal goals or intentions, which collectively affect an individual's career decisions. SCCT underscores the vital roles played by self-efficacy and outcome expectations in the decision-making process for career development. Simply put, an individual's career choices are influenced by their belief in their capability to execute required actions (self-efficacy) and their anticipations of the potential consequences of those actions (outcome expectations). Based on the above theoretical background, the present research work focuses

on self-efficacy in entrepreneurial activities which is believed to be a significant predictor of EI and entrepreneurial behaviours. A detailed description of ESE and its relationship with EI, presented in the next section, will help readers grasp the significance of ESE in entrepreneurial behaviour.

ESE refers to an individual's belief in his/her capability to perform tasks and roles aimed at entrepreneurial outcomes. Perceived ESE is belief in one's ability to be an entrepreneur, i.e., whether they would be able to start a business or not (Oyugi, 2015). Studies have found ESE as an important determinant of an individual's ability to start new ventures (Hmieleski & Baron, 2008; Taneja et al., 2024). Starting a new venture requires planning and conscious decisions at every phase of the entrepreneurial process, so individuals with higher degrees of self-efficacy are more inclined to accept challenges that might come in the process of implementation. Most entrepreneurs face various business risks and obstacles, as well as psychological stress and emotional exhaustion, however, people with high self-efficacy overcome the challenges and individuals execute appropriate actions. They tend to generate innovative ideas in comparison to people with low self-efficacy (Caines et al., 2019). Individuals with low ESE are prone to avoiding challenges or even quitting when confronted with obstacles, particularly when they are emotionally drained. People with high self-efficacy have higher emotional management skills and are able to process and understand their and others' emotions appropriately (Sun & Lyu, 2022) which improves their performance as an entrepreneur.

The literature review provided below suggests that individuals with higher confidence in their entrepreneurial abilities tend to view themselves as better suited for a career in entrepreneurship. The correlation between self-confidence and the perception of suitability for an entrepreneurial career underscores the psychological aspect of entrepreneurship, where one's self-perceived competence significantly influences their inclination and readiness to

undertake entrepreneurial tasks. A detailed description of the literature reviewed for the present study, as mentioned below, depicts the nature of relationship between EI and all studied psychological attributes. It will help readers understand the significance of ESE for EI and entrepreneurial behaviour. It forms the basis for developing hypotheses in all three studies and lays the groundwork for empirical investigations into the dynamics of EI.

## 2.2 Entrepreneurial self-efficacy and Entrepreneurial Intentions.

In a systematic literature review, Newman et al. (2019) found that ESE influences people's enthusiasm and desire to engage in entrepreneurial projects. A meta-analysis based on 89 studies and 51919 participants unveiled the role of ESE in determining the intention to start a new venture. This study looked at the crucial antecedents of EI, mediators, and moderators affecting EI. The results indicated that ESE plays a vital role in predicting EI (Liao et al., 2022; Amani et al., 2024).

Chen et al. (1998) observed a significant positive effect of ESE on the likelihood of being an entrepreneur among students and business executives. Students who reported stronger ESE expressed a stronger intention to start a business. Results revealed that business founding executives held stronger ESE than non-founding executives. Participants with high self-efficacy were more willing to do the set task and goals and showed more consistency and perseverance in the face of adversity and setbacks. Kickul et al. (2008) studied 5,000 middle and high school students and found a positive and significant relationship between ESE and EI. The study highlighted the need for boosting ESE as it is a key factor in increasing EI. Trevelyan (2009) concluded that individuals with high levels of self-efficacy start and maintain their behaviours in the face of uncertainty and resource scarcity. In addition, they place more emphasis on various adaptive behaviours to deal with difficulties and limitations as compared to those with low self-efficacy.

Naktiyok et al. (2010) studied and observed the relationship between ESE and EI among 245 students. ESE was significantly associated with the intention to develop new products and market opportunities, build an innovative environment, define core purpose, and cope with unexpected challenges. Piperopoulos and Dimov (2015) demonstrated the relationship between student's self-efficacy and EI. The study, comprised 114 students enrolled in different entrepreneurship courses (both theoretical and practical) at major British universities, indicated that higher self-efficacy is associated with lower EI in the theoretically oriented courses and higher EI in the practically oriented courses. Courses with a practical orientation present entrepreneurship as an avenue for exploration and achievement, emphasizing hands-on experiences rather than traditional classroom teaching.

Tiwari and colleagues (2019) proposed a study to identify EI among 250 nascent entrepreneurs in India. The cross-sectional survey was conducted among the entrepreneurs who were engaged in executing the new business idea or creating new ventures. The study measured various individual and contextual factors such as perceived desirability, perceived feasibility, entrepreneurial educational background, ESE, perceived social pressure and previous work experience in relation to EI. The analysis revealed that the model explained 51 per cent of the variance in EI. Also, ESE came out to be the most significant predictor of EI followed by prior entrepreneurial experience. Ndofirepi (2022) tried to explore the effect of ESE and entrepreneurial self-identity on entrepreneurial goal intentions of 262 students in Zimbabwe. The findings supported that entrepreneurial self-identity and self-efficacy had statistically significant direct effects on the intention to pursue an entrepreneurial activity. Another study on 334 students from various Malaysian higher education institutes revealed that the ESE, entrepreneurial motivation and family support had a significant positive relationship with the student's intention to start a new venture (Saoula et al., 2023).

A study involving a sample of entrepreneurs and students proposed to determine the role of entrepreneurs' personality characteristics, family entrepreneurial background, and the local supportive entrepreneurial background in forming EI. The findings revealed that the most crucial factor in determining EI among students and entrepreneurs was ESE. The authors also concluded that psychological factors are of more importance than social or cultural factors when deciding to establish a business (Antoncic & Antoncic, 2023).

Zhao et al. (2005) investigated the mediating role of ESE in the development of students' intentions to become entrepreneurs. An analysis of 265 business administration students' data using structural equation modelling showed that ESE fully mediated the effects of perceived learning (entrepreneurship-related courses, prior entrepreneurial experience, and risk inclination) on EI. Their study provided evidence that individuals choose to become entrepreneurs because they have high ESE. The authors asserted that learning and experience, the most malleable components, each had a greater influence on self-efficacy and EI. This implies that when individuals engage in learning and gain practical experience related to entrepreneurship, it tends to boost their self-efficacy. They become more confident in their abilities to succeed as entrepreneurs.

Hassan and colleagues (2020) highlighted the critical role of ESE as a key cognitive factor that significantly influences an individual's EI. They proposed that ESE directly affects a person's inclination to become an entrepreneur. Put simply, people who have high levels of ESE tend to believe that they are able to effectively handle the challenges and demands involved in starting a new business. This self-belief and confidence in their entrepreneurial abilities make them more likely to commit to the entrepreneurial journey. Biraglia and Kadile (2017) also showed a positive relationship between creativity and EI and this relationship was mediated by ESE. The findings indicated that in addition to being high on other factors, individuals must be self-efficacious enough to pursue entrepreneurial careers. Elnadi et al.

(2021) investigated the influence of the entrepreneurial ecosystem on EI as well as the indirect role of ESE between the relationship. The data were collected through an online platform from 259 respondents who were undergraduate business students enrolled at a public university in Saudi Arabia. The findings showed that students' perceptions of the entrepreneurial ecosystem influence EI both directly and indirectly through ESE. In a similar line of previous research findings, Al-Qadasi et al. (2023) also tried to explore the key factors which enhance EI. Data were collected from 487 final-year university students in Yemen using a cross-sectional survey. The results indicated that personality traits, such as the need for achievement and locus of control had a positive significant relationship with ESE and EI. Another crucial finding showed that ESE partially mediated the relationship between the need for achievement, locus of control and EI.

Another study on 351 Chinese students found that ESE plays a partial mediating role between entrepreneurial education and EI (Gao & Qin, 2022). The research findings show that when students engage in entrepreneurship education it sparks an interest, in becoming entrepreneurs. This form of education equips students with the knowledge and skills for entrepreneurship making the idea of establishing a business more attractive. The association between entrepreneurial education and EI can be partly explained by student's ESE. This implies that when students receive entrepreneurial education it not directly improves their EI but also indirectly boosts their confidence, in managing the obstacles associated with entrepreneurship ultimately resulting in higher EI.

A recent study conducted by Wardana et al. (2024) aimed to understand how student’s EI is influenced by their perception of their abilities as entrepreneurs, as well as subjective norms, role models, and success needs. The results demonstrated a significant association between ESE and EI, with ESE emerging as a mediating factor in the relationship between role models, subjective norms, success needs, and EI among students.

Thus, previous studies have demonstrated that ESE exerts a beneficial influence on entrepreneurial activities, operating both directly and indirectly. Specifically, it serves as a mediator in the relationship between stable personality traits and EI. Tran et al. (2016) presented a conceptual model that illustrates the mediating role of ESE in the relationship between individual-level personality traits and EI, drawing from the framework of the SCCT. It implies that in order to increase EI among individuals, instilling and promoting ESE is required. It would boost an individual's confidence to handle and cope effectively in an uncertain setting such as entrepreneurial activities. Also, researchers claimed that ESE is a modifiable attribute that leads to high EI and subsequently higher entrepreneurial activity (Barz et al., 2015; Anwar et al., 2020). In support of this, Caprara et al. (2010) argued that personality traits are stable individual characteristics that are primarily derived from the individual genetic endowment, whereas self-efficacy is an easily modifiable trait which can enhance student learning and performance. Self-efficacy can be acquired through education and experience, and could be targeted through intervention programmes (Densberger, 2014). Policymakers would be better equipped to design entrepreneurship training and education if they have a better knowledge of the pathways via which EIs are developed and maintained (Newman et al., 2019).

Based on the findings and significance of ESE, the present thesis asserts that ESE can have an impact on an individual's EI both directly and indirectly in relation to other psychological traits. Additionally, we expect an increase in EI if their ESE can be enhanced through some relevant interventions. In the present study, we will initially confirm the association of ESE with EI among engineering students in the Indian context. We will revalidate the association of ESE with EI on budding entrepreneurs in the second phase. In the third study, we aim to increase ESE by an intervention based on Bandura's social cognitive theory (1986).

While explaining the relationship between ESE and EI we studied a few more variables to understand the underlying dynamics of EI. Following is the detail of these variables along with their relationship with ESE and EI.

## 2.3 Associations among other studied predictors and Entrepreneurial intentions.

### 2.3.1 Association of Emotional Intelligence and Entrepreneurial Intentions, and Mediating Role of Entrepreneurial Self-Efficacy

All theories and models of Emotional Intelligence (EQ) fall under three main lines of thought: the ability model (Mayer & Salovey, 1997), the trait model (Petrides et al., 2018), and the mixed model (Bar-on, 1997; Goleman, 1995). EQ, according to Salovey and Mayer (1990), is the ability to monitor one's own and others' feelings and emotions, discriminate among them and utilize this information to guide one's thinking and actions. Petrides et al. (2018) proposed the trait emotional intelligence theory, which defined trait emotional intelligence as people's self-perceptions of their emotional abilities. It is a set of consistent traits linked to how a person perceives, expresses, and comprehends emotions (Petrides & Furnham, 2000). Goleman (1995) described emotional intelligence as abilities of being able to motivate oneself and survive in the face of frustrations, control impulse and delay gratification, manage one's moods and keep distress from swamping the ability to think, empathize and hope. Bar-On’s mixed model of emotional intelligence states that EQ is defined as a set of of non-cognitive competencies and skills that influence an individual’s ability to successfully adapt to environmental needs and pressures (Bar-On, 1997).

#### *2.3.1.1 Emotional Intelligence and Entrepreneurial Intentions*

The study of EQ has recently turned into entrepreneurship field from other domains such as job performance, leadership, and mental health (Baron, 2008; Cardon et al., 2012; Zachary & Mishra, 2010; Pathak & Goltz, 2021), indicating that emotional intelligence is a predictor of EI and behaviours (Zampetakis et al., 2009; Ahmetoglu et al., 2011; Dash et al., 2024). The

theoretical link between entrepreneurship behaviour and EQ could be related to the fact that individuals with high EQ are more capable of coping with stress, better able to influence people, and are more creative (Rhee & White, 2007; Zampetakis et al., 2009; Nwibe et al., 2024). Moreover, these individuals seem to be more aware of how certain outcomes influence their behaviour and are more capable of regulating their emotions (George, 2000). Emotional competencies shown by individuals high on EQ encourage an entrepreneurial orientation (Padilla-Meléndez et al. 2014; Fernandez-Pérez et al., 2019). An exploratory meta-analysis conducted by Miao et al. (2017) renders support for the positive relationship between EQ and EI. This meta-analysis tried to explore the association of EQ and EI based on the fit theory and trait-activation theory. In order to look into the overall relationship between EQ and EI, random-effects meta-analyses based on 12 studies (along with 12 effect sizes) were carried out. The results of this meta-analysis demonstrated that EQ is positively related to EI.

#### *2.3.1.2 Emotional Intelligence and Entrepreneurial Self-efficacy*

Due to their ability to have a positive outlook on life and manage their emotions appropriately in complex situations, emotionally intelligent persons are well suited for entrepreneurship activity as the job demands in the entrepreneurship match with their individual characteristics. Mortan et al. (2014), found that regulation and utilization of emotions were positively related to ESE, and in turn, the perception of self-efficacy mediated the relationship between EQ and the intention to become an entrepreneur. A recent study also showed a positive association between EQ and ESE (Wen et al., 2020; Nwibe et al., 2024) and stated that more research needs to incorporate EQ as a variable when understanding EI.

People with high EQ have higher sociability, which helps in the negotiation process while interacting with customers and fundraisers as they are capable of understanding other's emotional cues and needs (Kelly & Kaminskiene, 2016). This influences the perception of ESE (Salvador, 2008) which would consequently lead to increased EI and behaviour. It has

been shown in the research that having a high level of EQ allows individuals to be more resilient to external stressors and they are able to regulate negative emotions such as anxiety, frustration and anger, to reduce their stress. This, in turn, contributes to enhanced ESE and entrepreneurial behaviour (Nikolaou & Tsaousis, 2002). Empirical studies that demonstrated the positive association between EQ and EI are mentioned below:

Mclaughlin (2004) demonstrated the significance of EQ in developing EI. The findings indicated that EQ showed a significant and positive impact on EI. Othman et al. (2018) also demonstrated the link between EQ and the intention to choose entrepreneurship as a career among the students. The study indicated that students who were able to manage their negative emotions were more inclined towards entrepreneurship. Pradhan et al. (2012), in a cross-sectional study on 301 engineering and management students, demonstrated that EQ is a significant predictor of EI. The study suggested that every educational and training institution should inculcate EQ in order to encourage students to adopt an entrepreneurial mindset. Zampetakis et al. (2009) studied the role of EQ and perceived organizational support on entrepreneurial behaviour using a sample of 224 employees, working for public and quasi-public service sectors. Perceived organizational support and EQ traits were significantly related to EI and behaviour. The authors explained that awareness of the factors causing particular emotions helps individuals to take appropriate actions which influence entrepreneurial behaviour.

Bahadori (2012) conducted a study on 107 managers from a medical science university in Iran to test the impact of EQ on entrepreneurial behaviour in organizations. All four dimensions of EQ (self-emotional appraisal, other's emotional appraisal, regulation of emotion and use of emotion) were significantly and positively related to EI and behaviours of managers. According to the findings of this study, individuals with high EQ, which includes recognizing and managing their emotions as well as those of others, have the ability to

establish a supportive and inspiring work environment. Entrepreneurship frequently includes dealing with setbacks and uncertainties. Individuals who excel in regulating their emotions are better equipped to manage stress and setbacks. This outlook instils the belief that they can handle the demands of entrepreneurship, potentially resulting in higher levels of EI. Employing a mixed-method design, Padilla-Meléndez et al. (2014) aimed to understand how the changes in emotional competencies influence EI. The participants (N=153) were provided with outdoor training and were measured on emotional competencies and EI, before and after the training experience. The findings indicated that changes in emotional competencies, such as self-management, social awareness, and relationship management, affect entrepreneurial orientation (proactiveness, risk, innovation) and intentions. Khalid et al. (2018) concluded that people with greater levels of EQ are more willing to take and tolerate risks and hence are more intended to start their own companies.

As far as the indirect role of ESE in the relationship of EQ and EI is concerned, Mortan et al. (2014) examined the impact of EQ on ESE and EI. Based on 394 respondents, the study indicated that two dimensions of EQ, i.e., regulation and utilization of emotions, had a positive relationship with ESE. Additionally, self-efficacy mediated the relation between EQ and the intention to become an entrepreneur. Tiwari et al. (2017b) studied the role of EQ and ESE on social entrepreneurial attitudes and social EI. The findings demonstrated that the EQ had a significant relationship with attitude and social EI. In the entrepreneurial process, individuals bear the responsibility of identifying and executing innovative solutions to tackle pressing social problems that remain unaddressed. This undertaking necessitates an understanding of emotions, encompassing both their own emotional states and those of others, coupled with the capability to handle these emotions efficiently.

Fernandez-Perez et al. (2019) also demonstrated the indirect positive effect of emotional competencies on EI through ESE. The authors argued that emotions and cognition should be combined to gain a deeper understanding of the complex process that leads to increased EI. By effectively channelling and regulating emotions, individuals can navigate the array of challenges with enhanced competence. This, in turn, fosters an individual's self-efficacy regarding entrepreneurial activities, potentially resulting in heightened EI. The study suggested that just the knowledge and resources required for business are not enough to develop ESE and a positive attitude towards entrepreneurship. Another study on 352 final-year business administration students indicated a positive association between EQ and EI, and ESE came out to be the significant mediator in the relationship (Nawaz et al., 2019). A study conducted in China analyzed the relationship between college students' emotional competencies, ESE, and EI. The findings of this cross-sectional survey (N=312) reflected that emotional competence had a positive effect on EI. Furthermore, all the dimensions of ESE were significantly correlated with EI. The results also showed that ESE mediated the relationship between emotional competence and EI (Chien-Chi et al., 2020).

Velastegui et al. (2021) analyzed the relationship between emotional competencies and EI among students from public higher education institutions in Ecuador. The results showed that emotional competencies are important predictors of EI and are associated with ESE. Another recent study conducted by Lopez-Nunez et al. (2022) explored the relationship among EQ, self-efficacy and EI, controlling for the effects of personality, gender, and age. Hierarchical regression indicated that EQ was positively associated with EI, and self-efficacy mediated the relationship between EQ and EI. Al-Tekreeti et al. (2024) found that EQ exert a significant and positive indirect effect on EI through the mediation of entrepreneurial motivation. In an entrepreneurial process, frequent decisions are required at every phase and involve dealing with uncertain situations. The ability to regulate and manage one's emotions,

combined with a strong sense of self-efficacy, enables individuals to identify opportunities, navigate interpersonal connections more effectively, and exhibit greater resilience in the face of risk and uncertainty. The overall findings of the studies indicated that the desire to establish a business is strongly influenced by ESE; thus, any entrepreneurship training and promotion programmes must include activities aimed at raising ESE.

The studies given above have indicated a positive correlation between EQ and ESE, EQ and EI, as well as ESE and EI. This observation, along with relevant theories, suggests the possibility that ESE might serve as a mediating factor in the relationship between EQ and EI. The potential mediating role of ESE implies that individuals with high EQ might be more likely to believe in their ability to succeed in entrepreneurial ventures, and this belief can subsequently lead to stronger intentions to pursue entrepreneurship. The literature highlighted that EQ influences decision-making and subsequent behaviours, therefore, understanding the impact of emotional components in entrepreneurial decisions is critical. To the best of the researchers' knowledge, very few empirical studies have examined the relationship between EQ (Pradhan & Nath, 2012; Tiwari et al., 2017b) and EI in the Indian context. There are studies indicating the direct relationship of EQ with EI; however, we posit that EQ is indirectly related to EI through ESE. The above-highlighted interrelationship between EQ, ESE and EI suggested the following hypothesis -

**Hypothesis 1 (H1)**: *There is a positive association among Emotional intelligence (EQ), Entrepreneurial Self Efficacy (ESE) and Entrepreneurial Intentions (EI), and ESE would mediate the relationship between EQ and EI.*

### 2.3.2 Association between Cognitive flexibility, Entrepreneurial Intentions and the Mediating role of Entrepreneurial Self-Efficacy

#### *2.3.2.1 Cognitive Flexibility and Entrepreneurial Intentions*

CF reflects *the awareness that in any situation there are options and alternatives available, the willingness to be flexible and adapt to the situation and confidence in being*

*flexible* (Martin & Rubin, 1995). Cognitively flexible individuals select, adapt and combine different pieces of knowledge in unique ways to manage changing scenarios they have not encountered previously. CF is the ability to develop cognitive processing strategies for new and unexpected situations in one's environment, i.e., to switch quickly between tasks or stimulus sets, which is an important feature of human intelligence (Moore & Malinowski, 2009; Feng et al., 2020). Individuals who consistently evaluate their thoughts and behaviours, adjusting them to suit changing circumstances and construct a detailed mental picture of unfamiliar future scenarios to aid in planning and decision-making, demonstrate CF (Hofmann et al., 2012). This adaptability encompasses the ability to generate innovative perspectives, problem-solving strategies, and constructive ideas, while also substituting unproductive thoughts with well-balanced and suitable thinking. It involves creating alternatives and analyzing challenging situations to make them more approachable and manageable (Dajani & Uddin, 2015; Cheng et al., 2014). The linkages of creativity and CF can relate positively to EI. Individuals with high CF can think through multiple perspectives and can adapt their thoughts and behaviours as per the context.

In the entrepreneurial journey, individuals often encounter novel situations that demand effective problem-solving and decision-making skills. These aspects are closely tied to CF, emphasizing the interconnected nature of adaptability and successful navigation of entrepreneurial challenges (Canas et al., 2003; Yu et al., 2023). In some cases, it is important that people do not rely on habitual thinking and fixed strategies which had a positive solution to earlier problems but have a broad attentional focus and switch flexibly between approaches to the task with changing scenarios (Ashby et al., 1999). In one of the studies, the authors argued that creative performance is a function of cognitive flexibility. More importantly, it also suggests that some traits or states influence creativity because of their association with CF (Nijstad et al., 2010).

#### *2.3.2.2 Cognitive flexibility and Entrepreneurial self-efficacy*

Cognitively flexible individuals can explore diverse possibilities and identify new entrepreneurial opportunities (Dennis & Vander-Wal, 2010; Nicolaou et al., 2009) by overcoming the habitual patterns of thinking or mental set (Canas et al., 2006). This impacts an individual's confidence in their ability to develop innovative business ideas (Biraglia & Kadile, 2017; Zampetakis & Moustakis, 2006). Being solution-oriented and adaptable in the face of rapid changes is a key aspect of CF. These skills, in turn, foster an individual's belief in their abilities to fulfil the tasks and demands of entrepreneurship. While cognitive antecedents play a crucial role, it's noteworthy that only a limited number of empirical studies have explored them when investigating EI. Some empirical evidence showcasing a positive correlation between CF and EI, and shedding light on the mediating role of ESE in this relationship are presented below.

Dheer & Lenartowicz (2017) discussed CF as an important factor that impacts an individual's efficacy and intentions towards entrepreneurship. Dheer & Lenartowicz (2019) analyzed the effect of CF on an individual's intentions to pursue a career in entrepreneurship. In this cross-sectional survey involving 440 students, it was observed that there was a positive association between CF and EI. Individuals possessing a high degree of CF are inclined towards creativity, innovation, and the ability to consider various viewpoints. They excel at adapting their thoughts and actions to handle diverse complexities. Consequently, they are driven to seek career paths that allow them to apply these skills effectively. Those with high CF demonstrate a strong entrepreneurial potential and are more inclined to embark on entrepreneurial ventures, such as starting their own business (Chhabra et al., 2020). The authors suggested incorporating the cognitive antecedents of EI as it could give novel insights.

Jiatong et al. (2021) developed a moderated mediation model to understand the relationship between CF and EI. The results indicated that CF is positively related to EI and ESE served as the mediator of this relationship. In the same vein, Gill et al. (2021) explored the role of ESE as a mediator between the relationship of CF and EI. The results supported the structured hypotheses of the study where CF showed a positive and significant direct relationship with EI. Also, ESE came out to be the mediator between the relationship of CF and EI. The findings demonstrated that ESE strengthens the direct relationship between CF and EI.

The significance of cognitive perspective in the field of entrepreneurship has received less attention and there is a need to expand the research (Dheer & Lenartowicz, 2019). The entrepreneurial process necessitates continuous planning and discussion at each stage, and hence CF could provide new insights in understanding the dynamics of EI. The current body of research has demonstrated that CF has been linked positively with EI, indicating that individuals with higher CF tend to have a greater inclination toward entrepreneurship. It has also been observed that there is a positive association between CF and ESE. Also, studies showed a positive relationship between ESE and EI as discussed earlier. The positive association between ESE and EI has already been discussed earlier. Given these established relationships among the variables, we posit that, as ESE has been identified as a motivational factor influencing EI, it could potentially act as a mediator in the association between CF and EI. Therefore, considering previous research and findings, the hypothesis could be stated as:

**Hypothesis 2 (H2):** *There is a positive association among Cognitive Flexibility (CF), Entrepreneurial Self Efficacy (ESE) and EI, and ESE would mediate the relationship between Cognitive Flexibility and Entrepreneurial Intentions*

### 2.3.3 Association of Internal Locus of Control and Entrepreneurial Intentions, with Entrepreneurial Self-Efficacy as a mediator

Another important trait studied in the entrepreneurship context is the locus of control. A person's perspective of the causes of events in their life can be seen in their locus of control. The ILOC indicates the belief that one has control over events in his or her life, whereas the external locus of control reflects the belief that events in one's life are influenced by other external forces (Shook et al., 2003). People's self-determination and commitment, i.e., ILOC, enable them to cope with the upcoming environmental hurdles while pursuing their goals. Individuals with ILOC have favourable attitudes and a high possibility towards completion of entrepreneurial tasks (Lefcourt, 2014).

#### *2.3.3.1 Internal locus of control and Entrepreneurial Intentions*

People with an ILOC can better express their interests and take charge of their lives during significant events. They tend to experience less anxiety, are more resilient and have a greater sense of certainty in completing the intended activities successfully, and these characteristics are prerequisites for initiating entrepreneurship activities (Luthans & Ibrayeva, 2006). Individuals with high ILOC are believed to detect entrepreneurial opportunities in the environment and have an innovative mindset to deal with complex problems (Engle et al., 1997). Research has shown that the ILOC is a critical component that distinguishes entrepreneurs from non-entrepreneurs (Brockhaus,1980; Caliendo et al., 2014). Previous research has established the positive link between ILOC and the likelihood of engaging in entrepreneurial behaviour (Gurol & Atsan, 2006; Prakash et al., 2015). In the same vein, Roy et al. (2017) and Vetrivel et al. (2019) reflected on the positive impact of ILOC on EI among students. Caliendo et al. (2014) argue that ILOC is among the personality traits that best predict intentions to pursue entrepreneurship.

#### *2.3.3.2 Internal Locus of control and Entrepreneurial self-efficacy*

According to Wichman and Oyasato (1983), people who have ILOC are better at learning and adapting to different situations. Individuals with ILOC believe in their skills, effort, and abilities that influence rewards/outcomes (Hsiao et al., 2016). People who have an ILOC are less worried and more confident in their ability to carry out their intended activity, such as starting a new business (Luthans & Ibrayeva, 2006), and this pushes towards a progressive entrepreneurial attitude, and those who have it are to be found with a higher level of self-efficacy (Ajzen, 2002; Wood & Bandura,1989). A few previous studies highlighting the relationship among ILOC, ESE and EI are presented below:

Gurel et al. (2010) studied 409 university students and observed a significant positive relationship between ILOC and EI among the students. Zain et al. (2010) conducted a study on Malaysian undergraduate business students at public universities and found that entrepreneurship is influenced by a combination of internal and external factors, such as entrepreneurial courses taken, family background, and enrolment in business-related academic disciplines. They concluded that an individual's way of thinking and acting, i.e., ILOC, determines his or her decision to become an entrepreneur. Rokhmann and Ahamad (2015) investigated the impact of few psychological factors on EI among students (N=300) in the Islamic college of Kudus, Indonesia. The findings demonstrated that psychological factors such as the need for achievement, ability to take risks and locus of control, are major predictors of entrepreneurial activities.

The positive association between ILOC and EI could be attributed to the aspect that individuals with an ILOC are more likely to persist with tasks and accept responsibility for their actions in comparison to people with an external locus of control (Rotter, 1996). Entrepreneurs who take more risks often demonstrate having an ILOC in contrast to non-entrepreneurs who typically display an external locus of control (Karabulut, 2016). This

means that entrepreneurs are more prone to believing in their ability to have control over their outcomes and actions, while non-entrepreneurs often attribute these to external factors like fate or luck.

In a similar line of findings, Karabulut (2016) explored the influence of some personality dimensions on EI among 480 undergraduate students from Turkey. The results indicated a positive and significant relationship of ILOC with the intentions to start a new venture. Nungsari et al. (2023) also explored the effect of individual traits on EI. A cross-sectional sample (N=295) of Malaysian students was studied and a positive significant association between ILOC and EI was observed. Similar findings were observed in the study conducted by Antoncic and Antoncic (2023). Another cross-sectional study investigated the influence of certain personality dimensions on EI among junior healthcare students and fresh graduates in Saudi Arabia. As per the findings, ILOC was found to have a positive impact on EI (Mohamed et al., 2023). People with an ILOC tend to recognize entrepreneurial opportunities (Asante & Affum-Osei, 2019). These individuals are more resilient in the face of adversities and learn from failures (Zhao & Wibowo, 2021). Entrepreneurs frequently face complex situations marked by dynamic external influences such as market competition, evolving government regulations, and shifting customer demands. In such a scenario, individuals possessing an ILOC tend to be more resilient than those with an external locus of control. This resilience stems from their belief in having control over their actions and outcomes, enabling them to adapt to changing circumstances more effectively.

Ayodele (2013) explored the relationship of locus of control with ESE and EI among 220 Nigerian adolescents. The findings showed that individuals having an ILOC tend to have a positive entrepreneurial attitude and intentions towards initiating a new venture. Auna (2020) investigated the association between ILOC and EI as well as the mediating role of ESE in the relationship. The mediation analysis revealed that ESE came out be the potential

mediator in the relationship between ILOC and EI. Entrepreneurs frequently set high goals for their businesses. Individuals with an ILOC are more inclined to create and actively pursue such goals because they hold the belief that they can influence the course of their lives. The process of working towards and accomplishing these entrepreneurial goals can raise ESE. It builds confidence in their ability to succeed, resulting in increased EI.

Similar findings were observed in a few other studies. Uysal et al. (2022) examined the impacts of locus of control on EI, as well as whether the ESE mediates between the relationship. The participants were 111 Turkish students enrolled in business administration courses. Utilizing longitudinal survey data, the results indicated that there was a positive significant relationship between ILOC and EI, and ESE mediated the association between ILOC and EI. Biswas and Verma (2022) analyzed the impact of personality dimensions on EI among younger students (N=440) from 5 prestigious management institutes in India. The results demonstrated a significant positive relationship between ILOC and EI. Moreover, the authors asserted that entrepreneurship education partially mediates the relationship between ILOC and EI**.** Hamzah and Othman (2023) also found that entrepreneurial competency mediated the relationship between the ILOC and EI. This study asserted that when individuals perceive life's outcomes as largely shaped by their own actions and choices via the enhancement of entrepreneurial competency, this perspective can lead to an improvement in their entrepreneurial skills, consequently leading towards greater EI.

Despite many studies supporting the positive association of ILOC and EI, there are a few contradictory findings that showed that there is a negative or no relationship between ILOC and EI. For instance, Rauch and Frese (2007) in their meta-analysis related to the relationship of various personality traits with EI found a small effect of ILOC on EI and success. Arkorful and Hilton (2022) concluded that external locus of control had a more significant relationship with EI. Along the same line, Altinay et al. (2012) investigated the

influence of family tradition and personality traits (locus of control, innovativeness, risk-taking propensity, need for achievement, tolerance of ambiguity) on EI. A total of 279 responses were obtained by convenience sampling from students pursuing tourism and hospitality management degrees. Specifically, considering the locus of control factor, the study's findings indicated that there was no significant relationship between ILOC and EI. Ferreira et al. (2012) also explored the relationship between some psychological traits and EI. The sample included two secondary student classes, aged between 14 and 15 years. The findings indicated that the ILOC did not have any significant relationship with EI. Likewise, Dinis et al. (2013) also tested an EI model based on certain psychological characteristics and the findings revealed that ILOC did not have any significant relationship with EI.

Thus, the literature has mixed or inconsistent findings about the relationship between ILOC and EI. This implies that additional indirect factors might influence the effect of ILOC on EI. Given the findings, a deeper understanding of the underlying mechanism between ILOC and EI relationship is essential (Uysal, 2022). The existing studies demonstrated that ILOC is positively related to both ESE and EI and since ESE has been shown to be positively associated with EI in the existing literature, we assume that ESE could be one such indirect link through which ILOC influences EI (Afifah, 2015; Auna, 2020). Accordingly, the present study sets out the following hypothesis:

**Hypothesis 3 (H3):** *Locus of control (ILOC), Entrepreneurial Self Efficacy (ESE) and Entrepreneurial Intentions (EI) are positively associated with each other, and ESE would mediate the relationship between ILOC and EI.*

### 2.3.4 Association between Conscientiousness and Entrepreneurial Intentions, Mediating Role of Entrepreneurial Self-Efficacy

#### *2.3.4.1 Conscientiousness and Entrepreneurial Intentions*

Conscientiousness has been regarded as one of the significant factors in differentiating between entrepreneurs and non-entrepreneurs/managers (Zhao et al., 2005, 2010; Brandstatter, 2011). Conscientiousness is one of the Big Five personality traits that represents the tendency to organize, obey rules and regulations, focus on pre-planning, and complete activities on time. Entrepreneurial activities necessitate persistence, hard work, and a set of targets. Given the idea that people are drawn to jobs that match their personality attributes, conscientious people are more fit for entrepreneurship (Schneider & Saeed, 2021; Conejo et al., 2023). Individuals high on conscientiousness strive for great accomplishments and mastery through constant work and discipline (Costa & McCrae, 1992). Conscientious individuals also exhibit high levels of emotion regulation, allowing them to persist and plan in the face of adversity and shift their attention from negative thoughts to positive actions (Lee & Klein, 2002). These people accept personal responsibility for their decisions, prefer decisions with a moderate level of risk, dislike monotonous activities, and are interested in exploring and learning new things indicating high creativity (Li et al., 2022b); these are the basic characteristics that drive people to engage in entrepreneurial activities (McClleand, 1961). Another aspect to be highlighted when explaining the association of conscientiousness and intention to start a new venture is that conscientiousness is related to higher problem-solving and coping which may further facilitate the development of EI.

#### *2.3.4.2 Conscientiousness and Entrepreneurial Self-Efficacy*

The possession of conscientiousness-related attributes increases individuals' belief in handling entrepreneurial activities and decisions (Lee & Klein, 2002), which might lead to increased EI. Previous research (Brown et al., 2012; Chien-Chie et al., 2020) showed that individuals with higher conscientiousness scores had high self-efficacy. Few recent studies

have explored ESE as a mediator of the relationship between conscientiousness and EI. Among others, Sarfaraz et al. (2023) also found that ESE partially mediate the relationship between conscientiousness and EI. Some more empirical observations of the relationship between conscientiousness, ESE and EI are indicated below:

In a meta-analysis, Zhao et al. (2010) and Yangailo and Qutieshat (2022) identified conscientiousness to be a constant and vital feature that is closely associated with EI and entrepreneurial success. Individuals who score high on conscientiousness tend to exhibit traits like persistence and a strong need for achievement. In entrepreneurship, which is often fraught with uncertainties and challenges, individuals who are highly conscientious are more likely to thrive. Their persistence enables them to tackle the obstacles and setbacks that come with starting and running a business, and their strong desire for achievement motivates them to pursue entrepreneurial goals.

Jing and Sung (2012) investigated the relationship between personality factors and EI among 392 participants. Conscientiousness was found to be positively associated with EI. In a study by Akanbi (2013), conscientiousness strongly predicted EI among 470 students in Nigeria. Butz et al. (2018) investigated the relationship of conscientiousness and EI among 500 undergraduate students in the United States. The analysis showed that there was a significant positive association between conscientiousness and EI. Li et al. (2022a) studied the influence of personality factors on EI (N=674). Among other personality dimensions, conscientiousness came out to be the most significant predictor of EI. Along the same lines, another study by Awwad and AI-Aseer (2021) explored the impact of the Big Five personality traits on the EI among 323 undergraduate university students in Jordan and found that conscientiousness had a positive and significant association with EI.

Other similar studies (Alcivar et al., 2023; Bazkiaei et al., 2021; Mathusan & Gamage, 2022; Salameh et al., 2022; Tsaknis et al., 2022) intended to explore the impact of

conscientiousness on EI and found that conscientiousness have a substantial impact on EI among students. Individuals who are high on conscientiousness are better able to maintain the high level of effort and commitment required for entrepreneurial activities. They exhibit a strong commitment and work ethic, enabling them to manage the diverse responsibilities that come with entrepreneurship. Their orientation is often geared towards long-term goals, prioritizing persistent efforts over immediate rewards, which aligns well with the enduring nature of entrepreneurship. These characteristics drive an individual's motivation and willingness to explore entrepreneurial opportunities and overcome the challenges that come with entrepreneurship.

Other studies have suggested that ESE indirectly contributes to explaining the positive connection between conscientiousness and EI. A study in China examined the relationships between Big Six personality and EI. It also explored the mediating role of ESE. The overall findings showed that Conscientiousness was positively associated with EI. Furthermore, ESE served as an important mediator of the relationship between conscientiousness and EI (Mei et al., 2017).

Murugesan and Jayavelu (2017) studied engineering students and observed that those who are high on conscientiousness and have high self-efficacy are more likely to have strong EI than others. Similarly, AI-Ghazalli et al. (2022) studied the impact of big five personality traits on EI. Additionally, the study examined the role of ESE in influencing EI. Findings of the study revealed that conscientiousness influenced ESE which might have led to high EI. The study highlights the underlying mechanism through which conscientiousness is associated with EI and suggests ESE to be the crucial factor explaining the plausible link. Hossain et al. (2021) also examined the impact of individual-level traits on social EI. According to the findings of this study, conscientiousness and self-efficacy have a substantial influence on social EI.

The mechanism that explains the positive link between conscientiousness and EI through ESE can be attributed to several theoretical links. Individuals who are conscientious demonstrate strong focus, determination, and a commitment to continuous learning while remaining attentive to changes in their environment. They bring a strong work ethic and perseverance to their entrepreneurial endeavours, committing themselves to the tasks at hand. This effort and dedication contribute to a greater ESE, as individuals build confidence in their abilities through their hard work and commitment. This increase in self-efficacy, in turn, leads to increased EI since these individuals believe in their ability to succeed in entrepreneurial activities as a result of their conscientious characteristics.

Though most of the studies support the association between conscientiousness and EI among students, some studies challenge this relationship. For instance, Ismail (2009) found no association between conscientiousness and EI. Studies by Antoncic et al. (2015) and Hsu and Wang (2018) observed no significant differences in the level of conscientiousness between entrepreneurs and non-entrepreneurs. Other recent studies also demonstrated contradictory results regarding the association of conscientiousness and EI (Burch et al., 2019; Luc, 2022).

It is important to acknowledge that there are contradictory findings and ongoing debates regarding the association between personality traits and EI. These findings imply that conscientiousness alone might not predict EI or behaviours, necessitating further research to uncover the potential pathways linking conscientiousness and EI (Mei et al., 2017). Overall, existing literature suggests an inconclusive finding regarding the relationship between personality factors and EI (Baron & Shane, 2007); and this relationship may be influenced by other motivational factors such as self-efficacy (Al-Ghazali et al., 2022). While the majority of studies have demonstrated a positive association between conscientiousness and both ESE and EI, and ESE directly associated with EI, it can be inferred that ESE could act as a

mediating factor in the relationship between conscientiousness and EI. Thus, investigating the underlying dynamics between personality traits, beliefs, and EI can provide valuable insights into the complex dynamics involved in entrepreneurship. As a result of merging this logic, we propose the following hypothesis:

**Hypothesis 4 (H4)**: *There is a positive association among Conscientiousness, Entrepreneurial Self Efficacy (ESE) and Entrepreneurial Intentions (EI), and ESE would mediate the relationship between Conscientiousness and Entrepreneurial Intentions.*

### 2.3.5 Association of Risk propensity and Entrepreneurial Intentions, with Entrepreneurial Self-Efficacy as a mediator

#### *2.3.5.1 Risk Propensity and Entrepreneurial Intentions*

Individuals high on risk propensity are motivated to engage in behaviours that have some potential risk or harm along with some potential benefits. Risk-taking was regarded as the distinguishing property of the entrepreneur (McClelland, 1961; Hisrich, 1986). When entrepreneurs build new companies, they embrace various psychological, social and financial risks (Hisrich et al., 2007). Entrepreneurship is historically associated with risk-taking (Gürol & Atsan, 2006); risk-averse persons become employees and risk-seeking individuals become entrepreneurs (Kihlstrom & Laffont, 1979). Individuals with high-risk propensity are likely to take on challenges, and have a strong desire for growth, skill development and career advancement. They are more likely to have a greater tolerance for ambiguity and uncertainty, which are common in entrepreneurial endeavours. This tolerance enables them to consider entrepreneurial opportunities seriously. Risk-taking individuals are more open to inventive and creative ideas, both of which are required in entrepreneurship (Shane & Venkataraman, 2000). This willingness to try new things can increase EI.

#### *2.3.5.2 Risk-propensity and Entrepreneurial Self-efficacy*

Individuals high on risk-propensity perceive the difficult situation as less risky than their counterparts (Sitkin & Weingart 1995). Individuals high on risk propensity do not feel

overwhelmed while solving problems under uncertain settings (Gist & Mitchell., 1992). These people hence are more likely to perceive a greater sense of control over outcomes and place a higher value on the likelihood of receiving positive rewards. Risk takers, in particular, demonstrate a readiness to take on difficulties which is needed in the entrepreneurial process. People who are risk-averse are more prone to pay attention to negative outcomes and underestimating opportunities, whereas risk-seeking individuals tend to focus on positive outcomes and opportunities, and underestimate threats. Such orientation might strengthen the individuals' own beliefs and could lead to higher ESE. This increased ESE, in turn, may also improve individuals' inclinations to start new businesses (Samydevan et al., 2020). Studies have found a positive relationship between the ability to take risks and EI and business success (Brandstatter, 2011). Some empirical observations supporting the association among RP, ESE and EI are given below.

Lüthje and Franke (2003), in their model of EI, pointed out that the risk-taking propensity has an impact on the individual's decision to create a new venture. The results were supported by another exploratory study that the tolerance for risk significantly predicted self-employment intention (Segal et al., 2005). More recently, Gu et al. (2018) found that risk-taking propensity is positively related to EI, while self-efficacy plays a mediating role. Khalid et al. (2018) also observed a positive association between risk propensity and EI among 260 business students.

Pandit et al. (2018) examined the EI of college students in India and observed a significant positive relationship between the willingness to take risks and high EI and highlighted the need for better risk management education. Another study by Voda and Florea (2019) found a direct association of RP with EI. This study aimed to investigate the potential relationship between willingness to take risks, entrepreneurship education and EI.

The analysis of data obtained from 115 university students revealed that the willingness to take risks and entrepreneurial education significantly influence EI.

Hassam et al. (2018) explored whether the risk-taking propensity could increase the level of EI, and whether ESE moderates this relationship. RP and ESE were found as significant direct predictors of EI; however, ESE was not a significant moderator in the relationship. According to Karimi et al. (2017), risk-taking propensity indirectly, through their impact on ESE affects Iranian students' intentions to engage in entrepreneurship. Densberger (2014, p. 444) stated that “entrepreneurs believe themselves to be generally competent people who are willing to try new things, but they are willing to do so not because they like taking risks, but because they think they are capable of managing the risk and its consequences. In short, they have got piles of self-efficacy, and they are not afraid to use it”.

Pinto et al. (2020) studied EI and explored various motivations and blockades for new venture creation among 433 undergraduate students. The study included final-year graduate students from various colleges affiliated with Mangalore University. The findings showed that the majority of students were unsure of their future ambitions. Further, it was observed that there was a significant positive relationship between EI and risk-taking abilities. Similar findings were also observed in other studies (Nicholson et al., 2005; Stewart & Roth, 2001; Zhang et al., 2015; Shukla & Kumar, 2024).

Reissová et al. (2020) aimed to study the elements that are most influential in the formation of EI. The sample consisted of 789 students from three countries (the Czech Republic, Germany, and the United Kingdom). RP was found to be the most prominent factor in the development of EI among students. The authors also added that entrepreneurship education would be less effective if personal characteristics are not taken into account while providing training and education. In a similar vein, Lyu et al. (2024) empirically

demonstrated the significant and positive influence of RP on social EI. The authors observed that individuals with greater RP exhibit less apprehension toward entrepreneurship and possess favourable attitudes toward engaging in entrepreneurial activities. With a focus on integrating individual and environmental factors, another study investigated the impact of RP on EI. The results revealed that while the willingness to take risks is often highlighted as a vital trait of entrepreneurs, the role of personality characteristics can assess an individual's preparedness to initiate a business (Zhuang & Sun, 2024).

Despite studies supporting the association between RP, ESE and EI, there are some contradictory findings. Brockhaus (1980) showed that risk-taking tendency could not differentiate entrepreneurs from other individuals, so risk-taking propensity could not be regarded as a distinguishing attribute of the entrepreneur. Another meta-analysis by Miner and Raju (2004) suggested that the RP in entrepreneurship remains unresolved and entrepreneurs tend to avoid risks. The authors found a small effect size in the relationship between RP and EI. Similarly, Phan et al. (2021) also conducted a study on 795 Vietnamese students and observed that there is no direct relationship between risk-taking propensity and EI. Additionally, a study on junior healthcare students also found that risk-taking propensity did not affect students' EI (Mohamed et al., 2023).

These contradictory findings seek additional studies to elucidate the nature of the mediating processes in this association (Gu et al., 2018). To overcome the gaps in our understanding of the mechanism by which RP leads to high EI, we must delve deeper into the linked pathways. Previous studies have found a positive relationship between RP, EI, and ESE; ESE has also been found to be positively related to EI. As a result, we propose that ESE could act as a mediator in the relationship between RP and EI. Based on previous studies following hypothesis has been framed:

**Hypothesis 5 (H5):** *There is a positive association among Risk Propensity (RP), Entrepreneurial Self Efficacy (ESE) and Entrepreneurial Intentions (EI), and Entrepreneurial Self Efficacy would mediate the relationship between Ris Propensity and Entrepreneurial Intentions.*

### 2.3.6 Association of Self-regulatory focus and Entrepreneurial Intentions, the mediating role of Entrepreneurial Self-Efficacy

Self-regulation plays a crucial role in entrepreneurship, influencing how individuals achieve their goals. It involves using mental strategies to control thoughts, emotions, and behaviour over time and in various situations. The theory of self-regulation sees human actions as a social and cognitive process where individuals set personal goals and adjust their behaviours to reach those goals. Central to this process is the ability to organize knowledge, thoughts, and behaviours, drawing from past experiences of success or failure. One well-known theory distinguishes between two frameworks: promotion (focused on achieving gains) and prevention (focused on avoiding losses) (Higgins, 2000).

#### *2.3.6.1 Self-regulation (promotion and prevention focus) and Entrepreneurial Intentions*

The relevant literature has indicated that people with a promotion-focused approach are more inclined towards entrepreneurship. Promotion-focused people tend to be open-minded, search more carefully and take a wide variety of ideas into account, and hence, can identify opportunities in the environment (Tumasjan & Braun, 2012). They have the advantage of creating new markets, considering innovative alternatives and improving entrepreneurial markets (Brockner et al., 2004). In turn, this may drive the wish or desire to set up a business. Further, the level of persistence required in a cognitive task (Crowe & Higgins 1997) to be executed in new, unpredictable and challenging circumstances is higher among promotion-focused people (Markman & Baron 2003). Individuals characterized by a promotion focus are driven by growth, and they tend to use strategies that involve eagerness. They emphasize on security and safety needs, often utilizing *vigilant* strategies or approaches. Eagerness

typically drives towards the advancement to a better state and vigilance tends to ensure the maintenance of the satisfactory status quo (Higgins, 2000).

Individuals with a prevention focused approach tend to fulfil explicit work requirements and not cross the boundary conditions (Higgins et al., 1994). This suggests that individuals with an emphasis on prevention are specifically responsible for work-related activities and are less likely to participate in entrepreneurial undertakings outside their jobs. However, in a multi-stage entrepreneurial process, the combination of "promotion-driven and prevention-driven motives, beliefs and behaviours is needed for entrepreneurial success" (Brockner et al., 2004).

#### *2.3.6.2 Self-regulation and Entrepreneurial Self-efficacy*

Bandura (1997) suggests that self-regulation influences an individual's actions through self-efficacy mechanisms. It includes the motivation to take action, the determination to persist in the face of challenges, and the perception of one's competence in completing a task. The positive association between promotion-focused and ESE can be linked to the psychological attributes such as risk taking, optimism, a strong desire to achieve their goals, high levels of persistence, and a need for self-actualization. These qualities lead individuals to believe that promotion-focused approach can assist them in effectively handling the challenges associated with entrepreneurship. Consequently, this self-assurance may encourage them to embark on entrepreneurial endeavours (Keller, 2019). Some of the observations supporting the association among self-regulation (promotion-focused), ESE and EI and are given below.

Foo et al. (2016) analysed the effect of environmental support and self-regulation among academic scientists' EI**.** The sample comprised 201 doctoral and postdoctoral researchers from a university in Norway. The findings showed that promotion focus as an individual trait alone does not predict EI rather individual's promotion focus interacts with the work and family environments to determine academic scientists' EI.

Gu et al. (2018) examined the mediating role of regulatory focus in the relationship between risk propensity and EI. The findings indicated that the promotion focus (but not the prevention focus) is positively associated with EI among the sample chosen. Additionally, these self-regulatory orientations partially mediated the relationship between RP and EI. Pihie and Bagheri (2013**)** examined the relationship between self-efficacy, self-regulatory focus and EI among 722 students. The results showed a significant and positive relationship between students' promotion focus, ESE and EI.

Thus, the self-regulation perspective offers a novel approach to unveil the underlying mechanism that predicts EI. Due to the paucity of studies examining the effects of self-regulatory processes (promotion and prevention) on EI and behaviour, the current study aims to advance the field of entrepreneurship by exploring the relationship between self-regulation and EI. Based on the above discussion, we put out the following hypothesis:

**Hypothesis 6** ***(a):*** *Self-Regulatory Focus (Promotion-focus), Entrepreneurial Self Efficacy (ESE) and Entrepreneurial Intentions (EI) are positively associated with each other, and ESE would mediate the relationship between Promotion-focus and EI.*

**Hypothesis 6** ***(b):*** *There is a negative association among Prevention Self-Regularity Focus (Pre-SRF), Entrepreneurial Self Efficacy (ESE) and Entrepreneurial Intentions (EI), and ESE would mediate the relationship between Prevention-focus and EI.*

The main focus of Study I was on comprehending the dynamics of EI and exploring its correlation with identified psychological attributes. More specifically, it explored the direct relationship between EI and EQ, CF, RP, ILOC, conscientiousness, and self-regulation. In addition to the direct effects, this study aimed to explore the mediating role of ESE between above-mentioned psychological attributes and EI. The primary hypotheses for the present study have been tested utilizing the methodology outlined below, including a detailed description of the participants, measures, and subsequent findings.

## 2.4 Method

### 2.4.1 Participants

For the present study, a total of 769 individuals (males=559, females=210) within the age range of 18 to 26 years ($M_{age}$ =19.50 years, $SD_{age}$ =1.37 years) were selected from various engineering institutes located in six districts of Punjab, India (Ropar, Mohali, Chandigarh, Ludhiana, Patiala, Ferozepur). Fifty per cent of the participants hailed from urban areas, 43% from rural, and 7% from semi-urban regions. Among the participants, 74.3% belonged to nuclear families, while 25.7% to joint families. Inclusion criteria for participants were as follows: a) Affiliation with the engineering discipline, b) absence of submitted start-up proposals, c) proficiency in reading the English language, and d) absence of mental and physical health issues. The sample size was found to be sufficient for this cross-sectional study, as determined by G-Power software version 3.1.9.7. With alpha set at 0.05, power at 0.80, and considering a small effect size (Cohen, 1992), the recommended sample size was 645. The present study included 769 participants, indicating that the sample size was indeed adequate. Table 2.1 presents the demographic characteristics and descriptive statistics of the study variables.

There were various reasons for selecting engineering students for the present research work. According to Lumsdaine & Blinks (2003), engineering education equips students with the tendency to gravitate towards solving problems, analysing and developing solutions. Additionally, the structured and procedural thinking provided by engineering education makes them best suited for an entrepreneurial career. Furthermore, engineering colleges have the required ecosystems which extend easy access to resources, mentorship and networking opportunities which further lead to the effective cultivation of an entrepreneurial mindset. Thus, enhanced EI among engineering students could further be translated into actual entrepreneurial initiative if desired by the participants. Thus, considering the factors

mentioned above, it was expected that the intervention would be more beneficial for engineering students.

## 2.4.2 Measures

The data for this cross-sectional study was collected with the help of a set of standardized questionnaires. These questionnaires are well-established measures of the selected constructs. A brief description of the questionnaires used in the present study is as follows.

### *2.4.2.1 Entrepreneurial Intentions*

Entrepreneurial Intentions Questionnaire (EIQ; Linan & Chen, 2009) was used to assess *Entrepreneurial Intentions.* It is a 6-item self-report questionnaire developed on a 7-point Likert scale ranging from 1 (*strongly disagree*) to 7 (*strongly agree*), where a higher score indicates a higher level of EI. This scale showed high internal consistency (0.909) and is considered a reliable and valid measure for measuring EI among students. EIQ has been validated in the Indian context also (Mishra & Singh, 2022b; Srivastava & Misra, 2017; Roy & Das, 2022). Some examples of the items are "I am ready to do anything to be an entrepreneur", "I will make every effort to start and run my own business", and "I have serious doubts about ever starting my own business". For the current sample, Cronbach alpha was 0.81.

### *2.4.2.2 Cognitive flexibility*

*Cognitive flexibility* was measured using the Cognitive Flexibility Questionnaire (CFQ; Martin & Rubin, 1995). It consists of 12 items— four negative and eight positive. The CFQ uses a five-point Likert scale, and a higher score indicates high CF. The CFQ had high internal consistency (0.76-0.77), good concurrent and construct validity. The scale has been used in the Indian population and found to be reliable and valid (Ram et al., 2019; Kercood et al., 2017). The sample items include, "I can communicate an idea in many different ways", "I

avoid new and unusual situations", and "I feel like I never get to make decisions". The present data showed a Cronbach alpha of 0.86.

#### *2.4.2.3 Risk propensity*

*Risk Propensity* was assessed with the scale based on the original research of Slovic (1972). It comprises of four items that are rated on a five-point Likert scale, ranging from 1 (strongly disagree) to 5 (strongly agree). The scale has been found to be reliable and valid for measuring risk propensity, as the scale showed high internal consistency (alpha=0.90). Various studies have used this scale (Karimi et al., 2016; Ndofirepi., 2020) and affirm its reliability in measuring RP among Indian students. Some examples of the items are: "I am not willing to take risks when choosing a job or a company to work for" and "I prefer a low-risk/high-security job with a steady salary over a job that offers high risks and high rewards. The Cronbach alpha for this scale on the present sample was 0.72.

#### *2.4.2.4 Entrepreneurial Self-efficacy*

Entrepreneurial Self-Efficacy Questionnaire (De Noble et al., 1999) was used to measure *Entrepreneurial Self-efficacy*. This scale consists of 26 items measuring seven dimensions on a 5-point Likert scale. The dimensions are: Developing a new product and market opportunities; building an innovative environment; initiating investor relationships; defining core purpose; coping with unexpected challenges; developing critical human resources; using business. The higher scores indicate a high level of ESE. This scale showed moderate to high internal consistency (0.66-0.83) and is considered reliable and valid. This scale has been used in various developed and developing countries (Sanchez, 2014; Setiawan, 2014). Examples of the items are, "I can see new market opportunities for new products and services" and "I can design products that solve current problems". Cronbach alpha for the present sample came out to be 0.93.

#### *2.4.2.5 Emotional Intelligence*

*Emotional intelligence* was assessed using Wong and Law Emotional Intelligence Scale

(WLEIS; Wong & Law, 2002). The scale is a 16-item questionnaire having four dimensions, namely, self-emotion appraisal (SEA), others' emotion appraisal (OEA), use of emotion (UOE), and regulation of emotion (ROE). The WLEIS uses a 7-point Likert-type scale, and high scores shows greater EQ. Internal consistency reliability for the four dimensions ranged from 0.83 to 0.90. Wong and Law (2002) reported that the internal consistency reliability of this scale was satisfactory (alpha=0.94). This scale has been used in the Indian context as well (Kumar, 2018; Ng et al., 2007) and found to be reliable and valid for measuring EQ among Indian students. The sample items are "I have a good sense of why I have certain feelings most of the time", "I always know my friends' emotions from their behaviour.", "I always tell myself I am a competent person" and "I am able to control my temper and handle difficulties rationally". The present data showed Cronbach's alpha to be 0.90.

#### *2.4.2.6 Locus of control*

*Internal Locus of control* was measured using ***Locus of control scale*** (LOCS; Mueller & Thomas, 2001). This scale consists of 10 items, of which four measure the internal locus of control and six measure the external locus of control (Mueller & Thomas, 2001). The scale uses a 5-point Likert scale. The scale's reliability could range between 0.53 to 0.81 depending upon different cultural contexts (Mueller & Thomas, 2001). LOCS has been used in Indian studies also (Asante & Affum-Osei, 2019; Voda et al., 2019). Examples of the statements are: "Whether or not I am successful in life depends mostly on my ability", and "I feel in control of my life". On this scale, the present sample had a Cronbach alpha of 0.76.

#### *2.4.2.7 Conscientiousness*

For the assessment of *conscientiousness*, 12 items were taken from NEO-Five Factor Inventory (Costa & McCrae, 1992). Developed as a shortened version of the original NEO Personality Inventory (NEO-PI), the NEO-FFI comprises 60 statements, each representing one of the five personality dimensions (12 items each), namely, Neuroticism, Extraversion, Openness to Experience, Agreeableness and Conscientiousness. This inventory provides a comprehensive framework for evaluating various aspects of personality. The sample items include, "I keep my belongings neat and clean", "I try to perform all the tasks assigned to me conscientiously", and "I strive for excellence in everything I do". The reliability coefficient for this scale on the present sample was 0.81.

#### *2.4.2.8 Regulatory focus*

To measure self-regulatory focus, Regulatory Focus Questionnaire (RFQ; Higgins et al., 2001) was used. It is an 11-item scale that measures two dimensions of self-regulation, i.e., *Promotion and Prevention focus*. The scale reported moderate to high internal consistency (0.73-0.80) for the promotion and prevention focus. RFQ is a valid and reliable measure for assessing regulatory focus (Haws et al., 2010; Summerville & Roese, 2008) and has been applied across cultures (Chung et al., 2014; Kurman & Hui, 2012; Kung et al., 2016). The reliability coefficient for this scale on the present sample was 0.68.

It is widely acknowledged that reliability coefficients of 0.70 or higher are generally acceptable (Nunnally & Bernstein, 1994). Thus, all the scales have demonstrated good reliability in measuring EI. The reliability coefficient for the scale "Self-regulatory focus" was 0.68, close to 0.70, indicating a moderately acceptable level of reliability.

### 2.4.3 Statistical Analysis

For the present study/Phase I, data were subjected to mediation analysis. Preacher and Hayes's approach (2008) was applied for exploring the mediational effects and data analysis

was performed using IBM version SPSS 20.0 and AMOS 25. The data met all the necessary assumptions for the aforementioned statistical analyses, ensuring the robustness of the results.

### 2.4.4 Procedure

A cross-sectional survey was designed for the present study and carried out using purposive sampling. Following the acquisition/development of the questionnaires and research design, the proposal for the study was sent to the institute's ethics committee (IEC) for approval to proceed with the data collection. For the data-collection phase, a total of 27 engineering institutes from various districts in Punjab were initially approached. However, only six colleges granted permission for the study to be conducted on their campuses. Once clearance was obtained from the IEC, the researcher visited these engineering colleges. Permission was obtained from the respective authorities (Dean/Principal) to collect data from the students. On visiting the colleges, standardized questionnaires were distributed to all students, accompanied by basic instructions and an informed consent form in the classroom. Participants were assured of the confidentiality of their responses, clarifying that the data would be used solely for research purposes. Upon giving consent, participants were then asked to complete the survey. A total of 850 sets of data were collected. Subsequently, a process of data cleaning was undertaken. Data with missing values and responses to control items ("If you are reading it carefully, do not give any response to this item"), which were included between the scale items to identify random or automatic responses, were excluded. This led to a final dataset of 769 valid responses, resulting in an approximate 90% response rate. There were no incentives offered for participation. Finally, data were subjected to mediation analysis using the Preacher and Hayes' (2008) approach to test the primary hypotheses for the present study. Data analysis was performed using IBM version SPSS 20.0 and AMOS 25.

## 2.5 Results

Tables 2.1–2.7 show the overall findings of the current study. Table 2.1 shows the demographic characteristics of the sample and descriptive statistics. The correlation coefficients for all of the variables are shown in Table 2.2. To test the primary hypotheses, the Structural Equation Modelling (SEM) was done, and the derived latent variables were used to test the mediation among the factors. For this purpose, 24 indicators of ESE, eight indicators of CF, 4 indicators of ILOC, 8 indicators of Conscientiousness, 16 indicators of EQ and 5 indicators of EI were included in the final analysis. The data fulfilled the basic assumptions regarding normality and multicollinearity for carrying out the SEM. Table 2.1 presents skewness and kurtosis values for assessing normality. The indicated values suggest that the data conforms to normality. To assess multicollinearity in the data, Variance Inflation Factor (VIF) and Tolerance values were examined. The results indicated no evidence of multicollinearity among the predictor variables. This was observed as VIF values were within the range of 1.5 to 3 and the tolerance values ranged between 0.6 and 0.9. Therefore, it was concluded that multicollinearity was not a concern in the dataset.

The path diagrams are presented in Figures 2.1, 2.2, 2.3 and 2.4. Figure 2.1 depicts the model wherein the mediational effect of ESE was explored for the relationship between EQ and EI. The model fits well with the data and all indices of model fit was found to be significant, $x^2$ = 2.01, CFI = 0.92, TLI = 0.91, SRMR = 0.06, RMSEA =0.03 (Table 2.4). Figure 2.2 depicts the model wherein the mediation effect of ESE was explored for the relationship between CF and EI. The model fits well with the data and all indices of model fit were found to be significant, $x^2$=1.86, CFI = 0.94, TLI = 0.94, SRMR = 0.04, RMSEA = 0.03 (Table 2.5). Figure 2.3 presents the model showing the mediation effect of ESE in the relationship between ILOC and EI. The model fits well with the data and all indices of model fit were found to be significant, $x^2$=1.96, CFI = 0.94, TLI = 0.93, SRMR = 0.04, RMSEA =

0.03 (Table 2.6). Figure 2.4 illustrates the model in which the mediational effect of ESE was investigated for the link between Conscientiousness and EI. The model fits well with the data, and all model fit indices were found to be significant, $x^2$ = 2.02, CFI = 0.93, TLI = 0.92, SRMR = 0.04, RMSEA = 0.03 (Table 2.7).

Regarding H1, it can be observed that the EQ scores are significantly associated with EI (r=0.30, p<0.01) and ESE scores (r=0.51, *p*<0.01) (Table 2.2). ESE came out to be positively related to EI also (r=0.42, *p*<0.01). Preacher and Hayes' (2008) approach was used for testing the significance of indirect effects (mediational effects) (Table 2.3 and Figure 2.1). Both the Paths, i.e., direct and indirect effect (through ESE) of EQ on EI were positive and statistically significant ($b_{direct}$=0.16, *p*<0.01, $b_{indirect}$= 0.23, *p*<0.01). For the present data, ESE came out to be a partial mediator of the relationship between EQ and EI, as the direct effect remained significant after adding the mediator to the model. The findings support the first hypothesis of the study. The correlational analysis (Table 2.2) shows that CF is also significantly associated with EI (r=0.23, *p*<0.01) and ESE (r=0.50, *p*<0.01). The mediation analysis revealed that the standardized direct effect of CF on EI is non-significant ($b_{direct}$= -0.01, *p*>0.05). The indirect effects of CF via ESE came out to be positive and highly significant, demonstrating a full mediation effect ($b_{indirect}$=0.27, *p*<0.01) (Table 2.3 and Figure 2.2), thus the present data support the second hypothesis of the study. ILOC also had a positive significant relationship with EI (r=0.24, *p*<0.01) as well as ESE (r=0.38, *p*<0.01). In the mediation analysis the standardized direct effect of ILOC on EI is non-significant ($b_{direct}$ = 0.08, *p*>0.05), however, the indirect effects came out to be significant ($b_{indirect}$=0.22, *p*<0.01) demonstrating full mediation effect. It supports H3 (Table 2.3 and Figure 2.3). Similarly, with regard to H4, conscientiousness was positively related to ESE (r= 0.44, *p*<0.01) and EI (r=0.30, p<0.01). The mediation analysis showed that the standardized direct effect of conscientiousness on EI was insignificant ($b_{direct}$=0.08, *p*>0.05). The indirect effects of

conscientiousness via ESE on EI came out to be positive and highly significant, demonstrating a full mediation effect of ESE in the relationship between conscientiousness and EI ($b_{indirect}$=0.27, $p$<0.01) (Table 2.3 and Figure 2.4). Thus, the data confirmed the study's hypotheses regarding the indirect association of EQ, CF, ILOC, and conscientiousness with EI, including ESE as a mediator. The results did not support H5 and H6 as no mediation effect was observed between RP and EI, as well as between promotion focus and EI.

## 2.6 Discussion

The present study aimed to examine the relationship between some psychological attributes, namely EQ, CF, ILOC, conscientiousness, RP, self-regulation and EI. The study mainly explored ESE as a potential mediator in the relationship between the above-mentioned psychological attributes and EI.

Considering the association among EQ, ESE and EI, it was hypothesized that EQ would have a positive relationship with ESE and EI, and ESE would mediate the relationship between EQ and EI (H1). In line with the previous findings (Ahmetoglu et al., 2011; Padilla-Melendez et al., 2014; Tiwari et al., 2017b; Othman & Muda, 2018; Madar et al., 2019; Hassan & Omar, 2016), the present study provided empirical evidence about the direct positive association of EQ and EI among the students. It implies that individuals who feel capable of managing their emotions and understand emotion dynamics tend to be more inclined towards entrepreneurship. Entrepreneurial activities may be challenging and stressful, requiring drastic adjustments and emotional regulation. Individuals high on EQ are better able to deal with these emotional and stressful situations. People with EQ use a variety of coping mechanisms to overcome such stressful scenarios and burnout (Humphrey, 2013). Additionally, individuals with high EQ tend to experience more positive emotions than their counterparts. Individuals experiencing positive emotions are more enthusiastic and creative (Amabile et al., 2005; Zampetakis et al., 2009; Chen et al., 2021). In addition to this,

emotionally intelligent persons are more likely to perceive and identify opportunities in their surroundings (Baron, 2008) and have the advantage of understanding the feedback of the customers regarding the products and services in the market (Elfenbein et al., 2007; Cardon et al., 2012). They may also respond appropriately in dynamic and complicated situations, giving the impression that the current situation can be handled with active efforts while disregarding hazards and dangers (Brockhaus, 1980). Henceforth, those with high EQ perceive themselves to be equipped with the above-highlighted skills and can meet the demands required in the entrepreneurial career and this may lead to an increase in EI.

Our main concern in the present study was to explore the indirect effect of ESE in the relationship between EQ and EI. The mediation analysis revealed that ESE partially mediated the relationship between EQ and EI. Previous studies have also supported the current findings with relevant empirical research (Mortan et al., 2014; Nawaz et al., 2019; Mwiya et al., 2018; Chien-Chi et al., 2020; Kanonuhwa et al., 2018). One reason for this indirect link could be that emotionally intelligent people have the ability to have an optimistic attitude towards life and manage their own and others' emotions effectively in difficult and unpleasant situations (Mortan et al., 2014). As a result, emotionally intelligent people believe they have the confidence to engage in a variety of entrepreneurial activities which are potentially stressful. In turn, this belief in one's capabilities of handling entrepreneurial tasks may lead to an increase in EI. Another theoretical connection highlighting an indirect relationship suggests that individuals with high EQ exhibit a willingness to take risks and display enhanced sociability. This, in turn, enables them to engage in effective interpersonal communication. They can also adeptly monitor their emotions, facilitating quick decision-making in various situations, effectively handle conflicts, and demonstrate a greater capacity to manage stress and a proactive disposition (Goleman, 1995; Pradhan & Nath, 2012; Skudiene et al., 2011; Zampetakis et al., 2009). Emotionally intelligent individuals perceive themselves as

competent in effectively managing the intricate process of creating a new venture, which entails a variety of complex activities such as developing, organizing and managing different aspects related to a new venture bearing most of the risks while dealing with customers and investors in the market. This belief in their entrepreneurial capabilities may help foster an individual's intention to get into entrepreneurial activities (Wong & Law, 2002; Mortan et al., 2014; McLaughlin, 2019). Regarding the strong link between ESE and EI, Chen et al. (1998) stated that when individuals have high ESE, they are better equipped to assess entrepreneurial opportunities even in environments filled with challenges, costs, and risks, in comparison to those with lower ESE. Furthermore, individuals with high self-efficacy feel more capable of dealing with adversities when they arise (Chen et al., 1998). Hence, it is reasonable to infer that a high ESE is likely to lead to increased EI among individuals.

Similarly, referring to H2, the results indicated a significant and positive association between CF and EI. The findings are consistent with previous empirical investigations (Dheer & Lenartowicz, 2019; Gill et al., 2021). People who are more cognitively flexible tend to be more creative, innovative and solve problems using multiple viewpoints when dealing with uncertain and complicated circumstances, as required in new venture creation (Spiro et al., 2003; Nijstad et al., 2010; Barbey et al., 2013; Biraglia & Kadile, 2017). Also, cognitively flexible individuals adapt to changing environmental demands by incorporating new information, which helps them find and recognize entrepreneurial opportunities in the environment (Canas et al., 2003; Dajani & Uddin, 2015). These individuals tend to overcome the mental set or habitual thinking when faced with novel situations by using different problem-solving strategies. Because entrepreneurship is a complicated and unstructured activity that needs planning and decision-making at every stage, individuals with high CF are more likely to pursue entrepreneurship and choose professions that allow them to use the skills mentioned above. As very few studies have studied CF as a predictive factor of EI,

more empirical investigations should be undertaken to support this positive association. The mediation analysis revealed that ESE fully mediated the relationship between CF and EI. The results implied that CF may not be directly linked to EI but indirectly through ESE. The findings are consistent with the prior studies (Dheer & Lenartowicz, 2017, 2019; Jiatong et al., 2021). One potential explanation for this finding might be that people with high CF can think from multiple perspectives and adapt their thoughts and behaviours to various complexities in the environment (Baron, 2008; Nicolaou et al., 2009); hence, they may have stronger beliefs that they can put their skills to use in the dynamic situations while managing the activities of entrepreneurship. And in turn, this belief might result in a strong desire to start a new venture.

A significant and positive association between ILOC and EI was observed. These results align with similar findings observed in previous studies (Rosique-Blasco et al., 2018; Voda et al., 2019; Tseng et al., 2022; Nungsari et al., 2023). The relationship between ILOC and EI may be attributed to the observation that people who have ILOC believe that their efforts and skills can produce better results in any activity. They firmly believe that their decisions, rather than external factors like luck or fate, have a significant impact on the rewards and results they achieve. People with ILOC tend to see themselves as well-suited for entrepreneurial careers because they view any circumstances arising during the entrepreneurial process as a direct result of their own actions which can be altered if required. They take accountability for these outcomes and believe in their capacity to improve and work effectively. Individuals with an ILOC are typically more self-reliant and better equipped to deal with stressful and uncertain situations (Sandler & Lakey, 1982). Their ability to actively cope with challenges and make independent decisions aligns well with the demands of entrepreneurship, and this might lead towards high EI. On the contrary, individuals with an external locus of control perceive themselves as having less control over

situations that are perceived as terrifying or dangerous. This can evoke feelings of emotional distress, apprehension, and insecurity, leading them to doubt their suitability for ventures characterized by unpredictability and complexity, such as entrepreneurship. Consequently, this leads to a lower level of EI among such individuals.

The mediation analysis revealed that ESE fully mediated between the relationship of ILOC and EI (H3). A potential explanation for this indirect relationship might be that individuals with an ILOC tend to engage in problem-solving behaviours such as seeking help and optimistic thinking (Ng et al., 2006). Because of their problem-solving behaviours and positive outlook, these individuals are more likely to take on complex tasks and exhibit proactivity when faced with challenges (Ojedokun, 2011). Furthermore, individuals who have an ILOC are known to possess greater autonomy and a stronger resistance to conforming to social pressures. These particular skills make an individual believe that they have the confidence to meet the demands of entrepreneurship, a career filled with challenges and external demands. This boost in confidence, referred to as self-efficacy, can strongly drive the desire to initiate a new business venture (Auna, 2020). As noted by Afifah (2015), individuals who possess an ILOC typically exhibit higher levels of ESE. They have a strong belief in their potential to be harnessed in creative and productive ways. This heightened self-efficacy acts as a powerful motivator, ultimately resulting in greater EI.

The results also showed a positive relationship between conscientiousness and EI. Previous studies have supported this direct association (Brice, 2004; Zhao et al., 2010; Chao-Tung et al., 2015; Jing & Sung, 2012; Ahmed et al., 2020; Biswas & Verma, 2022). However, there are contradictory findings that showed a negative or no significant relationship between conscientiousness and EI (Burch et al., 2019; Luc, 2022). The positive relationship between conscientiousness and an intention to pursue entrepreneurship could be attributed to several theoretical mechanisms. One possible reason is that individuals with high

levels of conscientiousness are very ambitious, goal-oriented, and persistent (Baum & Locke, 2004). Entrepreneurship offers an opportunity for growth, independence and taking initiative which are valued by individuals with high conscientiousness.

The results of the mediation analysis revealed that there is an indirect path, mediated by ESE, linking conscientiousness to EI (H4). The reason for this indirect link could be attributed to the observation that individuals with higher conscientiousness tend to have greater needs for achievement and personal growth. They also prioritize aligning individual goals with collective goals, emphasize careful planning over impulsive decision-making, and are more likely to adhere to rules and regulations. With this logic, individuals who are high on conscientiousness perceive themselves as capable of accomplishing the various tasks associated with entrepreneurial activities such as managing finances, handling interpersonal relationships effectively, and executing duties in a disciplined and timely manner (John et al., 2008). As a result, this perception enhances their confidence which, in turn, might lead to increased ESE (Mei et al., 2017; Sun & Zhang, 2014). A high level of ESE may have a significant influence on an individual's intentions to initiate a new business in the future.

Overall, the results highlighted the crucial role of ESE in the relationship between individual psychological traits and EI. The findings indicated that in addition to focusing on these individual traits, more emphasis should be directed on ESE while developing the intervention to increase students' intentions to pursue entrepreneurship as a career. To put it another way, the present research shows that EQ, CF, ILOC and conscientiousness are critical in generating EI when combined with ESE.

The concept of self-efficacy is strongly grounded in social cognitive theory (SCT), which posits that behaviour is a product of the interaction between an individual and their environment (Bandura, 1977). Rooted in SCT, the most contemporary theory regarding how an individual decides on career development is the Social Cognitive Career Theory (SCCT),

as proposed by Lent and colleagues (2000). SCCT is built upon the premise that individuals have the capacity to influence their own development and surroundings. It assumes that people are proactive, self-organizing, self-reflective, and self-regulating individuals who can control their actions to achieve specific outcomes. This theory forms the basis for understanding how self-efficacy plays a crucial role in shaping behaviour and career choices. An individual's decision or intention to engage in specific actions within a particular domain is influenced by two key factors. First, it's shaped by their assessment of their own capabilities to plan and carry out these actions, which is known as self-efficacy. Second, it's influenced by their expectations about the potential outcomes and consequences of performing these actions. These expectations include both the likely and imagined results of their behaviour. This theory underscores that these factors, self-efficacy and outcome expectations, play a critical role in an individual's decision-making and actions (Bandura, 1986; Lent et al., 2000). The overall findings suggest that by changing one’s perception of the individual’s competence, one may gain entrepreneurial skills with the right effort and tenacity, as these are not natural traits (Burnette et al., 2020). ESE is a malleable attribute and many studies have emphasized its significance in enhancing EI (Zhao et al., 2005; Newman et al., 2019; Gielnik et al., 2017). Emphasizing the malleability, if the academicians can raise ESE through various interventions, the effects of other personality attributes that are not directly changeable can be moderated. In this regard, Bandura (1997) proposed various sources for boosting self-efficacy, each of which might be used in a different domain, such as mastery experience, vicarious experience, social persuasion and physiological and affective states. Academicians can customize these approaches and suggest a curriculum which incorporate elements to boost one’s self-efficacy. Such elements may channelize students’ mindset to be job creators rather than job seekers.

### 2.6.1 Conclusion

The current study's findings reveal that EQ, CF, ILOC and Conscientiousness are four factors that are indirectly associated with EI through ESE. ESE partially mediates the association between EQ and EI, suggesting that individuals' ESE may improve the intention to pursue entrepreneurial tasks. ESE fully mediates the relationship between other factors, i.e., CF-EI, ILOC-EI and Conscientiousness-EI. It implies that changing students' ESE may aid in increasing EI and entrepreneurial activities.

### 2.6.2 Implications

The results have added to the existing findings by incorporating the less explored factors (i.e. EQ, CF, ILOC and Conscientiousness) in relation to EI among the engineering students. The results showed that EQ, CF, ILOC and conscientiousness might indirectly affect EI through ESE. The study has revealed the motivating function of ESE in determining EI. Literature shows that EQ, CF, ILOC and conscientiousness are important predictors of EI, however, these factors are less malleable, and it may be difficult to modify them. The present study proposed an alternative and provided preliminary data about the potential mediational association of ESE in the relationship between EQ, CF, ILOC, conscientiousness and EI. ESE, which is relatively more malleable, can be targeted through different interventions, however, more studies including experimental and longitudinal ones, are required to establish the association. As ESE has shown a significant association with EI, and many approaches are available for enhancing self-efficacy, the study findings may be used as a support for devising a special programme and inculcating it into the academic curriculum of college students.

### 2.6.3 Limitations

The present study has some limitations that offer more opportunities for future research in the entrepreneurship field. Firstly, our reliance on self-report measures serves as a limitation, as it

is challenging to completely eliminate the potential for socially desirable responses. Second, although the sample was large, the phenomenon was studied among engineering students only. Future studies should include students from other disciplines such as (Arts, Commerce and Business students). As this study was cross-sectional, longitudinal studies should be undertaken to see whether intention leads to entrepreneurial behaviour in future. As this is a preliminary study and does not investigate the causal mechanism, scholars should also focus on experimental designs to gain a more in-depth understanding of the dynamics among the identified variables. In addition, future studies can plan and check the efficacy of the interventions based on ESE, which could enhance EI among students.

**Table 2.1:** *Demographic characteristics of the total sample and descriptive statistics of the study variables.*

| Demographic characteristics | N | %Age | Min. | Max. | Mean | SD | Skewness | Kurtosis |
|---|---|---|---|---|---|---|---|---|
| **Age (Years)** | 769 | | 18 | 26 | 19.50 | 1.37 | 1.11 | 2.29 |
| **Gender** | | | | | | | | |
| **Male** | 559 | 72.7 | | | | | | |
| **Female** | 210 | 27.3 | | | | | | |
| **Locality** | | | | | | | | |
| **Rural** | 331 | 43.0 | | | | | | |
| **Urban** | 383 | 49.8 | | | | | | |
| **Semi-urban** | 55 | 7.2 | | | | | | |
| **Emotional Intelligence** | | | 16 | 112 | 89.16 | 13.28 | -1.13 | 1.47 |
| **Entrepreneurial self-Efficacy** | | | 24 | 120 | 89.86 | 12.18 | -0.29 | 0.97 |
| **Cognitive Flexibility** | | | 8 | 40 | 31.45 | 5.46 | -0.27 | 0.53 |
| **Risk Propensity** | | | 4 | 20 | 12.20 | 3.38 | 0.11 | -0.48 |
| **Conscientiousness** | | | 8 | 40 | 31.87 | 4.76 | -0.85 | 1.70 |
| **Internal locus of control** | | | 4 | 20 | 16.03 | 2.55 | -0.90 | 1.58 |
| **Self-regulation (Promotion-focus)** | | | 10 | 30 | 19.67 | 3.19 | 0.21 | 0.28 |
| **(Prevention-focus)** | | | 7 | 25 | 16.85 | 3.61 | -0.16 | -0.44 |
| **Entrepreneurial Intentions** | | | 5 | 35 | 27.29 | 6.91 | -0.41 | -0.33 |

**Table 2.2:** *Correlation coefficients among scores on Emotional intelligence, Cognitive flexibility, Entrepreneurial self-efficacy, Locus of control (Internal and External), Risk propensity, Conscientiousness, Self-regulation (Promotion and Prevention) and Entrepreneurial Intentions*

| | **Variables** | **1** | **2** | **3** | **4** | **5** | **6** | **7** | **8** | **9** | **10** |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **1** | Emotional Intelligence | 1.00 | | | | | | | | | |
| **2** | Cognitive Flexibility | 0.42** | 1.00 | | | | | | | | |
| **3** | Entrepreneurial Self-Efficacy | 0.51** | 0.50** | 1.00 | | | | | | | |
| **4** | Risk Propensity | -0.02 | -0.06 | -0.01 | 1.00 | | | | | | |
| **5** | Internal Locus of Control | 0.46** | 0.33** | 0.38** | -0.01 | 1.00 | | | | | |
| **6** | External Locus of Control | -0.03 | -0.09 | 0.01 | -.27** | -0.12** | 1.00 | | | | |
| **7** | Conscientiousness | 0.50** | 0.41** | 0.44** | -0.04 | 0.46** | -0.20** | 1.00 | | | |
| **8** | Promotion Focus | 0.21** | 0.21** | 0.18** | 0.05 | 0.14** | -0.14** | 0.25** | 1.00 | | |
| **9** | Prevention Focus | 0.18** | 0.11** | 0.07 | -0.04 | 0.12** | -0.17** | 0.22** | 0.18** | 1.00 | |
| **10** | Entrepreneurial Intentions | 0.30** | 0.23** | 0.42** | 0.13** | 0.24** | -0.03 | 0.30** | 0.11** | 0.01 | 1.00 |

**Note: N=769, **$p$<0.01**

**Table 2.3:** *Standardized total, direct (of emotional intelligence, Cognitive flexibility, Internal locus of control, conscientiousness controlling entrepreneurial self-efficacy) and indirect effects for entrepreneurial Intentions.*

| Variables | Effects | Entrepreneurial Intentions | |
|---|---|---|---|
| | | Estimates | p-value |
| **Emotional intelligence as predictor** | Total effect (Emotional intelligence & entrepreneurial self-efficacy) | 0.39 | 0.004 |
| | Direct effect (Emotional intelligence) | 0.16 | 0.003 |
| | Indirect effect (Through entrepreneurial self-efficacy) | 0.23 | 0.005 |
| **Cognitive Flexibility as predictor** | Total effect (Cognitive Flexibility & entrepreneurial self-efficacy) | 0.27 | 0.005 |
| | Direct effect (Cognitive Flexibility) | -0.01 | 0.880 |
| | Indirect effect (Through entrepreneurial self-efficacy) | 0.27 | 0.003 |
| **Internal Locus of Control as predictor** | Total effect (Internal locus of control & entrepreneurial self-efficacy) | 0.30 | 0.002 |
| | Direct effect (Internal locus of control) | 0.08 | 0.107 |
| | Indirect effect (Through entrepreneurial self-efficacy) | 0.22 | 0.003 |
| **Conscientiousness as predictor** | Total effect (Conscientiousness & entrepreneurial self-efficacy) | 0.35 | 0.005 |
| | Direct effect (Conscientiousness) | 0.08 | 0.220 |
| | Indirect effect (Through entrepreneurial self-efficacy) | 0.27 | 0.003 |

Note. N=769

**Table 2.4:** *Goodness of Fit indices for the model obtained through Structural Equational Modelling predicting entrepreneurial intentions with* ***Emotional intelligence*** *as a predictor and entrepreneurial self-efficacy as a mediator*

| Index | Accepted Values for N=769(N>250) and Observed Variables=45(OVs>30) | Model Results |
|---|---|---|
| Normed Chi-Square (Chi-square/DF) | 3< Chi-square/DF<5(Significant p-values expected) | 2.01 |
| GFI | Above 0.90# | 0.91 |
| CFI | Above 0.90# | 0.92 |
| TLI | Above 0.90# | 0.91 |
| SRMR | Below 0.08# | 0.06 |
| RMSEA | Below 0.08# | 0.03 |

Note. #As mentioned in Hair et al. (2014).

**Table 2.5:** *Goodness of Fit indices for the model obtained through Structural Equational Modelling predicting entrepreneurial intentions with* ***Cognitive flexibility*** *as a predictor and entrepreneurial self-efficacy as a mediator*

| Index | Accepted Values for N=769(N>250) and Observed Variables=37 (OVs>30) | Model Results |
|---|---|---|
| Normed Chi-Square (Chi-square/DF) | 3< Chi-square/DF<5(Significant p-values expected) | 1.86 |
| GFI | Above 0.90# | 0.92 |
| CFI | Above 0.90# | 0.94 |
| TLI | Above 0.90# | 0.94 |
| SRMR | Below 0.08# | 0.04 |
| RMSEA | Below 0.08# | 0.03 |

Note. # As mentioned in Hair et al. (2014).

**Table 2.6:** *Goodness of Fit indices for the model obtained through Structural Equational Modelling predicting entrepreneurial intentions with* ***Internal locus of control*** *as a predictor and entrepreneurial self-efficacy as a mediator*

| Index | Accepted Values for N=769(N>250) and Observed Variables=33(OVs>30) | Model Results |
|---|---|---|
| Normed Chi-Square (Chi-square/DF) | 3< Chi-square/DF<5(Significant p-values expected) | 1.96 |
| GFI | Above 0.90# | 0.93 |
| CFI | Above 0.90# | 0.94 |
| TLI | Above 0.90# | 0.93 |
| SRMR | Below 0.08# | 0.04 |
| RMSEA | Below 0.08# | 0.03 |

Note. #As mentioned in Hair et al. (2014).

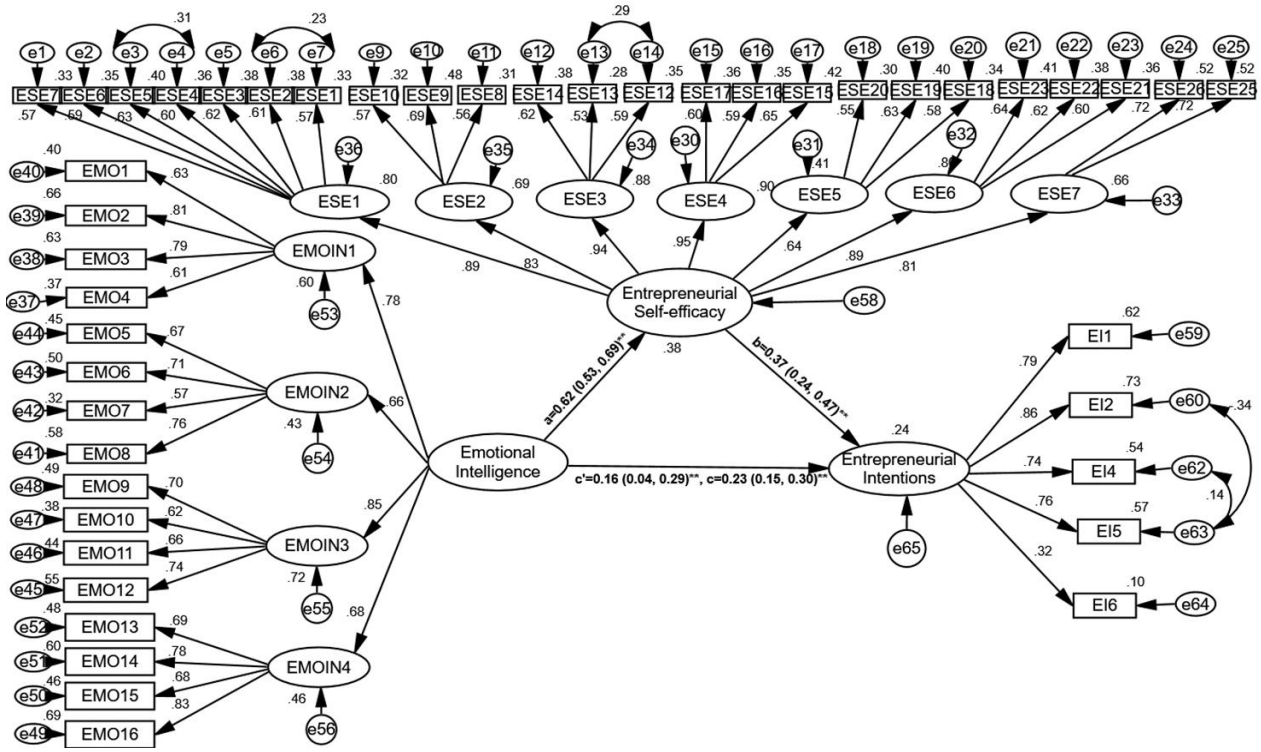
**Table 2.7:** *Goodness of Fit indices for the model obtained through Structural Equational Modelling predicting entrepreneurial intentions with* ***Conscientiousness*** *as a predictor and entrepreneurial self-efficacy as a mediator*

| Index | Accepted Values for N=769(N>250) and Observed Variables= 37(OVs>30) | Model Results |
|---|---|---|
| Normed Chi-Square (Chi-square/DF) | 3< Chi-square/DF<5(Significant p-values expected) | 2.02 |
| GFI | Above 0.90# | 0.92 |
| CFI | Above 0.90# | 0.93 |
| TLI | Above 0.90# | 0.92 |
| SRMR | Below 0.08# | 0.04 |
| RMSEA | Below 0.08# | 0.03 |

Note. # As mentioned in Hair et al. (2014).

**Figure 2.1**

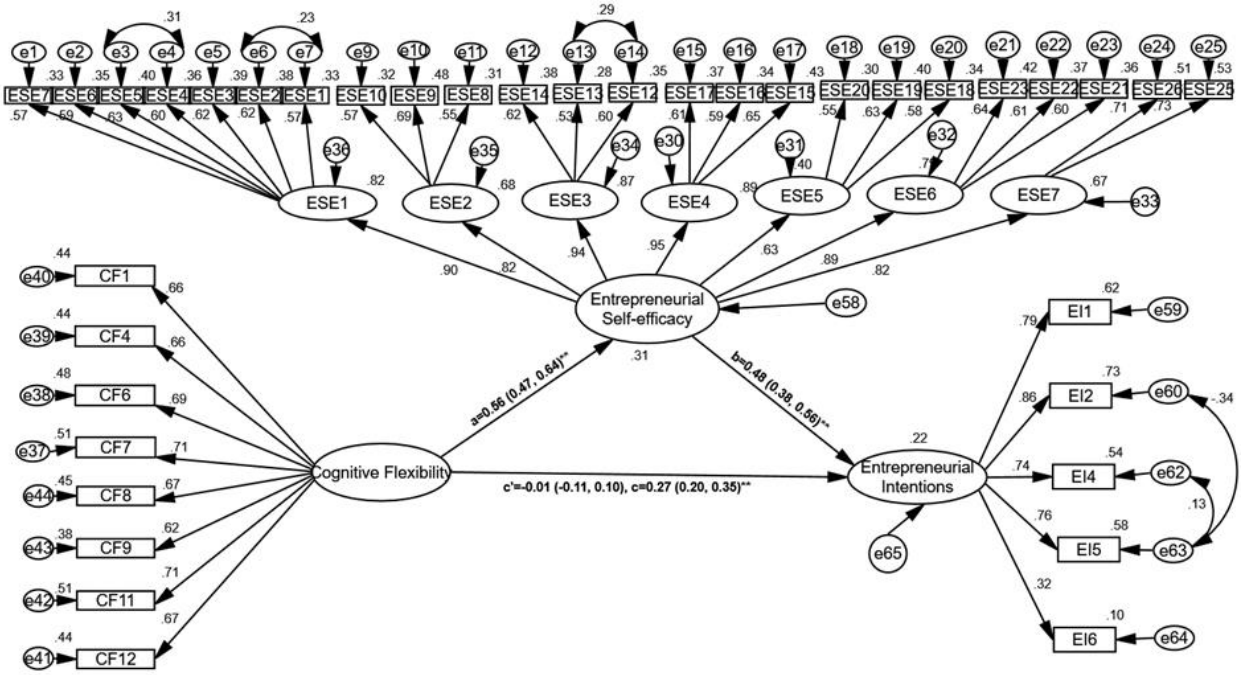
*Emotional intelligence predicting entrepreneurial intentions with entrepreneurial self-efficacy as a mediator*




*Note.* *Path A = standardized regression coefficient for the predictor in relation to the mediator; path B = standardized regression coefficient for the mediator predicting the criterion variable; path C = standardized regression coefficient for the predictor in relation to criterion variables with the mediator in the model.

**Figure 2.2**

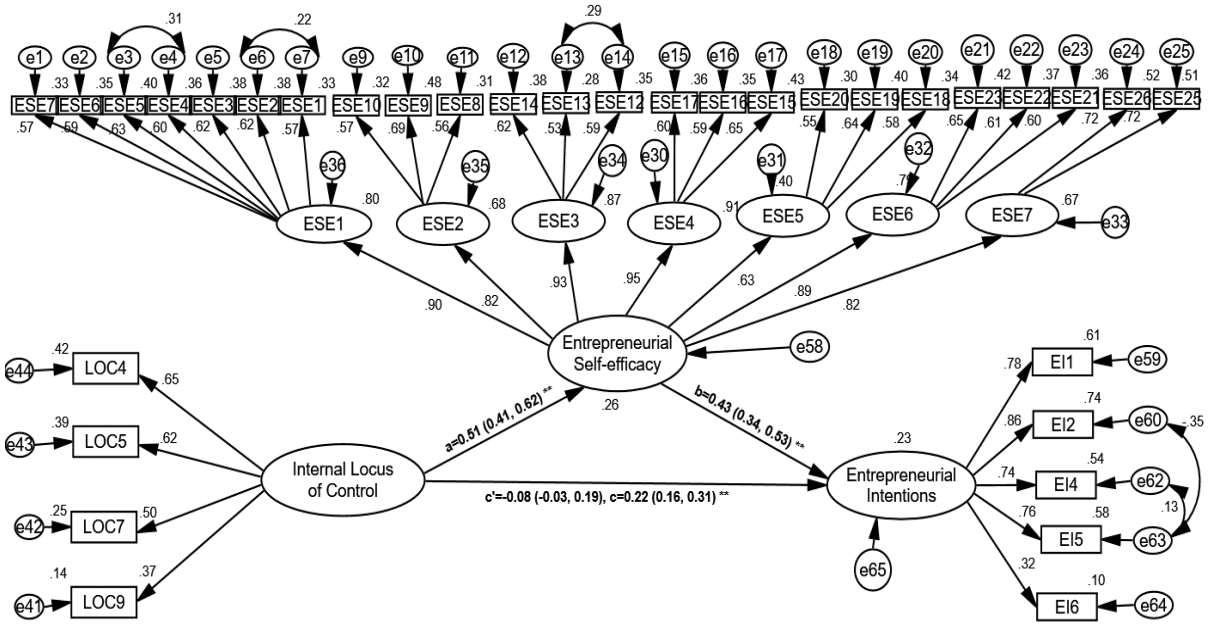
*Cognitive Flexibility predicting entrepreneurial intentions with entrepreneurial self-efficacy as a mediator*




*Note.* *Path A = standardized regression coefficient for the predictor in relation to the mediator; path B = standardized regression coefficient for the mediator predicting the criterion variable; path C = standardized regression coefficient for the predictor in relation to criterion variables with the mediator in the model.

**Figure 2.3**

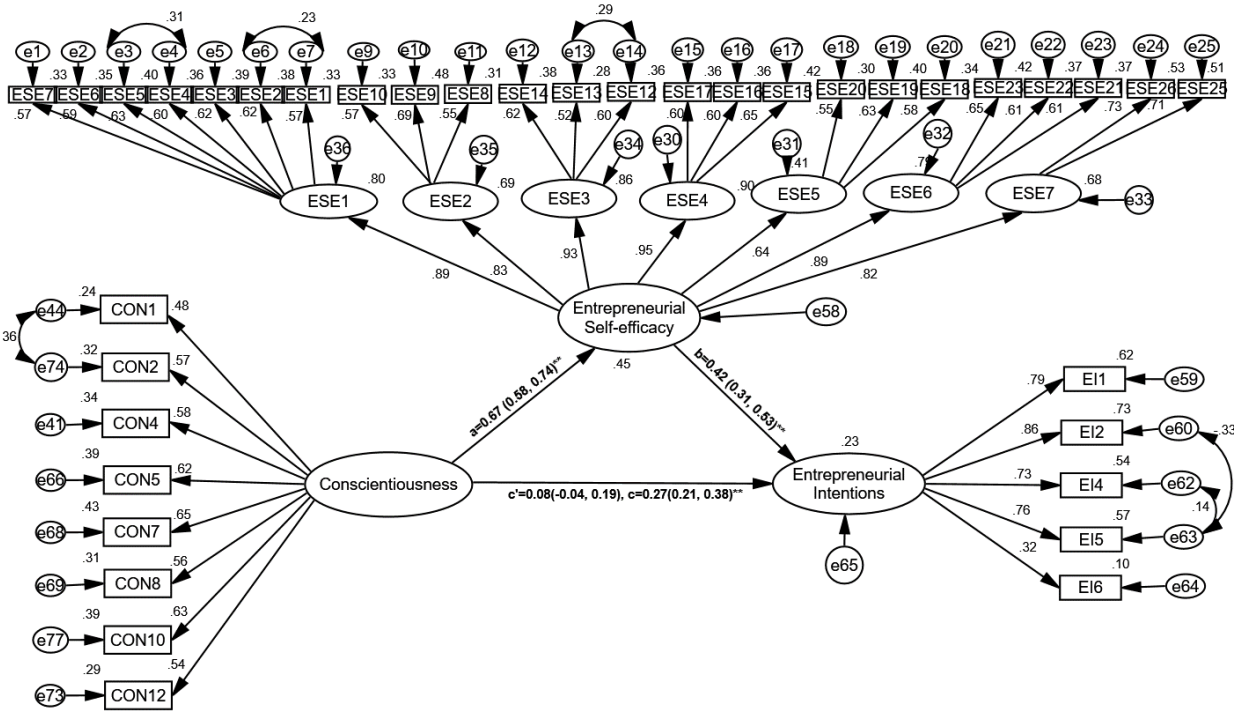
*Internal locus of control predicting entrepreneurial intentions with entrepreneurial self-efficacy as a mediator*




*Note.* *Path A = standardized regression coefficient for the predictor in relation to the mediator; path B= standardized regression coefficient for the mediator predicting the criterion variable; path C=standardized regression coefficient for the predictor in relation to criterion variables with the mediator in the model.

**Figure 2.4**

*Conscientiousness predicting entrepreneurial intentions with entrepreneurial self-efficacy as a mediator*




*Note.* *Path A = standardized regression coefficient for the predictor in relation to the mediator; path B = standardized regression coefficient for the mediator predicting the criterion variable; path C = standardized regression coefficient for the predictor in relation to criterion variables with the mediator in the model.

# Chapter 3

# Study II

# Convergence and Contrast: An Investigation into the Psychological attributes of budding Entrepreneurs

## 3.1 Introduction

This chapter presents the findings of the second study conducted within the current research work on entrepreneurial intentions (EI). Existing literature on EI shows that most of the research conducted so far studied student samples (who have not shown interest in any entrepreneurial activities) to understand EI and its correlates; a very few tried to explore EI among budding entrepreneurs (Gonzalez-Lopez et al., 2021; Tiwari et al., 2020). Further, exploring EI and its dynamics among budding entrepreneurs would provide a clearer picture concerning the correlates of EI, as budding entrepreneurs would have practically shown high EI by carrying out entrepreneurial activities. Therefore, the current study, serving as the second objective of the present research work, aimed to contribute to the existing knowledge on the factors influencing EI among budding entrepreneurs.

As mentioned in the previous chapter, EI is one of the most crucial factors impacting entrepreneurial behaviour, among other direct and indirect predictors. Researchers have explored various individual-level traits influencing EI. Among other psychological attributes, entrepreneurial self-efficacy (ESE), emotional intelligence (EQ), risk-propensity (RP), conscientiousness, internal locus of control (ILOC), cognitive flexibility (CF), and self-regulation have been identified as the significant factors influencing EI and related behaviour. *The theoretical relationship between the above-mentioned psychological attributes and EI have been thoroughly discussed in Chapter 2 (Study I) of the thesis; thus, repetition was deemed unnecessary.* Though, the literature on entrepreneurship and associated factors is

quite large but most of the existing research has mostly included students as their sample, and a notable gap exists in exploring EI within a more suitable sample, i.e., budding entrepreneurs. For understanding the pivotal determinants of EI, an in-depth understanding of the correlates of EI among budding entrepreneurs is imperative.

Motivated by the gaps observed in the relevant literature and the benefits of studying entrepreneurship, the current study explores the association of psychological attributes influencing EI in budding entrepreneurs and examines the differences in attributes between budding entrepreneurs and students not inclined toward entrepreneurship. The authors wanted to explore the factors that motivated budding entrepreneurs to initiate entrepreneurial activities in contrast to those who chose not to engage in such activities. For the present study, '*budding entrepreneurs' are individuals who are not only giving serious thought to starting a new venture but are also engaged in activities related to starting a venture, for example, developing a business plan, submitting a business proposal to e-cells/incubators, investing money, organizing a start-up team* (Martinez & Aldrich, 2011). Specifically, the current study aims to achieve three objectives: Firstly, to investigate the association of psychological attributes influencing EI in budding entrepreneurs. Secondly, to analyse the differences in psychological attributes between budding entrepreneurs and students less inclined towards entrepreneurship. Lastly, to explore the role of various factors in the overall variance of EI and pinpoint the most significant contributor to this variance. These objectives are not only academic pursuits but also practical tools that aim to guide the development of interventions and training programs. By doing so, the study aims to enhance crucial psychological attributes among students, contributing to the improvement of entrepreneurial education and empowerment.

Due to the limited existing literature regarding EI on budding entrepreneurs, there is a significant need to delve deeper into understanding EI among individuals genuinely interested in entrepreneurship. The absence of consensus related to the study variables and the prevalent focus on student samples highlight the importance of further exploration, particularly among budding entrepreneurs. As a result, the theoretical framework for this study primarily draws from associations observed among student samples (as outlined in Chapter 2), and the hypotheses are formulated accordingly for the present study to be conducted on budding entrepreneurs.

**Hypothesis 1 (H1)**: *There will be a positive and significant association among the psychological attributes (ESE, EQ, CF, RP, conscientiousness, ILOC, self-regulation) and EI among budding entrepreneurs.*

**Hypothesis 2 (H2)**: *Budding entrepreneurs would score high on the selected psychological attributes compared to the students, and ESE would be the most significant predictor of EI.*

The study can provide valuable insights into the unique psychological traits and characteristics exhibited by individuals inclined towards early entrepreneurial activities. Also, by aiming to identify the most significant factor among the studied variables, the research paves the way for the development of targeted interventions and training programs. These programs need to specifically target factors that differentiate budding entrepreneurs from students with no interest in entrepreneurial activities. Understanding the psychological factors influencing budding entrepreneurs allows for the creation of effective strategies to support and nurture their entrepreneurial endeavours. The study's results may serve as a guide for educational institutions and programs. The identification of key factors can inform curriculum development and training initiatives tailored to enhance the psychological attributes among students. The study enriches existing knowledge by focusing on the specific population of budding entrepreneurs, adding depth to the understanding of the relationship between psychological attributes and entrepreneurial interests.

It is pertinent to mention that the research work, which this current study is a part of, aims to explore the relationship between psychological attributes and EI, and assess the effectiveness of an intervention designed to enhance EI among students. In the first phase (Study I- Chapter 2), the study explored the relationships among specific variables using a sample of 769 undergraduate engineering students who were not engaged in entrepreneurial activities. Building upon this groundwork, the second phase, i.e., the present study, examines the association among selected variables in budding entrepreneurs. Additionally, it aims to compare and identify significant differences between students and budding entrepreneurs across these chosen variables. The study also seeks to identify the most influential factor among the variables. This identification is crucial for developing targeted interventions and training programs, aiming to foster EI and related behaviours among individuals. The multifaceted approach of this research work provides a holistic understanding and actionable insights for promoting entrepreneurship.

## 3.2 Method

### 3.2.1 Participants

The present study included 83 budding entrepreneurs (students studying in engineering college) aged 18-26 years (*Males*=59, *Females*=24) who had either submitted start-up proposals or initiated some initial entrepreneurship-related activities. The inclusion criteria for participants included: a) individuals actively engaged in entrepreneurial activities (budding entrepreneurs), b) members of an entrepreneurship group, c) enrolled as engineering students, d) proficient in English reading skills, and e) not suffering from any mental and physical health issues. Budding entrepreneurs were compared with students who did not engage in any entrepreneurial activities at the time of assessment. There were 769 such students (559 males) within the age range of 18 to 26 years ($M_{age}$=19.50 years, $SD_{age}$=1.37 years) selected from various engineering institutes located in six districts of Punjab, India

(Ropar, Mohali, Chandigarh, Ludhiana, Patiala, Ferozepur). Inclusion criteria for the second group, i.e., students, were: a) enrolled as engineering students, b) must not have submitted start-up proposals, c) proficiency in reading the English language, and d) not suffering from mental and physical health issues.

The rationale behind selecting two distinct groups, one comprising budding entrepreneurs and the other consisting of students not engaged in entrepreneurial activities, was rooted in the aim to compare and contrast the factors influencing entrepreneurial intentions across different samples. Firstly, focusing on budding entrepreneurs allows for an examination of the determinants that drive individuals already inclined towards entrepreneurial activities. By studying this group, we can identify the specific characteristics and motivations, that contribute to their EI. Understanding these factors is crucial for developing targeted interventions and support systems to foster entrepreneurship among potential entrepreneurs. On the other hand, including a group of students not involved in entrepreneurial activities provides a valuable point of comparison. By contrasting the characteristics and motivations of budding entrepreneurs with those of their non-entrepreneurial peers, we can learn about unique traits and factors associated with EI.

Detailed demographic characteristics and descriptive statistics for both the groups have been provided in Table 3.1.

### 3.2.2 Measures

The data for this cross-sectional study was collected with the help of a set of standardized questionnaires. These questionnaires are well-established measures of the selected constructs. A brief description of the questionnaires used in the present study is as follows.

#### *3.2.2.1 Entrepreneurial Intentions*

Entrepreneurial Intention Questionnaire (EIQ; Linan & Chen, 2009) was used to assess Entrepreneurial Intentions. It is a 6-item self-report questionnaire developed on a 7-point Likert scale ranging from 1 (strongly disagree) to 7 (strongly agree), where higher score indicates a higher level of EI. This scale showed high internal consistency (0.909) and is considered a reliable and valid measure for measuring EI among students. EIQ has been validated in the Indian context also (Mishra & Singh, 2022b; Srivastava & Misra, 2017; Roy & Das, 2022). Some examples of the items are "I am ready to do anything to be an entrepreneur", "I will make every effort to start and run my own business", and "I have serious doubts about ever starting my own business". For the current sample, Cronbach alpha was 0.81.

#### *3.2.2.2 Cognitive flexibility*

Cognitive flexibility was measured using Cognitive flexibility Questionnaire (CFQ; Martin & Rubin, 1995). It consists of 12 items— four negative and eight positives. The CFQ uses a five-point Likert scale, and higher score indicates high CF. The CFQ had high internal consistency (0.76-0.77), good concurrent and construct validity. The scale has been used in the Indian population and found to be reliable and valid (Ram et al., 2019; Kercood et al., 2017). The sample items include, "I can communicate an idea in many different ways", "I avoid new and unusual situations", and "I feel like I never get to make decisions". The present data showed a Cronbach alpha of 0.86.

#### *3.2.2.3 Risk propensity*

Risk Propensity was assessed with the scale based on the original research of Slovic (1972). It comprises of four items that are rated on a five-point Likert scale, ranging from 1 (strongly disagree) to 5 (strongly agree). The scale has been found to be reliable and valid for

measuring risk propensity, as the scale showed high internal consistency (alpha=0.90). Various studies have used this scale (Karimi et al., 2017; Ndofirepi, 2020) and affirm its reliability in measuring RP among Indian students. Some examples of the items are: “I am not willing to take risks when choosing a job or a company to work for” and “I prefer a low-risk/high-security job with a steady salary over a job that offers high risks and high rewards”. The Cronbach alpha for this scale on the present sample was 0.72.

#### *3.2.2.4 Entrepreneurial Self-efficacy*

Entrepreneurial Self-efficacy Questionnaire (ESEQ; De Noble et al., 1999) was used to measure Entrepreneurial Self-efficacy. This scale consists of 26 items measuring seven dimensions on a 5-point Likert scale. The dimensions are: Developing a new product and market opportunities; building an innovative environment; initiating investor relationships; defining core purpose; coping with unexpected challenges; developing critical human resources; using business. The higher scores indicate a high level of ESE. This scale showed moderate to high internal consistency (0.66-0.83) and is considered reliable and valid. ESEQ has been used in various developed and developing countries (Sanchez, 2014; Setiawan, 2014). Examples of the items are, “I can see new market opportunities for new products and services” and “I can design products that solve current problems”. Cronbach alpha for the present sample came out to be 0.93.

#### *3.2.2.5 Emotional Intelligence*

Emotional intelligence was assessed using Wong and Law Emotional Intelligence Scale (WLEIS; Wong & Law, 2002). The scale is a 16-item questionnaire having four dimensions, namely, self-emotion appraisal (SEA), others’ emotion appraisal (OEA), use of emotion (UOE), and regulation of emotion (ROE). The WLEIS uses a 7-point Likert-type scale, and high scores show greater EQ. Internal consistency reliability for the four

dimensions ranged from 0.83 to 0.90. Wong and Law (2002) reported that the internal consistency reliability of this scale was satisfactory (alpha=0.94). This scale has been used in the Indian context as well (Kumar, 2018; Ng et al., 2007) and found to be reliable and valid for measuring EQ among Indian students. The sample items are “I have a good sense of why I have certain feelings most of the time”, “I always know my friends' emotions from their behaviour.”, “I always tell myself I am a competent person" and “I am able to control my temper and handle difficulties rationally”. The present data showed Cronbach's alpha to be 0.90.

#### *3.2.2.6 Locus of control*

Internal Locus of control was measured using Locus of control (LOCS; Mueller & Thomas, 2001). This scale consists of 10 items, of which four measure the internal locus of control and six measure the external locus of control (Mueller & Thomas, 2001). The scale uses a 5-point Likert scale. The scale's reliability could range between 0.53 to 0.81 depending upon different cultural contexts (Mueller & Thomas, 2001). LOCS has been used in Indian studies also (Asante & Affum-Osei, 2019; Voda et al., 2019). Examples of the statements are: “Whether or not I am successful in life depends mostly on my ability”, and “I feel in control of my life”. On this scale, the present sample has a Cronbach alpha of 0.76.

#### *3.2.2.7 Conscientiousness*

For the assessment of conscientiousness, 12 items were taken from NEO-FFI (Costa & McCrae, 1992). This scale is a 60-item scale that measures personality traits across five dimensions (12 items each), namely, Neuroticism, Extraversion, Openness to Experience, Agreeableness and Conscientiousness. The sample items include, “I keep my belongings neat and clean”, “I try to perform all the tasks assigned to me conscientiously”, and “I strive for

excellence in everything I do". The reliability coefficient for this scale on the present sample was 0.81.

#### *3.2.2.8 Regulatory focus*

To measure self-regulatory focus, a Regulatory focus questionnaire (RFQ; Higgins et al., 2001) was used. It is an 11-item scale that measures two dimensions of self-regulation, i.e., Promotion and Prevention focus. The scale reported moderate to high internal consistency (0.73-0.80) for the promotion and prevention focus. RFQ is a valid and reliable measure for assessing regulatory focus (Haws et al., 2010; Summerville & Roese, 2008) and has been applied across cultures (Chung et al., 2014; Kurman & Hui, 2012; Kung et al., 2016). The reliability coefficient for this scale on the present sample was 0.68.

### 3.2.3 Statistical Analysis

During the data analysis phase, the demographic information and key study variables were summarized through the computation of descriptive statistics. To scrutinize the primary hypotheses, a series of statistical analyses were conducted. This encompassed correlation analysis, utilizing Pearson correlation coefficients, to evaluate relationships between variables. Additionally, linear regression analysis was employed to explore predictive relationships, and independent sample t-tests was performed to compare means specifically between budding entrepreneurs and students. The entire analytical process was executed using IBM SPSS version 25.0. The data met all the necessary assumptions for the aforementioned statistical analyses, ensuring the robustness of the results.

### 3.2.4 Procedure

Before conducting the survey, researchers obtained ethical clearance from the institute's ethics committee. Using purposive sampling, budding entrepreneurs (Group I) from various

engineering educational institutions in Punjab were selected. For this purpose, the researcher visited various entrepreneurship cells in different engineering institutes and obtained the contact details, including phone numbers and email addresses of the potential participants. Prior to participation, each participant was provided with instructions, outlining the confidentiality of their responses and sought informed consent. Upon providing consent, participants were asked to fill out the survey. A total of 96 responses were received, out of which some data were removed due to incomplete responses. After cleaning the data, 83 responses were included for the final statistical analysis. In order to estimate the required sample size, the G-Power software version 3.1.9.7 was used. The sample size was found to be adequate for an independent sample t-test, keeping the alpha at 0.05, effect size at 0.50 (Cohen's d; medium), and power at 0.80. Data analysis was done with the help of SPSS 25.0.

Students' data (Group II) was collected from engineering institutes across various districts in Punjab. Permission was sought from the authorities (Dean or Principal) to collect data from students and standardized questionnaires of study variables were distributed to all the students. They were assured that their responses would remain confidential and used for research purposes only. Upon giving consent to participate in the study, participants were asked to complete the questionnaires based on their level of agreement with the provided items. A total of 850 responses were collected. After that, data cleaning was undertaken for missing responses and 769 responses were used for the final statistical analysis (Refer Chapter 2 for detailed procedure).

## 3.3 Results

The overall findings are depicted in Tables 3.1-3.5. Table 3.1 shows the demographics and descriptive statistics of the sample. In Table 3.2, the correlation coefficients among the study variables are given. The correlational analysis showed that EI was significantly

correlated with ESE ($r$=0.51, $p$<0.01), RP ($r$=0.36, $p$<0.01), ILOC ($r$=0.51, $p$<0.01), conscientiousness ($r$=0.30, $p$<0.01), promotion-focus ($r$=0.24, $p$<0.05), EQ ($r$=0.46, $p$<0.01), and CF ($r$=0.44, $p$<0.01). These findings support H1 of the study. Table 3.3 shows the differences between the mean scores of groups I (budding entrepreneurs) and II (students) on selected variables. The findings indicated that there was a significant difference between the mean scores of groups I and II on four variables, i.e., RP, t (850)=5.19, $p$<0.01, Cohen's d=0.60; ESE, t (850)=2.41, $p$<0.01, Cohen's d=0.28; EI, t (850)=6.13, $p$<0.01, Cohen's d=0.71, and prevention-focus, t (850)=2.78, $p$<0.01, Cohen's d=0.33. However, no significant differences were observed between the means scores of groups I and group II on EQ (Cohen's d=0.03), CF (Cohen's d=0.03), conscientiousness (Cohen's d=0.10), promotion-focus (Cohen's d=0.02), and ILOC (Cohen's d=0.15).

Building upon the results of the difference analysis, a regression analysis was conducted using the identified significant factors—namely, ESE, RP, and prevention focus—as predictors, with EI serving as the criterion variable. These three predictors collectively accounted for 38% of the variance in EI, $R^2$=0.38, F (3,79) =16.27, $p$<0.01, Cohen's $f^2$=0.61 (Table 3.4). Additionally, a stepwise regression using the same model revealed that ESE is the most significant predictor of EI, $\beta$=0.50, $p$<0.01, followed by RP, $\beta$=0.35, $p$<0.01, as shown in Table 3.5. In the first model, ESE accounted for 25% of the variance in EI, $R^2$=0.25, F (1,81) =27.60, $p$<0.01, Cohen's $f^2$=0.33 (Table 3.5). In the second model, both ESE and RP accounted for 38% of the variance in EI, $R^2$=0.38, F (1,80) =16.24, $p$<0.01, Cohen's $f^2$=0.61 (Table 3.5). The third predictor, i.e., prevention-focus, could not reach the significance level and was excluded from the model. Therefore, the findings of this study support hypothesis 2 also. Overall, the findings align with the idea that confidence in one's ability to perform entrepreneurial tasks positively influences the inclination to pursue entrepreneurial activities. This evidence came from a relatively more valid sample for this kind of study. Additionally,

greater RP also found to be contributing significantly to EI, indicating that individuals comfortable with taking risks are more inclined to engage in entrepreneurial ventures. By studying budding entrepreneurs, the present study provides a valuable addition to the existing literature on EI and their correlates. Budding entrepreneurs are significantly higher on ESE and RP than other students not interested in entrepreneurial activities. These findings imply that efforts to enhance ESE and encourage a healthy level of RP may be beneficial for increasing EI among students.

## 3.4 Discussion

The primary objective of the present study was to explore the association between a few psychological attributes and EI among budding entrepreneurs. The study also compared the students, who have shown interest in entrepreneurial activities (budding entrepreneurs) and those who have not, on specific psychological attributes and explored the contribution of these psychological attributes to EI among budding entrepreneurs. The study also sought to identify the most influential psychological attribute among studied predictors that influence budding entrepreneurs' intentions to pursue entrepreneurial activities.

Regarding H1, the analysis indicated a positive and significant association between the studied psychological attributes and EI among budding entrepreneurs. Among the studied variables, ESE has been found to be positively associated with EI. These findings align with existing studies (Zhao et al., 2005; Mishra & Singh, 2022a). One possible explanation for this finding is that people with high ESE, due to their positive outlook, tend to recognize opportunities and are confident to deal with unprecedented obstacles expected in the entrepreneurial context. People with high ESE can cope with uncertain stressors and risks in an environment. These prerequisite skills among individuals influence the belief in their capabilities to fulfil the demands of entrepreneurship, which might lead to high EI (Naktiyok

et al., 2010). The results also showed that EQ is positively associated with EI among budding entrepreneurs. These findings align with the existing studies' outcomes (Rodrigues et al., 2019; Tiwari et al., 2020). Individuals with a high level of EQ possess valuable skills to help them effectively navigate challenges and avoid burnout (Humphrey, 2013). These people appear to be more aware of how specific outcomes influence their behaviour and are better able to manage their emotions appropriately, displaying emotional competencies that support an entrepreneurial attitude, and, in turn, this might lead to increased EI. The other psychological attribute found to be positively associated with EI is CF, and the results are consistent with the findings of previous studies (Mishra & Singh, 2022a; Gill et al., 2021). Cognitively flexible individuals can adapt to the changing environment and think through multiple ways to solve any problem. Adapting, thinking creatively, and innovating contribute to an individual's belief in their entrepreneurial capabilities, ultimately leading to higher EI (Dheer & Lenortawiz, 2019; Gill et al., 2021). The results also highlighted the positive and significant association between RP and EI among budding entrepreneurs. The findings align with the existing studies (Khalid et al., 2018; Pinto et al., 2020; Shukla & Kumar, 2024). A possible explanation for the positive relationship between RP and EI may be that people who take high risks are motivated to engage in activities that entail some risk and some potential advantages. Risk-taking was recognized as the distinguishing feature of the entrepreneur (Hisrich, 1986; Gürol & Atsan, 2006). Risk takers, in particular, are willing to face challenges, they focus on positive results, and disregard dangers required in the entrepreneurial process. Such an attitude may improve individuals' beliefs and lead to increased EI (Samydevan et al., 2020). Another psychological attribute that came out to be positively and significantly related to EI is ILOC. The positive relationship of ILOC with EI has also been highlighted in previous research (Gu et al., 2018; Reissová et al., 2020). People who have ILOC think that their actions, efforts, and abilities directly influence the

consequences they encounter. These people are more optimistic, less anxious, and more confident in their talents, which leads to a more proactive entrepreneurial mindset. This mindset, in turn, contributes to increased levels of ESE, which may boost individuals' EI (Auna, 2020). Conscientiousness was also shown to be positively associated with EI, and previous studies revealed similar results (Chien-Chi et al., 2020; Sarfaraz et al., 2023). The positive association between conscientiousness and EI can be attributed to the notion that people with high conscientiousness aim for huge accomplishments and mastery via hard work and discipline (Costa & McCrae, 1992). Conscientious people have high levels of emotion control, allowing them to persevere and plan in the face of hardship and shift their attention from negative thoughts to beneficial behaviour (Lee & Klein, 2002). These people accept personal responsibility for their decisions, prefer decisions with moderate risk, dislike monotonous activities, and are interested in exploring and learning new things, indicating high creativity (Li et al., 2022b). These are the basic characteristics that drive people to engage in entrepreneurial activities. Another recently explored psychological attribute, i.e., promotion focus, showed a positive and significant relationship with EI. The results are similar to the findings of the previous studies (Pihie & Bagheri, 2013; Gu et al., 2018). The link behind the positive association between promotion focus and EI could be attributed to the observation that people with promotion focus are inclined toward open-mindedness, and idea exploration that fuels their ability to identify opportunities, ultimately drive them to engage in entrepreneurial activities (Tumasjan & Braun, 2012; Brockner et al., 2004). Their tendency to engage in idea exploration enables them to find new markets, explore innovative alternatives, and enhance the entrepreneurial environment (Brockner et al., 2004). All these attributes may drive the intention of a person to set up a business as they perceive themselves to be capable and possess the necessary attributes for initiating entrepreneurial activities.

A significant difference between budding entrepreneurs and students was observed in their ESE scores. In the existing literature, ESE has been shown to be the most significant factor among the psychological attributes directly & indirectly influencing entrepreneurial behaviour. Studies have found ESE as an essential determinant of an individual's ability to start new ventures (Hmieleski & Baron, 2008). Starting a new venture requires planning and conscious decisions at every phase of the entrepreneurial process, so individuals with higher degrees of self-efficacy are more inclined to initiate entrepreneurial activities as they believe they can face the challenges. Most entrepreneurs face various business risks and obstacles, as well as psychological stress and emotional exhaustion; however, people with high self-efficacy have the confidence to change their surroundings and achieve success through appropriate actions (Newman et al., 2019). The above-highlighted prerequisite skills make individuals believe they can pursue entrepreneurship.

Findings showed that budding entrepreneurs were high on RP as compared to students. RP could be one of the driving factors that may lead some individuals to initiate an entrepreneurial journey. Existing literature has noted RP as a crucial differentiating attribute between entrepreneurs and students (McClelland, 1961; Hisrich, 1986). Individuals with risk-propensity perceive the same difficult situation as less risky than their counterparts (Sitkin & Weingart, 1995). Individuals high on RP do not feel overwhelmed while solving problems in uncertain settings (Gist & Mitchell, 1992). These people hence are more likely to perceive a greater sense of control over outcomes and place a higher value on the likelihood of receiving positive rewards. Risk takers, in particular, demonstrate a readiness to take on difficulties expected in the entrepreneurial process. The orientation to focus on positive outcomes and opportunities and underestimate threats might strengthen an individual's beliefs and lead to higher ESE. The increased ESE, in turn, may increase individuals' intentions to start a new business (Samydevan et al., 2020; Reissová et al., 2020).

The results showed that budding entrepreneurs scored significantly high on EI as compared to the students. This difference highlights that EI may be one distinguishing factor that might influence entrepreneurial behaviour among students; It is supported by existing studies (Belchior & Lyons, 2021; Kong et al., 2020). Individuals with high EI levels tend to engage more in entrepreneurial activities (Zhao et al., 2005; Karimi et al., 2016; Mei et al., 2022). Entrepreneurial journeys are full of challenges and setbacks; therefore, people with high EI, due to their interest and willingness, take more risks and are more resilient and optimistic towards their goals.

Another recently explored factor in entrepreneurship, i.e., self-regulatory focus, has emerged as another distinguishing factor between budding entrepreneurs and students. The results highlighted that the budding entrepreneurs scored lower on prevention focus than the students. The findings align with previous studies (Gu et al., 2018; Pihie & Bagheri, 2013; Tumasjan & Braun, 2012), indicating that individuals with a prevention focus are less likely to indulge in entrepreneurial activities. People with a prevention focus are motivated by security and safety needs (Higgins & Silberman, 1998). This mindset might lead them to opt for more stable and secure paths rather than the uncertainty and risks inherent in entrepreneurial ventures.

The regression analysis, including RP, ESE and prevention focus as predictors and EI as a criterion variable, showed that 38% variance in EI is due to the included factors. Another significant observation from this study was that, among these three predictors, ESE emerged as the most significant predictor of EI among budding entrepreneurs, which implies that individuals who possess higher levels of self-efficacy in entrepreneurial tasks are more likely to demonstrate higher EI. This finding highlights the importance of fostering ESE in potential entrepreneurs, as it can contribute to developing higher EI (already discussed). ESE can act as a driving factor, and as budding entrepreneurs build confidence in their entrepreneurial

capabilities, it can drive them to engage in entrepreneurial activities with more determination and enthusiasm. It, in turn, can contribute to developing and enhancing EI and related behaviour. Unlike other personality traits that may be relatively stable, ESE can be developed and improved through interventions and programs (Burnette et al., 2019). Targeting ESE could also have a moderating effect on the influence of other personality traits. It means that even if certain personality traits might naturally influence an individual's EI, focusing on increasing ESE can mitigate or enhance the impact of these other traits on EI.

### 3.4.1 Conclusion

In conclusion, our study aimed to explore the connection between EI and specific psychological attributes among budding entrepreneurs, comparing two groups: those interested in entrepreneurship and those not. The research investigated differences in psychological attributes and their contribution to EI development. The findings revealed a positive association between examined psychological factors and EI among budding entrepreneurs, with ESE identified as a key predictor. This aligns with theoretical frameworks emphasizing the impact of self-efficacy on career decisions, particularly in entrepreneurship. The study revealed a positive and statistically significant association between EI and most of the examined psychological attributes among budding entrepreneurs, showcasing the importance of these attributes in shaping entrepreneurial behaviour. The comparative analysis between budding entrepreneurs and students highlighted significant differences between the groups on ESE, RP, EI, and prevention focus. The regression analysis further emphasized that ESE is the most significant predictor of EI, underlining the pivotal role of self-efficacy in driving EI. By studying budding entrepreneurs, the present study provides a valuable addition to the existing literature on EI and their correlates. Budding entrepreneurs are significantly higher on ESE and RP than other students not interested in entrepreneurial activities. These findings imply that efforts to enhance ESE and encourage healthy level of RP among students

may be beneficial for increasing EI in them. In the third phase of this research work, which the current study is a part of, an effort will be made to devise an intervention targeting ESE and test its efficacy in enhancing EI among engineering students.

### 3.4.2 Implications

The study contributes to the theoretical understanding by highlighting the positive association between EI and various psychological attributes among budding entrepreneurs. It underscores the relevance of these attributes in shaping the entrepreneurial mindset. These findings substantiate existing theories on risk-taking, internal locus of control, conscientiousness, and promotion-focused orientation as distinguishing features of entrepreneurial individuals. The findings imply that identifying distinct psychological attributes that differentiate budding entrepreneurs from students can help refine entrepreneurship education and design interventions to promote EI. Insight into the most influential predictors of EI among budding entrepreneurs offers guidance for formulating personalized interventions. The findings imply that cultivating ESE should be a focal point in intervention programs aiming to nurture entrepreneurial behaviour among students. Integration of ESE booster programs into educational curricula across diverse institutions and entrepreneurship-related organizations is recommended. By integrating activities that specifically target the development of ESE, institutions can better prepare students for entrepreneurial ventures.

Understanding the role of RP in shaping EI suggests the importance of promoting a positive risk-taking culture. Encouraging an environment where calculated risks are acknowledged, supported, and learned from can foster innovation and initiative among budding entrepreneurs. Additionally, the study highlights the point that programs or activities should be conducted aiming at shifting mindsets, understanding one’s and other emotions, and being adaptable to various situations.

### 3.4.3 Limitations and future avenues of research

The current study does have certain limitations. First, relying on survey questionnaires accounts for the possibility of socially desirable responses. Second, the use of a cross-sectional design limits the cause-and-effect relationships. Future research should incorporate experimental designs to explore the disparities between budding entrepreneurs and students comprehensively. Third, the study's sample was comprised primarily of engineering students, which may restrict the generalizability of the findings. Future investigations should examine broadening the sample to include students from various fields, such as Business, Arts, and Commerce. It is also worth noting that the study was limited to the Punjab region, demanding cautious generalization of the outcomes. To enhance the generalizability of the outcomes, future studies should replicate this research in different geographical regions, thereby expanding the range of its applicability.

**Table 3.1:** *Sociodemographic characteristics and descriptive statistics for each measure of Group-I and Group-II participants.*

| | Variables | N | % | Min | Max | Mean | SD | Skewness | Kurtosis |
|---|---|---|---|---|---|---|---|---|---|
| **Group I (Budding Entrepreneurs-** students who showed interest in entrepreneurship by submitting start-up proposals/ involved in any early entrepreneurial activities) | Age (In years) | 83 | | 18 | 26 | 19.35 | 1.97 | 2.12 | 4.28 |
| | Residence | | | | | | | | |
| | Urban | 50 | 60.2 | | | | | | |
| | Rural | 27 | 32.5 | | | | | | |
| | Semi-urban | 6 | 7.2 | | | | | | |
| | Family type | | | | | | | | |
| | Nuclear | 53 | 63.8 | | | | | | |
| | Joint | 30 | 36.2 | | | | | | |
| | Entrepreneurial Intentions | | | 18 | 35 | 28.21 | 4.76 | -0.47 | -0.72 |
| | Entrepreneurial self-efficacy | | | 73 | 119 | 93.21 | 10.05 | 0.35 | 0.44 |
| | Emotional Intelligence | | | 64 | 112 | 88.7 | 11.90 | -0.51 | -0.46 |
| | Cognitive flexibility | | | 21 | 40 | 31.61 | 3.75 | -0.25 | 0.26 |
| | Risk propensity | | | 7 | 20 | 14.2 | 3.35 | -0.17 | -0.84 |
| | Internal locus of control | | | 10 | 20 | 15.6 | 2.46 | -0.35 | -0.43 |
| | Conscientiousness | | | 16 | 40 | 31.38 | 3.93 | -0.47 | 2.50 |
| | Promotion-focus | | | 14 | 28 | 19.7 | 3.20 | 0.97 | 0.61 |
| | Prevention-focus | | | 8 | 24 | 15.6 | 3.49 | -0.08 | 0.03 |
| **Group II** (Students who have not submitted any start-up proposals and are not involved in early entrepreneurial activities) | Age (In years) | 769 | | 18 | 26 | 19.50 | 1.37 | 1.11 | 2.29 |
| | Residence | | | | | | | | |
| | Urban | 383 | 49.8 | | | | | | |
| | Rural | 331 | 43.0 | | | | | | |
| | Semi-urban | 55 | 7.2 | | | | | | |
| | Family type | | | | | | | | |
| | Nuclear | 571 | 74.3 | | | | | | |
| | Joint | 198 | 25.7 | | | | | | |
| | Entrepreneurial Intentions | | | 5 | 35 | 23.44 | 6.91 | -0.41 | -0.33 |
| | Entrepreneurial self-efficacy | | | 24 | 120 | 89.86 | 12.18 | -0.29 | 0.97 |
| | Emotional Intelligence | | | 16 | 112 | 89.16 | 13.28 | -1.13 | 1.47 |
| | Cognitive flexibility | | | 8 | 40 | 31.45 | 5.46 | -0.27 | 0.53 |
| | Risk propensity | | | 4 | 20 | 12.20 | 3.38 | 0.11 | -0.48 |
| | Internal locus of control | | | 4 | 20 | 16.03 | 2.55 | -0.90 | 1.58 |
| | Conscientiousness | | | 8 | 40 | 31.87 | 4.76 | -0.85 | 1.70 |
| | Promotion-focus | | | 10 | 30 | 19.67 | 3.19 | 0.21 | 0.28 |
| | Prevention-focus | | | 7 | 25 | 16.85 | 3.61 | -0.16 | -0.44 |

**Table 3.2:** *Correlation coefficients among scores on RP, CF, ESE, ILOC, ELOC, Conscientiousness, EQ, Self-regulatory focus and EI.*

| | Variables | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **1** | Risk Propensity | 1.00 | | | | | | | | | |
| **2** | Cognitive Flexibility | 0.18 | 1.00 | | | | | | | | |
| **3** | Entrepreneurial Self-Efficacy | 0.01 | 0.60** | 1.00 | | | | | | | |
| **4** | Internal Locus of Control | 0.18 | 0.41** | 0.52** | 1.00 | | | | | | |
| **5** | External Locus of Control | -0.48** | -0.14 | -0.04 | -0.14 | 1.00 | | | | | |
| **6** | Conscientiousness | -0.04 | 0.41** | 0.44** | 0.46** | -0.20 | 1.00 | | | | |
| **7** | Emotional Intelligence | 0.03 | 0.45** | 0.55** | 0.51** | -0.05 | 0.50** | 1.00 | | | |
| **8** | Promotion focus | 0.20 | 0.21 | 0.16 | 0.19 | -0.29** | 0.25** | 0.22* | 1.00 | | |
| **9** | Prevention focus | 0.13 | 0.13 | 0.04 | 0.07 | 0.32** | 0.22** | 0.07 | 0.35** | 1.00 | |
| **10** | Entrepreneurial Intentions | 0.36** | 0.44** | 0.51** | 0.51** | -0.31** | 0.30** | 0.46** | 0.24* | 0.11 | 1.00 |

Note: **$p$<0.01, *$p$<0.05, N=83

**Table 3.3:** *Comparison of Group I and Group II on respective psychological measures.*

| Variables | Group I (Budding entrepreneurs, N=83) | | Group II (Students, N=769) | | t-test | | |
|---|---|---|---|---|---|---|---|
| | **M** | **SD** | **M** | **SD** | **T-ratio** | **p-value** | **Cohen's d** |
| **Entrepreneurial Intentions** | 28.21 | 4.76 | 23.41 | 6.91 | 6.13 | **0.000** | **0.71** |
| **Risk-Propensity** | 14.22 | 3.35 | 12.20 | 3.38 | 5.19 | **0.000** | **0.60** |
| Cognitive flexibility | 31.61 | 3.75 | 31.45 | 5.46 | 0.25 | 0.800 | 0.03 |
| **Entrepreneurial self-efficacy** | 93.21 | 10.05 | 89.86 | 12.18 | 2.41 | **0.016** | **0.28** |
| Internal locus of control | 15.65 | 2.46 | 16.03 | 2.55 | 1.30 | 0.193 | 0.15 |
| Conscientiousness | 31.38 | 3.93 | 31.87 | 4.76 | 0.90 | 0.365 | 0.10 |
| Emotional Intelligence | 88.71 | 11.90 | 89.16 | 13.28 | 0.30 | 0.764 | 0.03 |
| Promotion focus | 19.74 | 3.20 | 19.67 | 3.19 | 0.19 | 0.843 | 0.02 |
| **Prevention focus** | 15.69 | 3.49 | 16.85 | 3.61 | 2.78 | **0.006** | **0.33** |

Note: N= 83 (Budding entrepreneurs)
N=769 (Students not involved in entrepreneurial activities)
Significant factors: **Highlighted**

**Table 3.4:** *Regression analysis summary for Entrepreneurial Intentions (Criterion variable), including ESE, RP, and Prevention-focus as predictors.*

| Variables | Model | | |
|---|---|---|---|
| | UC | | SC |
| | B | SE(B) | $\beta$ (t-ratio) |
| **ESE** | 0.237 | 0.042 | 0.50 (5.66) |
| **RP** | 0.497 | 0.127 | 0.34 (3.91) |
| **Prevention-focus** | 0.059 | 0.122 | 0.04 (0.48) |
| **R** | | 0.618 | |
| **$R^2$** | | 0.382 | |
| **F** | | 16.27** | |
| **Cohen's $f^2$** | | 0.61[a] | |

Note: N=83, **$p$<0.01
UC=Unstandardized coefficients
SC=Standardized coefficients
a= Large effect size

**Table 3.5:** *Stepwise regression analysis summary for Entrepreneurial Intentions (Criterion variable) including ESE, RP and prevention-focus as predictors.*

| **Variables** | **Model 1** | | | **Model 2** | | |
|---|---|---|---|---|---|---|
| | **UC** | | **SC** | **UC** | | **SC** |
| | **B** | **SE(B)** | $\beta$ (t-ratio) | **B** | **SE(B)** | $\beta$(t-ratio) |
| **ESE** | 0.24 | 0.04 | 0.50 (5.25**) | 0.24 | 0.04 | 0.50 (5.71**) |
| **RP** | | | | 0.51 | 0.12 | 0.45 (4.03**) |
| **R** | | 0.50 | | | 0.62 | |
| **$R^2$** | | 0.25 | | | 0.38 | |
| **$R^2$ change** | | | | | 0.13 | |
| **F** | | 27.60** | | | 24.52** | |
| **Cohen $f^2$** | | 0.33[a] | | | 0.61[b] | |

Note: Prevention focus was excluded from the model
**$p$<0.01
a= Medium effect size
b= Large effect size

# Chapter 4

# Study III

# Enhancing Entrepreneurial Intentions in Engineering Students through an Intervention targeting Entrepreneurial Self-Efficacy: An Empirical Study

## 4.0 A Brief Overview of the Chapter

Entrepreneurial Intention (EI), the key factor influencing entrepreneurial behaviour, is believed to carry forward the effect of driving factors onto the desired behaviour. Further, researchers aiming to boost EI have explored its underlying dynamics. They proposed entrepreneurial self-efficacy (ESE) as a key factor that, if improved, can enhance EI (as discussed in the previous chapters). In the literature, not many studies tried to enhance ESE and observed its effect on EI. Based on previous recommendations of researchers working in this field, the present study was designed to test the efficacy of an intervention, devised specifically to foster EI among undergraduate engineering students. The intervention is mainly based on the social cognitive framework suggested by Bandura (1986), and is expected to be effective in fostering ESE and EI.

The motivation for conducting the present study was multifold, including the pressing need to promote entrepreneurship, the lack of interventional studies despite previous recommendations, and conflicting or inconclusive findings regarding the impact of entrepreneurship education on the individual's intention towards entrepreneurship. Furthermore, the findings of Study I and Study II of the present research work, indicating the crucial direct and indirect effect of ESE on EI among engineering students, have guided to select ESE as the factor to be targeted in the devised intervention.

The findings of the study supported the hypotheses and provided evidence for the effectiveness of the devised intervention. Overall, this study contributes to the

entrepreneurship literature by suggesting the psychological elements to be included in entrepreneurship education. It takes a step forward in advancing our understanding of effective educational practices in the entrepreneurship field.

It's important to highlight that the primary goal of the present research work was to design and assess the effectiveness of intervention to foster EI. To achieve this, two preliminary studies were conducted to identify the most crucial factors to target through the present intervention. In the introduction section (Chapter 1), we have already underscored the importance of Study III as a primary objective of the thesis. Study I serves as the cornerstone, laying the theoretical groundwork and providing essential context for the subsequent investigations. By dedicating more space to Study I, our aim was to thoroughly explore the theoretical underpinnings, research questions/objectives, and methodologies that form the foundation for the intervention (Study III). This approach ensures that readers gain a comprehensive understanding of the theoretical framework before delving into the empirical findings of the present study.

## 4.1 Introduction

Human capital indeed plays a vital role in the growth and advancement of the country. To effectively compete globally, the Indian economy needs to enhance its levels of innovation and creativity. By fostering an entrepreneurial culture and supporting entrepreneurial endeavours, the state can stimulate innovation, encourage creativity and drive economic growth. Shaping the entrepreneurial mindset and EI of young people has to be the most important role and goal of the contemporary education system. In this regard, entrepreneurship education has been introduced into the traditional education system, and the influence and effectiveness of entrepreneurship education remain a prominent area of investigation in recent times. Some studies have revealed that entrepreneurship education is an important factor affecting an individual's EI (Njoroge & Gathungu, 2013; Moses et al.,

2016; Mukesh et al., 2020; Overwein et al., 2024). However, the findings of such investigations are not conclusive. For instance, in one of the meta-analyses, Martin et al. (2013) found a significant positive impact of entrepreneurship education on entrepreneurship intentions. In another meta-analysis, entrepreneurship education was found to have a small effect size with regard to boosting EI and self-efficacy (Martínez-Gregorio et al., 2021). The traditional entrepreneurial education imparts mainly information relevant to initiating a new venture and does not focus on fostering an entrepreneurial mindset and favourable attitude towards entrepreneurship. As mentioned earlier, there are mixed types of findings pertaining to the effect of entrepreneurial education. Studies showing the positive impact are as follows.

Gorman et al. (1997) concluded that entrepreneurial education programs can have a positive impact on the entrepreneurial mindset. Consistent with this, the results of other studies showed that the training programmes related to entrepreneurship activity raised attitudes to some extent and the overall EI (Souitaris et al., 2007; Adelaja & Minai, 2018). Similarly, Petermenn and Kennedy (2003) examined the effect of participation in an enterprise education program on perceptions of the desirability and feasibility of starting a business. The results showed that the change in the perceptions was larger in the experimental group as compared to the control group. Rauch and Hulsnik (2015) and Kubberod and Pettersen (2017) observed changes in attitudes and perceived behavioural control after the participants attended an entrepreneurship awareness program.

It has been observed that the entrepreneurship studies mentioned above typically had methodological flaws such as the lack of control groups and pre- and post-intervention measurements. Researchers suggested more true experimental designs in the entrepreneurship studies. Using a quasi-experimental design, Sanchez (2013) explored the impact of an entrepreneurship education program on the entrepreneurial competencies and intentions of the students. The entrepreneurship program offered activities grouped into four components:

(1) basic teachings of accounting, finance, marketing, and management, adapted to the age of the students (2) teaching and practice in competencies such as self-efficacy, proactiveness, and risk-taking (3) business plan and (4) an interaction with practitioners component, which includes talks from practitioners and networking events. The teaching methodology consisted of presentations, discussion of readings, practical exercises, computer simulations, group dynamics and games, etc. The findings indicate that the students in the experimental group showed an increase in entrepreneurial competencies and EI in comparison to the control group who did not receive any entrepreneurship education.

Karimi et al. (2016) demonstrated the impact of entrepreneurship education on students' EI and opportunity identification. Results indicated that the elective *Entrepreneurship Education Programs (EEPs)* significantly increased students' EI, although this increase was not significant for the *compulsory EEPs.* The authors argued that educators should differentiate between compulsory courses offered to all students and courses offered as electives for students who are interested in entrepreneurship.

In the Indian context, Mukesh et al. (2020) conducted a study focusing on action-embedded pedagogy in entrepreneurship education. The study employed a randomized experimental design with pre-and-post-tests consisting of control and treatment groups. The authors indicated that traditional classroom teaching from the business and management perspective is not enough to motivate students to choose entrepreneurship rather an action learning pedagogy (emphasizing creative learning) needs to be implemented. The control group was offered an entrepreneurship course consisting of six modules, introduction to entrepreneurship, entrepreneurial behaviour, entrepreneurial process, business start-up process, business plan writing, and case studies of Indian and International entrepreneurs. The experimental group included basics of entrepreneurship modified with action learning teaching. Action-learning pedagogy involved the implementation of small business activity

on the institute premises or outside it, wherein the students had to apply for financial support, finalize their business plan, to sell their products and services by contacting different stakeholders. Further, the students were given feedback in the progress session. This study indicated that those who were exposed to action pedagogy showed significantly higher levels of ESE and EI in comparison to those who were provided with just classroom teaching regarding entrepreneurship.

Murugesan and Jayavelu (2015) studied the impact of entrepreneurship education on students in business, engineering and arts disciplines. The study used a within-group design to measure the change in attitudes and intentions over a period of six months. The results showed that there was an increased level of subjective norm, attitude towards self-employment, perceived behavioural control and intentions towards self-employment in the post-test scores.

Deepali et al. (2017) conducted a study to investigate the impact of entrepreneurship education on EI among 164 students. The study involved two groups: one group received six months of formal entrepreneurship education, i.e., to develop skills for managing and starting entrepreneurial ventures, while the other group received general education without specific entrepreneurship training. The findings indicated that formal entrepreneurship education had a positive impact towards starting a new venture in future.

Along with the supporting findings, there are studies showing contradicting findings related to the impact of entrepreneurial education on EI (Mentoor & Friedrich, 2007; Oosterbeek et al., 2010; Adu et al., 2020; Otache et al., 2024). In a meta-analysis, Bae et al. (2014), found a small effect size pertaining to entrepreneurship education and students' EI. This analysis, which included 73 studies and a total sample size of 37,285 people, revealed a low correlation between EI and education in the field of entrepreneurship. Another study

found a decline in EI but an increase in student's self-assessed entrepreneurial skills (Von Graevenitz et al., 2010).

Despite the significance of promoting entrepreneurship education, not adequate experimental/interventional research has been done in the area; thus, its significance and potential effects are currently understudied (Bae et al., 2014; Fellnhofer & Kraus, 2015; Lorz et al., 2013; Mukesh et al., 2018; Yi & Duval-Couetil, 2018; Huang-Saad et al., 2018; Ugwoke et al., 2022). Among the interventional studies conducted so far, researchers tried to enhance EI by providing information about entrepreneurship which includes identifying business opportunities, creating business plans, and developing management and leadership skills as highlighted in the previous paragraphs (Peterman & Kennedy 2003; Fayolle et al., 2006; Lindberg et al., 2017; Souitaris et al., 2007; Athayde, 2009; Rauch & Hulsink, 2015; Gielnik et al., 2015; Karimi et al., 2016; Qureshi, 2016). While these interventions/programs aim to equip individuals with knowledge and skills pertaining to entrepreneurship, they often fail to recognize the psychological factors that significantly contribute to foster EI among individuals (Nabi et al., 2017; Williams et al., 2019; Burnette et al., 2020; Bachmann et al., 2021; Barth & Muehlfeld, 2022). To address this gap, it is essential to integrate psychological content into entrepreneurship education programs and test its efficacy in enhancing EI. Among other psychological factors, literature suggests ESE as one of the most crucial factors that significantly impacts individuals' decision to start a new venture (Newman et al., 2019; Mcgee & Peterson, 2019). ESE is a modifiable attribute that leads to high EI and subsequently higher entrepreneurial activity (Newman et al., 2019).

Given the importance of entrepreneurship and the dearth of established intervention plans targeting psychological factors to inculcate entrepreneurship, the present study was designed to explore the efficacy of an intervention targeting ESE & EI. Initially, engineering students with low ESE and EI were identified through standardized questionnaires from

Study I. All participants were then divided into three homogenous groups: Experimental Group-I (EG-I), Experimental Group-II (EG-II) and control group. EG-I received an Entrepreneurial Self-Efficacy Booster Program (ESEBP), and EG-II received Traditional Entrepreneurship Education (TEE). No training pertaining to entrepreneurship was provided to the control group, however, a few sessions on study and time management were conducted for them.

ESEBP mainly targets ESE. A recent meta-analysis has demonstrated that ESE may be the most effective target, as it is one of the most significant factors associated with EI and entrepreneurial activities (Newman et al., 2019; Miao et al., 2017; Zhang et al., 2021). In addition to being a direct predictor of EI and entrepreneurial activities, ESE is a significant mediating and moderating factor also; it mediates the association between some personality dimensions and EI (Tsai et al., 2016; Mishra & Singh, 2022a; Pihie & Bagheri, 2013), and also between entrepreneurship education and EI. It implies that without self-efficacy, entrepreneurship education and other contributors may not be adequate to foster EI (Wu et al., 2022; Anwar et al., 2022). Two aspects were highlighted by Chen et al. (1998), to explain the positive relationship between ESE and EI. First, individuals with high self-efficacy are more likely to identify entrepreneurial opportunities. People with low ESE may see those opportunities as being laden with costs and risks. Second, when it comes to uncertainties, dangers, and suffering, people with high ESE tend to feel more capable of coping with it than people with low ESE. People with high self-efficacy are more intrinsically motivated to complete the goal, more eager and more steadfast and persistent while facing challenges and setbacks. It shows that people with a high degree of ESE are more likely to plan and start a business than those with a low level of ESE (Roy et al., 2017; Zellweger et al., 2011). A detailed explanation regarding the positive association between ESE and EI is provided in Chapter 2 of the thesis. Thus, the relevant literature suggests that enhanced ESE could help in

fostering EI among individuals. In the present study, an intervention was designed, i.e., ESEBP (details in the procedure section) to boost ESE and tested it on a sample of engineering students.

## 4.2 Theoretical Basis and Framework of ESEBP

The ESEBP is mainly based on Bandura's (1989) Social Cognitive Theory (SCT), which emphasizes how the interplay of cognitive, behavioural, personal, and environmental factors influences an individual's motivation and behaviour. The theory considers self-efficacy as a significant motivator of behaviour (Redmond, 2010). Self-efficacy refers to people's beliefs about their capacity to do specific tasks (Axtell & Parker, 2003). Because self-efficacy has been identified as a critical predictor of EI in the literature, it could be considered as a target in the interventions promoting EI and behaviours.

Bandura (1977) proposed that individuals' self-efficacy can be enhanced through verbal persuasion, mastery experiences, role models, and emotional and physiological experiences. Encouragement and discouragement from the external source on their performance outcomes could influence their efficacy to perform, so verbal persuasion is quite significant (Redmond, 2010). For instance, when a person receives positive encouragement like "You can do it" or "I have confidence in you," it can boost their confidence and belief in their abilities to accomplish tasks. Conversely, discouraging statements like "you can't finish this project" can generate self-doubt and undermine their perceived capability. Persuasive information helps an individual form the perception that they have the capability to complete any specific task by utilizing available skills (Burnette et al., 2019). Persuasion may generate positivity and self-affirming beliefs that aid in skill growth and learning (Swaim & Hanley, 2017). In the context of entrepreneurship, an individual may consider themselves capable of pursuing entrepreneurship as a career if they realize and get convinced about their capacity to accomplish specific tasks required for new venture creation.

Another source which fosters self-efficacy is mastery experiences. When individuals complete small goals, they perceive that they can face upcoming challenges and complexities in the same domain. Creating a situation in which people can experience a ‘small win’ might induce mastery experiences. The positive feedback on the task individuals perform builds a strong belief in their ability (Kurfist, 2019; Brown et al., 2012; Peifer et al., 2020). Even false normative, positive feedback has been successfully used to alter self-efficacy (Hsu et al., 2019; Dimotakis et al., 2017). Positive feedback regarding fulfilment of any entrepreneurial chores, might enhance engagement and change their self-perception.

Vicarious experience implies that an individual’s personal efficacy is influenced by the performance and achievement of similar others (Bandura,1977; Bosma et al., 2012). Exposure to role models either by directly interacting with or by observing others may influence the intention to pursue entrepreneurship as a career (Scherer et al., 1989; Linan & Fayolle, 2015; Nowinski & Hodoud, 2019; Laviolette et al., 2012). The case studies and stories encouraging students to judge their capabilities by relating themselves with the role models increase intrinsic motivation (Siggelkow, 2007; Friedman et al., 2010). Being exposed to varied entrepreneurial role models may influence an individual's drive to pursue an entrepreneurial activity.

Perception of one’s physiological arousal and emotions can also influence self-efficacy. Optimal emotional arousal facilitates positive beliefs about one’s capability. Emotional states, such as anxiety or confidence, and physiological reactions, such as an increased heart rate or a sense of relaxation, can significantly influence one's belief in their own capabilities. These internal responses play a pivotal role in shaping an individual's perception of their ability to accomplish tasks or face challenges.

Imaginal experiences or positive visualization, as suggested by James Maddux (2013), can also induce self-efficacy beliefs. Exercises that allow individuals to visualize their future

accomplishments will help them believe that they can succeed. There have been studies on the impact of positive visualization on optimism (Shapira & Mongrain, 2010). According to King (2001), people imagine a future in which their current difficulties are resolved, implying that change in their current situation is possible. As a result, there is a high level of optimism, which promotes an increased level of confidence to pursue their goals.

All these sources of self-efficacy are believed to enhance self-efficacy in different domains (Bandura, 1989). Building on the foundation of the broader Social Cognitive Theory developed by Bandura (1986), the more recent Social Cognitive Career Theory (SCCT) proposed by Lent and his colleagues (2000) is centred on how individuals make decisions regarding their careers and particularly highlights the role of self-efficacy. This theory highlights the influence of certain factors, both individual and contextual, in shaping an individual's career choices. These factors encompass self-efficacy, outcome expectations, and personal goals or intentions, which collectively affect an individual's career decisions. SCCT underscores the vital roles played by self-efficacy and outcome expectations in the decision-making process for career development. Simply put, an individual's career choices are influenced by their belief in their capability to execute required actions (self-efficacy) and their anticipations of the potential consequences of those actions (outcome expectations). Based on the above theoretical background, the present research work focuses on self-efficacy in entrepreneurial activities which is believed to be a significant predictor of EI and entrepreneurial behaviours.

As far as existing literature on entrepreneurship is concerned, only a few studies used experimental designs to enhance ESE and EI. Also, only one or the other sources suggested by Bandura have been targeted. For instance, Burnette et al. (2020) used verbal persuasion as a key source in their intervention to foster ESE among students. The findings showed that students in the experimental group had high level of ESE in comparison to the control group.

The intervention also indirectly improved academic and career interest via ESE. Similarly, another study, conducted along the same lines, incorporated mastery experiences and role models as key components within their intervention (Bachmann et al., 2021). The findings revealed a considerable increase in ESE among the recipients of the intervention, in contrast to the control group. Also, the intervention group displayed a more favourable attitude toward the prospect of launching a business venture.

The outcome of these studies showed that the experimental group, after the intervention, exhibited a favourable entrepreneurial attitude, high level of ESE and EI. However, it's worth noting that, to the best of our knowledge, no prior research endeavour has integrated all of the crucial components of Bandura's theory into a single intervention aimed at enhancing ESE and EI among engineering students. Therefore, the present study was designed to explore the efficacy of an intervention in such an important domain of entrepreneurship. In light of the findings from a few previous studies and theoretical links, the following hypotheses were formulated:

**Hypothesis 1 (H1):** *Experimental group-I (ESEBP) would score significantly higher on ESE and EI as compared to the other groups in the post-intervention assessment.*

**Hypothesis 2 (H2):** *There would be a significant difference between pre-intervention and post-intervention scores of ESE and EI in experimental groups I and II; however, no difference would be observed in the control group.*

## 4.3 Method

### 4.3.1 Participants

From the pool of 769 respondents who participated in Phase I of the research, those who had low EI were selected for the experiment conducted in the third phase. These participants were informed about Phase III and again asked for their consent to participate in the intervention.

A total of 142 participants agreed to participate in the study; however, only 134 participants completed all intervention sessions. Among them, there were 82 males and 52 females, all in the age group of 18-22 years ($M_{age}$=19.04, $SD_{age}$= 0.94). Inclusion criteria for participants were: a) low scores on EI, b) possessing the ability to read the English language, c) not suffering from any mental and physical health issues, and d) engineering students.

Forty-seven participants ($M_{age}$= 19.04, $SD_{age}$= 0.88) from EG-I and 48 participants from EG-II (TEE) ($M_{age}$= 19.25, $SD_{age}$= 1.04) completed all the sessions and appeared for the final post-intervention assessment. In the control group, 39 participants ($M_{age}$= 18.79, $SD_{age}$= 0.83) attended all four sessions related to study and time management. In order to estimate the required sample size, the G-Power software version 3.1.9.7 (Faul et al., 2007) was used. The sample size was found to be adequate for this design having three levels of independent variables, keeping the alpha at 0.01, effect size (partial eta square) at 0.15, and power at 0.80. A detailed description of the participants and studied variables are given in Table 4.1.

### 4.3.2 Measures

Data collection was conducted with the help of a set of standardized questionnaires. These questionnaires are well-established measures of the constructs studied in the present research work. Details of these questionnaires are given below.

#### *4.3.2.1 Entrepreneurial Self-Efficacy*

The Entrepreneurial Self-Efficacy Questionnaire (ESEQ) developed by De Noble et al. (1999) was used to assess *ESE*. It contains 26 items, given on a 5-point Likert scale, 1= "*strongly disagree*" and 5= "*strongly agree*". A few examples of the items are: "I can discover new ways to improve existing products", "I can determine what the business will look like", and "I can persist in the face of adversity". This scale has been validated across various developed and developing countries (Setiawan, 2014; Naktiyok, 2010; Sanchez,

2014; Izquierdo & Buelens, 2011) and is considered a reliable and valid measure for measuring ESE. Cronbach's alpha of this scale on our sample was 0.91.

#### *4.3.2.2 Entrepreneurial Intentions*

*EI* was measured using the Entrepreneurial Intentions Questionnaire (EIQ), a 6-item scale with four positive and two negative items (Linan & Chen, 2009) given on a 7-point Likert scale. Examples of the items are: "I am ready to do anything to be an entrepreneur," "I will make every effort to start and run my own business," and "I have serious doubts about ever starting my own business." This scale has been tested in the Indian context and found reliable (Mishra & Singh, 2022b; Roy & Das, 2017). Cronbach's alpha of this scale on the present sample was 0.81.

### 4.3.3 A description of the devised intervention

The intervention devised and tested in this study is an ***Entrepreneurial Self-efficacy Booster Program***, a four-session intervention that aims to enhance ESE. It accommodates sources suggested by Bandura (1986) like verbal persuasion, mastery experiences, and vicarious experiences. Additionally, it integrates visualization or imaginal experiences, as proposed by Maddux (2013). Before the sessions, the participants are made comfortable in the classroom settings and are briefed about the intervention sessions for 15 minutes. The primary focus of the first session is 'verbal persuasion'. To persuade participants using a strong conceptual background, *mindset intervention* (Burnette et al., 2020) is employed which mainly focuses on two types of mindsets—Growth and Fixed mindset. The concept of a growth mindset serves as a persuasive and empowering tool, particularly for individuals lacking prior experience in a specific domain. It encourages them to view challenges as opportunities for growth rather than indicators of fixed abilities. This shift in perspective can significantly impact the motivation, resilience, and willingness to persevere through challenges in

entrepreneurship (Burnette et al., 2020). In the current session, the participants are made aware of these two types of mindsets, and how these mindsets develop. Further, they are informed about the characteristics of individuals with a growth mindset with the help of various real-life examples and short videos related to entrepreneurial context. They are informed about the role of efforts in one's entrepreneurial success. All the content of the discussion was mainly oriented toward persuading them about the role of their efforts and mindsets which determine one's success in a particular domain. Moreover, participants are motivated to embrace challenges and see criticism as a lesson to improve the characteristics of a growth mindset. Participants are also told about the negative effects of having a fixed mindset. Additionally, the participants are taught how to overcome challenges and obstacles with a growth mindset in the entrepreneurial process through reading scientific articles and discussions. Participants are made to believe that like any other skills and abilities, with time, effort, and the right strategy, they can grow entrepreneurial ability in themselves. In essence, the mindset that growth is achievable through effort and learning greatly influences an individual's ability to adapt, innovate, and persist in the face of challenges, ultimately contributing to their success in the entrepreneurial domain. After presenting the content as designed, the manipulation check is done with the help of 3 questions to be answered by giving a rating on a 7-point Likert scale and an open-ended question. The manipulation checks revealed that participants expressed a belief that becoming an entrepreneur is achievable through consistent effort and time. The feedback from the participants highlighted that employing a growth mindset could enable individuals to overcome the challenges inherent in entrepreneurial activities. This suggests that participants recognized the importance of perseverance and dedication in acquiring entrepreneurial skills, as well as the value of a growth-oriented mentality in tackling the hurdles faced in entrepreneurial endeavours. The mindset intervention provides a very useful framework to persuade students

in a well-structured manner. It makes persuasion more effective than any motivational communication based on random observations.

The second intervention session is about increasing the sense of mastery experience. With the help of some hypothetical scenarios (Hsu et al., 2019) about decision making, people are made to experience a 'small win', which affects their subsequent performance. The students give their responses on these decision-making tasks related to business situations. There are two sets of decision-making scenarios presenting business dilemmas with two options to choose from. Participants are instructed in the following way, "There will be two sets of decision-making scenarios. The first set would be comparatively easy than the other one. You all need to mark one option which is appropriate for you in the given scenario. After you shall complete both sets, your answers will be analyzed and compared to those of expert entrepreneurs identified by the Entrepreneur Magazine in 2013 by a computer program developed by a professor in Computer Information System at Appalachian State University, and the results will be provided to you within 15 minutes" (adapted from Hsu et al., 2019). A sense of mastery in the participants is induced by providing pre-defined positive feedback irrespective of the answers they would mark ("*Congratulations!! The results of the computer analysis show that 75% of your answers match those of successful entrepreneurs. This puts you in the top 5% among undergraduate students nationwide who possess the potential knowledge and skills to start a business*"). To check for the manipulation, the students are asked to respond to a statement based on a 5-point rating scale and an open-ended question. According to the manipulation checks, it reflected that offering positive feedback in response to business dilemma questions led to an increase in ESE. For instance, students in the current session expressed that receiving positive feedback on the tasks made them recognize their potential to handle future entrepreneurial tasks and responsibilities. The act of providing positive feedback on small tasks notably boosted their confidence in their abilities. This

suggests that acknowledging and affirming small achievements can significantly impact one's belief in their capabilities, particularly in entrepreneurial contexts. At last, the participants were debriefed regarding the falsified feedback and the deceptive elements employed during the present session.

The third session focuses on the source of vicarious experience. The participants in this session are shown certain videos depicting some role models to impart knowledge about the experiences and journeys of successful Indian entrepreneurs. The discussion is centred on the stories of Indian entrepreneurs, including their family and educational background, success and failures, overcoming the challenges and origin of their start-up ideas. Participants are urged to draw personal connections between themselves and the shown entrepreneurs and their related narratives. A customized video featuring some motivational statements from the entrepreneurs is shown during the session's final 15 minutes. The manipulation check is conducted for this session as well.

The Last session of the intervention module involves positive visualization suggested by Maddux (2013) as the fifth source of enhancing self-efficacy. The session begins by making the participants relax, demonstrating simple hand movements and directions to close their eyes and take a few breaths. It may optimize one’s physiological arousal and emotions that can influence self-efficacy. Optimal emotional arousal facilitates positive beliefs about one’s capability. Afterwards, the participants are directed through the written script to have the imaginal experiences related to an entrepreneurial journey, struggles and success etc. More specifically, the participants are made to visualize that “they are initiating their entrepreneurial career, and with persistent endeavours, they are developing the skills required in the entrepreneurial process”. For effective use of imaginal experiences, it is important to ensure that the individual leading the session maintains his or her voice and pitch in

accordance with the emotional focus that needs to be conveyed to the participants. Finally, a manipulation check is done along with the post-data collection.

### 4.3.4 Research design

A mixed (2×3) repeated measure design was used for the present study in which 47 participants in EG-I, 48 in EG-II and 39 in the control group were tested on the measures of ESE and EI, prior to and after the intervention. The mixed (2x3) repeated measures design employed refers to an experimental design used to investigate the effects of two independent variables on the dependent variable, with one being a between-subjects factor and the other being a within-subjects factor. In the present study, the "2x3" notation signifies that there are two levels of one independent variable i.e., Time of assessment (within-subjects factor- Pre and Post assessment) and three levels of another independent variable i.e., Three interventional groups (between-subjects factor- EG-I, EG-II and control group). By incorporating both between-subjects and within-subjects factors, this design allows for the examination of both overall group differences and changes over time within each group. In the present study, where the goal was to compare the effectiveness of different interventions (between-subjects factor) over two-time points (within-subjects factor), the mixed repeated measures design provides a comprehensive framework for analyzing the data.

### 4.3.5 Procedure

After obtaining approval from the institute's ethical committee (Human), a few colleges were contacted out of which six colleges agreed and allowed to conduct the study. Initially, a pool of 769 responses was received. After scoring the questionnaires, individuals low on ESE and EI were screened-in (n=192). The cutoff criteria were determined by focusing on individuals whose scores on EI fell below the 25th percentile of the overall scores. Employing the 25th percentile as the cutoff enabled a standardized measure to categorize students, creating a

distinct reference point within the entire range of scores. This systematic approach facilitated the identification of individuals showcasing comparatively lower EI levels compared to other students. These individuals and their colleges were contacted for consent to be a part of the intervention. Out of 192 low on EI, 142 respondents, belonging to four colleges, agreed to participate. There were 29, 35, 40 and 38 participants respectively from those four colleges. These participants were then randomly assigned to three groups. Owing to attrition and screening procedures carried out during manipulation checks, a total of 8 participants could not complete the study. Thereafter, the remaining 134 participants completed all the sessions of the intervention and final assessment. No significant difference was observed between the three groups at the baseline on the measure of ESE, $F$ (2,131) =0.49, $p$=0.61 and EI, $F$ (2,131) =2.01, $p$=0.13. The participants in EG-I (n=47) received four sessions of an entrepreneurial self-efficacy booster program. Participants assigned to EG-II (n=48) were provided with basic education about entrepreneurship, whereas study and time management skills were discussed with the control group participants (n=39).

Post-intervention data were obtained after conducting all the sessions. At last, the participants were debriefed about the research work, and provided with partial monetary compensation as per the norms. Data analysis was done employing mixed design Analysis of Variance (ANOVA) using IBM version SPSS 25.0.

## 4.4 Results

The findings of the present study are summarized in Tables 4.1-4.5 and Figures 4.1, 4.2. Table 4.1 presents demographic information of participants and descriptive statistics of studied variables. Table 4.2 shows the comparison of EG-I, EG-II and the control group on ESE and EI scores obtained before and after the intervention. One-way ANOVA results indicated that, at the baseline, there was no significant difference between the groups on the measures of ESE, $F$ (2,131) =0.48, $p$=0.61 and EI, $F$ (2,131) =2.01, $p$=0.13; however, after

the intervention, significant differences were observed between the EG-I, EG-II, and control group on ESE scores, $F$ (2,131) = 9.38, $p$<0.01 and EI, $F$ (2,131) = 98.09, $p$<0.01. With regards to ESE scores, the EG-I (ESEBP) scored higher, $M$=100.04, $SD$=12.20, as compared to the EG-II (TEE), $M$=92.10, $SD$=12.60, and control group, $M$=90.20, $SD$=8.33. Similarly, EG-I scored higher on EI, $M$=30.95, $SD$=4.70, as compared to the EG-II, $M$=22.95, $SD$=4.31, and control group, $M$=18.17, $SD$=3.70. Hence, the present data support our first hypothesis.

Regarding the second hypothesis, Table 4.3 highlights that intervention had a significant impact on the studied variables (ESE and EI). In terms of ESE scores, participants in EG-I had higher post-intervention scores ($M$=100.04, $SD$=12.20) than the pre-intervention scores ($M$=92.19, $SD$=14.50), and the difference was found to be statistically significant, $F$ (1, 46) =14.45, $p$<0.01, $\eta^2$=0.239. For EG-II, though the post-intervention mean scores on ESE were increased ($M$=92.19, $SD$=12.60) than the pre-intervention scores ($M$=90.06, $SD$=10.04), but the difference came out to be statistically non-significant, $F$ (1,47) = 0.973, $p$= 0.329, $\eta^2$ =.020, which shows that a part of the second hypothesis related to ESE scores in EG-II group could not derive support from the findings. Regarding the control group, there was a difference between mean scores of post-intervention ($M$=90.20, $SD$=8.33) and pre-intervention ($M$=89.92, $SD$=11.31) on ESE measure; however, it was statistically non-significant, $F$ (1,38) =0.14, $p$=0.90, $\eta^{2=}$ .000. The impact of the intervention was also significant on EI scores. In EG-I, participants' post-intervention scores ($M$=30.95, $SD$=4.70) increased from their pre-intervention scores ($M$=19.33, $SD$=4.05), and the difference came out to be statistically significant, $F$ (1,46) =183.77, $p$<0.01, $\eta^2$=0.80. In EG-II, participants' post-intervention scores ($M$=22.95, $SD$=4.31) increased than their pre-intervention scores ($M$=19.47, $SD$=4.30), and the increase was statistically significant, $F$ (1,47) =16.31, $p$<0.01, $\eta^2$ =0.26. The control group reflected a non-significant difference, $F$ (1,38) =0.054, $p$=0.81, $\eta^2$ $^{=\cdot}$ 0.001. Hence, the data supports the second hypothesis concerning EI scores.

The findings were confirmed through a mixed ANOVA design also. Table 4.4 depicts the ANOVA summary table for the ESE scores. For the present data, there was a significant interaction between Groups (k=3) factor (A) and Timing of the assessment (k=2; pre-intervention and post-intervention) factor (B), $F$ (2, 131) =3.34, $p$<0.01. The findings are also shown in Figure 4.1. It shows differences in pre and post-intervention scores varied among the three groups. Further, simple effect analysis was conducted to explore the specific levels on which difference is observed.

Tables 4.4(a) and 4.4(b) present the simple effect analysis. For the ESE measure, we examined the effect of Groups (A) at each level of intervention ($B_1$ and $B_2$), and similarly, the effect of intervention (B) at each level of Groups ($A_1$, $A_2$, $A_3$). We found that at baseline ($B_1$), there was no difference between all the three groups (A), $F$ (2, 131) = 0.48, $p$>0.05; however, after the intervention ($B_2$), there was a significant difference among all three groups, $F$ (2,131) =9.38, $p$<0.01. Examining the effects of intervention (B) for each group ($A_1$, $A_2$ and $A_3$), the findings demonstrated that participants in the ESEBP group ($A_1$) showed significant change after the intervention, $F$ (1,46) =14.45, $p$<0.01. However, there was no significant effect of the intervention on ESE scores for EG-II ($A_2$), $F$ (1,47) =0.97, $p$>0.05 and control group ($A_3$), $F$ (1,38) =0.01, $p$>0.05.

Table 4.5 presents the ANOVA summary for EI. The results showed a significant interaction between pre-intervention and post-intervention (B) and three groups (A), $F$ (2, 131) =49.75, $p$<0.01. The significant interaction indicates that the effect of factor (B) changes depending on the level of (A) and vice-versa. The findings have also been depicted in Figure 4.2.

Tables 4.5(a) and 4.5(b) present a simple effect analysis for EI. Since the interaction effect was significant for EI, we looked at the impact of groups (A) at each level of the intervention ($B_1$ and $B_2$). The analysis revealed that, at baseline ($B_1$), there was no significant

difference between all the three groups (A), $F$ (2, 131) = 2.01, $p$>0.05. However, after the intervention ($B_2$), there was a significant difference among all the three groups with different kinds of intervention, $F$ (2,131) =98.10, $p$<0.01. When the effects of intervention (B) were examined for each group ($A_1$, $A_2$, $A_3$), the findings demonstrated that participants in the EG-I group ($A_1$) showed greater significant change after the intervention, $F$ (1,46) =183.78, $p$<0.01 in comparison to the EG-II group ($A_2$), $F$ (1,47) =16.37, $p$<0.01. The control group ($A_3$) had a non-significant change after the intervention on the EI scores, $F$ (1,38) =0.05, $p$>0.05.

## 4.5 Discussion

The present study aimed to explore the efficacy of an intervention designed to enhance ESE among engineering students. *It was hypothesized that EG-I (ESEBP) would score significantly higher on ESE and EI compared to the other groups in the post-intervention assessment. It was also expected that there would be a significant difference between pre-intervention and post-intervention scores of ESE and EI in EG-I and II; however, no difference was expected in the control group*.

The results supported our hypotheses as there was a significant difference between EG-I and the other two groups on post-intervention scores of ESE and EI (H1). Additionally, in the post-intervention assessment, there was a significant and positive change in the EI scores of both groups (EG-I and II), supporting H2. On the ESE measure, EG-I participants exhibited a significant positive change in post-intervention scores compared to their pre-intervention scores, while EG-II and the control group had a non-significant change. The results of mixed ANOVA showed that the interaction effect of groups and intervention was significant for both the dependent variables (ESE and EI).

The current work demonstrates the positive impact of ESEBP on boosting ESE among engineering students. The findings align with a few previous studies (Burnette et al., 2020;

Bachmann et al., 2021). The ESEBP intervention successfully changed beliefs about individuals' capabilities towards entrepreneurship activities.

The increase in ESE may be explained with the help of the basic premises of Bandura's social cognitive framework of self-efficacy. This perspective indicates that ESE can transform an individual's entrepreneurial learning into EI and subsequent related behaviours. Self-efficacy can be acquired through various sources such as verbal persuasion, feedback, modelling, and the accumulation of mastery experiences. Taking social cognitive theory into account, fostering a growth mindset among the individuals related to the entrepreneurial process might have resulted in higher ESE. Growth mindset messaging is a form of verbal persuasion (Burnette et al., 2020) and has various positive outcomes. People with a growth mindset are more open to new information, are risk-takers, work on constructive criticism and are more resilient (Dweck, 2006; Schroder, 2020; Tao et al., 2022). Also, they experience less stress and anxiety (Walker & Jiang, 2022). In light of this, the participants in the ESEBP group were made to understand the impact of a growth mindset on the entrepreneurial process by reflecting that entrepreneurial ability is not innate and can be learned through constant efforts. Participants were actively involved in activities such as reading scientific articles and participating in discussions on growth and fixed mindset, centred around the idea that entrepreneurial ability can be nurtured with time. Participants were also motivated to pursue entrepreneurial tasks and persist in the face of adversities. Inculcating a growth mindset might have affected their confidence in their own abilities. The findings can be explained by the fact that people become more engrossed in entrepreneurship-related activities when they realize that they can succeed and manage their entrepreneurial endeavours with effort and perseverance.

Another potential explanation for the increase in the level of ESE owes to the individuals' feedback experiences on the entrepreneurial tasks. Researchers have supported

this finding (Hsu et al., 2019; Peifer et al., 2020). After obtaining small goals and receiving positive feedback on the domain-specific task, people tend to believe that they are capable of overcoming future challenges in that particular domain. Positive feedback on the task, in turn, fosters a high belief in an individual's abilities. Individuals who engage in self-reflective practice and receive positive feedback from others might show agency by modifying perceptions of their competence and engaging in subsequent behaviours (Bandura, 2001). Positive feedback can generate positive emotional responses, such as pride and confidence, which are associated with higher self-efficacy. These emotions can motivate individuals to persist in their efforts and take on more challenging tasks in the future.

Exposure to the stories of successful entrepreneurs told to the participants during the third session might have affected the participant’s ESE scores. Previous studies have suggested the use of vicarious experience and role models as a beneficial strategy for enhancing ESE (Saptono et al., 2021). For example, social cognitive theory highlights how observational learning/modelling can impact motivation (Bandura, 1996). The case studies and stories encourage students to judge their capabilities by relating themselves to the role models, thereby increasing their intrinsic motivation (Friedman et al., 2010). Observers often compare themselves to their role models. When they perceive similarities between themselves and their role models, such as age, background, or circumstances, they tend to believe that they can attain similar levels of success. This can lead to an increase in self-efficacy. As a result, in the current research, exposing students to various successful entrepreneurs, those who initially belonged to lower socio-economic status, and their related entrepreneurial stories might have positively altered the perception of their capabilities.

The intervention also used the influence of imaginal experiences in altering an individual's self-efficacy towards entrepreneurship. Studies have provided the conceptual link for the impact of positive visualization on optimism and overall well-being (Shapira &

Mongrain, 2010; Sari, 2015). Given this mechanism, it may be concluded that carefully picturing one's future accomplishments and ambitions fosters self-belief in one's capacity for success. Since the participants were made to visualize the entrepreneurial journey, managing effectively throughout the process and their achievements, might have positively affected their self-conception in regard to activities in the entrepreneurial process.

Another significant finding is that for EG-II, there was a non-significant change in students' ESE scores. The reason behind this may be due to the fact that EG-II did not directly emphasize the aspects of enhancing the confidence of the participants towards entrepreneurship activities. Instead, EG-II were provided the information on entrepreneurship that concentrated mainly on stimulating entrepreneurial awareness. Few empirical studies have tried to find an explanation for this. Saptono et al. (2021) asserted that conventional learning in the classroom alone does not effectively foster individuals' self-efficacy to pursue entrepreneurial activities. While classroom instruction addresses practical components of business such as planning and finances, it overlooks psychological dimensions such as self-confidence and motivation. As a result, students may not obtain a comprehensive understanding of the mindset required to effectively confront the complexities and uncertainties inherent in entrepreneurship. According to Kurfist (2019), co-curricular activities such as attending workshops and interacting with successful entrepreneurs may have a higher impact on a person's perception of efficacy towards entrepreneurship than traditional classroom instruction.

The significant interaction effect on the EI measure also revealed that, when the participants were not given any kind of intervention, no significant differences existed among all the three groups on EI scores. However, after providing different kinds of intervention, there was a significant increase in two of the groups (ESEBP and TEE) but not in the control group. The EG-I group showed a higher magnitude of change than the EG-II group. Simply

put, interaction results corroborated the conclusions that through the intervention, individuals had higher and significant ESE, which might have led to high EI. Previous literature supported our findings of the positive association between ESE and EI (Nowinski et al., 2019; Newman et al., 2019). As outlined by Chen et al. (1998), the rationale for establishing a direct link between an individual's ESE and their perception of the entrepreneurial environment can be explained by how people with varying levels of ESE interpret this environment. Those who possess high ESE tend to see the entrepreneurial landscape as filled with opportunities, while individuals with low ESE tend to view it as fraught with risks. It's important to emphasize that both groups experience the same external factors, such as uncertainties, potential dangers, and difficulties associated with entrepreneurship. However, individuals with high levels of ESE demonstrate greater confidence in their ability to confront and effectively handle these challenges, which distinguishes them from those with lower ESE.

On the other hand, if we focus on the impact of TEE on EI, existing studies confirmed our findings, highlighting the positive influence of entrepreneurship education on EI among individuals (Fayolle, 2006; Karimi, 2016; Badri & Hachicha, 2019; Gielnik et al., 2015; Aboobaker et al., 2020). More specifically, this result indicated that providing classroom entrepreneurship teaching can also directly enhance the EI of the individuals. But, as the effect sizes depict, the intervention devised for the current study, i.e., ESEBP, which targets EI through boosting ESE, brought about a comparatively larger magnitude of change. This demonstrates that ESE is one of the critical underlying cognitive factors, which, when altered, can show a drastic change in individuals' EI; Supporting theoretical models have already been discussed in the previous paragraphs. The findings of this study are in alignment with SCCT, as it emphasizes the vital role of ESE, outcome expectations, and how contextual factors can enhance ESE. In the present intervention, participants were exposed to entrepreneurship

education, role models, and received perceived support through verbal persuasion and feedback. The interplay between these contextual factors, outcome expectations (i.e., participants' awareness of the potential outcomes of entrepreneurship), ESE, and EI is consistent with the conceptual model provided by Tran et al. (2016) rooted in SCCT.

### 4.5.1 Conclusion

The overall findings imply that the designed intervention is efficacious in raising ESE and subsequently fostering EI among undergraduate engineering students. The present study also demonstrated the significant impact of traditional entrepreneurship education on EI; however, there was no change in ESE. This finding reflects that imparting theoretical knowledge related to entrepreneurship alone would not boost self-confidence among students, but when combined with modules focussing on psychological resources will show a drastic change in ESE and EI. The present findings addressed the scarcity of interventional studies using true experimental designs as well as contributed to the existing knowledge in the entrepreneurship education area. This study enables adaptation and modifications of interventions based on specific ethnocultural situations.

### 4.5.2 Implications

The present study demonstrated that ESEBP is effective in improving ESE and EI among engineering students, addressing a significant gap in existing entrepreneurship education studies that utilize experimental or interventional approaches. The findings suggest that basic entrepreneurship education alone does not substantially enhance ESE for engineering students. However, when paired with self-efficacy booster modules, it shows greater potential in boosting both ESE and EI. The research provides valuable insights for integrating intervention modules into educational curricula to encourage entrepreneurship from early stages and increase individuals' intention to pursue entrepreneurial careers.

### 4.5.3 Limitations and Future Directions

The current study has certain limitations. First, we used the self-report measures, so it is difficult to rule out the possibility of socially desirable responses. Nevertheless, it's worth noting that self-report measures are considered the most effective way to measure intentions (Ajzen, 1991; Linan & Chen, 2009). Second, the fact that our data collection and intervention were done in a specific context (i.e., regions of Punjab) limits the findings' generalizability, as the cultural context plays a significant role in influencing EI. Future research must focus on applying intervention in a variety of contexts that are more diverse in terms of geography, ethnicity, gender, and age. The present sample, i.e., engineering students should also be kept in mind while generalizing the findings. Future research should include students from various fields, such as Business students, Arts and Commerce. Third, it was tried to ensure that the groups would remain homogenous, although the attempts might not have been fully successful on that front. At last, follow-up sessions might have shown whether or not our intervention's effects persisted for a long time. To further examine the intervention's long-term effects, future studies could include follow-up evaluations in their study. Qualitative studies can also be undertaken by future scholars to have a deeper knowledge of the effectiveness of the present intervention.

**Table 4.1:** *Socio-demographic characteristics and descriptive statistics for each measure of experimental as well as control group participants at baseline*

| | | **EG-I (ESEBP)** | **EG-II (Basic Education)** | **Control group** |
|---|---|---|---|---|
| **N** | | **47** | **48** | **39** |
| Mean age (SD) | | 19.04 (0.88) | 19.25 (1.04) | 18.79 (0.83) |
| Residence | Urban | 18 | 26 | 21 |
| | Rural | 25 | 17 | 12 |
| | Semi-urban | 4 | 5 | 6 |
| ESE | Minimum | 61 | 61 | 69 |
| | Maximum | 130 | 108 | 111 |
| | Mean | 92.19 | 90.06 | 89.92 |
| | SD | 14.50 | 10.04 | 11.31 |
| | Skewness | 0.09 | -0.85 | 0.13 |
| | Kurtosis | 0.07 | 0.32 | -0.95 |
| EI | Minimum | 11 | 6 | 12 |
| | Maximum | 25 | 25 | 21 |
| | Mean | 19.93 | 19.47 | 18.33 |
| | SD | 4.05 | 4.30 | 2.47 |
| | Skewness | -0.58 | -1.5 | -0.84 |
| | Kurtosis | 0.70 | 2.3 | -0.07 |

**Table 4.2***: Comparison of experimental I, experimental II and control groups on ESE and EI at baseline and after the intervention.*

| Time of Assessment | Variables | (EG-I) | | (EG-II) | | Control Group | | F-ratio | p-value |
|---|---|---|---|---|---|---|---|---|---|
| | | M | SD | M | SD | M | SD | | |
| **Pre-Intervention** | **ESE** | 92.19 | 14.50 | 90.06 | 10.04 | 89.92 | 11.31 | 0.48 | 0.61 |
| | **EI** | 19.93 | 4.05 | 19.47 | 4.30 | 18.33 | 2.47 | 2.01 | 0.13 |
| **Post-intervention** | **ESE** | 100.04 | 12.20 | 92.10 | 12.60 | 90.20 | 8.33 | 9.38 | 0.00 |
| | **EI** | 30.95 | 4.70 | 22.95 | 4.31 | 18.17 | 3.70 | 98.09 | 0.00 |

**Table 4.3*:*** *Mean, SDs and effect size for Entrepreneurial self-efficacy and Entrepreneurial intention of experimental and control groups on pre-intervention and post-intervention assessment.*

| **Comparison groups** | | **Intervention (B)** | | | | **ANOVA** | | |
|---|---|---|---|---|---|---|---|---|
| | **Groups(A)** | Pre-Intervention | | Post-Intervention | | | | |
| | | M | SD | M | SD | F-ratio | p-value | Partial eta square ($\eta^2$) |
| **ESE** | EG-I | 92.19 | 14.5 | 100.04 | 12.2 | 14.45 | 0.000 | 0.24 |
| | EG-II | 90.06 | 10.04 | 92.10 | 12.60 | 0.97 | 0.329 | 0.02 |
| | Control | 89.92 | 11.31 | 90.20 | 8.33 | 0.01 | 0.907 | 0.00 |
| **EI** | EG-I | 19.93 | 4.05 | 30.95 | 4.70 | 183.77 | 0.000 | 0.80 |
| | EG-II | 19.47 | 4.30 | 22.95 | 4.31 | 16.31 | 0.000 | 0.26 |
| | Control | 18.33 | 2.47 | 18.17 | 3.70 | 0.05 | 0.817 | 0.00 |

**Table 4.4*: ANOVA Summary for Entrepreneurial Self-efficacy***

| **Source of Variance** | SS | df | MS | F | p-value |
|---|---|---|---|---|---|
| **Groups(A)** | 1884.543 | 2 | 942.272 | 5.344 | .000 |
| **Error** | 23098.726 | 131 | 176.326 | | |
| **Intervention (B)** | 764.020 | 1 | 764.020 | 7.327 | .000 |
| **AB** | 697.562 | 2 | 348.781 | 3.345 | .000 |
| **Error** | 13660.886 | 131 | 104.282 | | |

**Table 4.4(a)**: Summary of simple effects of Groups (A) on Pre ($B_1$) and Post Intervention ($B_2$) assessment of ESE scores

| Source of Variance | SS | df | MS | F-ratio |
|---|---|---|---|---|
| A for $B_1$ | 146.97 | 2 | 73.48 | 0.48 |
| Error | 16988.753 | 131 | 129.685 | |
| A for $B_2$ | 2435.14 | 2 | 1217.568 | 9.38** |
| Error | 19770.858 | 131 | 150.922 | |

***p*<0.01

**Table 4.4(b)**: Summary of simple effects of Intervention (B) on experimental group I ($A_1$), experimental group II ($A_2$) and control group ($A_3$) for ESE scores

| Source of Variance | SS | df | MS | F-ratio |
|---|---|---|---|---|
| B for $A_1$ | 1448.52 | 1 | 1448.52 | 14.45** |
| Error | 4609.98 | 46 | 100.22 | |
| B for $A_2$ | 100.04 | 1 | 100.04 | 0.97 |
| Error | 4831.96 | 47 | 102.81 | |
| B for $A_3$ | 1.55 | 1 | 1.55 | 0.01 |
| Error | 4218.95 | 38 | 111.02 | |

***p*<0.01

**Table 4.5*: ANOVA Summary for Entrepreneurial Intention***

| **Source of Variance** | SS | df | MS | F | p-value |
|---|---|---|---|---|---|
| **Groups(A)** | 2261.589 | 2 | 1130.794 | 61.594 | .000 |
| **Error** | 2405.012 | 131 | 18.359 | | |
| **Intervention (B)** | 1518.981 | 1 | 1518.981 | 106.069 | .000 |
| **AB** | 1425.180 | 2 | 712.590 | 49.75 | .000 |
| **Error** | 1876.017 | 131 | 14.321 | | |

**Table 4.5(a)**: Summary of simple effects of Groups (A) on Pre ($B_1$) and Post Intervention ($B_2$) assessment of EI scores

| Source of Variance | SS | df | MS | F-ratio |
|---|---|---|---|---|
| A for $B_1$ | 57.00 | 2 | 28.50 | 2.01 |
| Error | 1857.454 | 131 | 14.18 | |
| A for $B_2$ | 3629.77 | 2 | 1814.88 | 98.10** |
| Error | 2423.575 | 131 | 18.50 | |

***p*<0.01

**Table 4.5(b)**: Summary of simple effects of Intervention (B) on experimental group I ($A_1$), experimental group II ($A_2$) and control group ($A_3$) for EI scores

| Source of Variance | SS | df | MS | F-ratio |
|---|---|---|---|---|
| B for $A_1$ | 2854.51 | 1 | 2854.51 | 183.78** |
| Error | 714.49 | 46 | 15.53 | |
| B for $A_2$ | 290.51 | 1 | 290.51 | 16.31** |
| Error | 836.99 | 47 | 17.81 | |
| B for $A_3$ | 0.46 | 1 | 0.46 | 0.05 |
| Error | 324.54 | 39 | 8.54 | |

***p*<0.01

**Figure 4.1:** ***Comparison of experimental I, experimental II and control groups on ESE at baseline and after intervention***

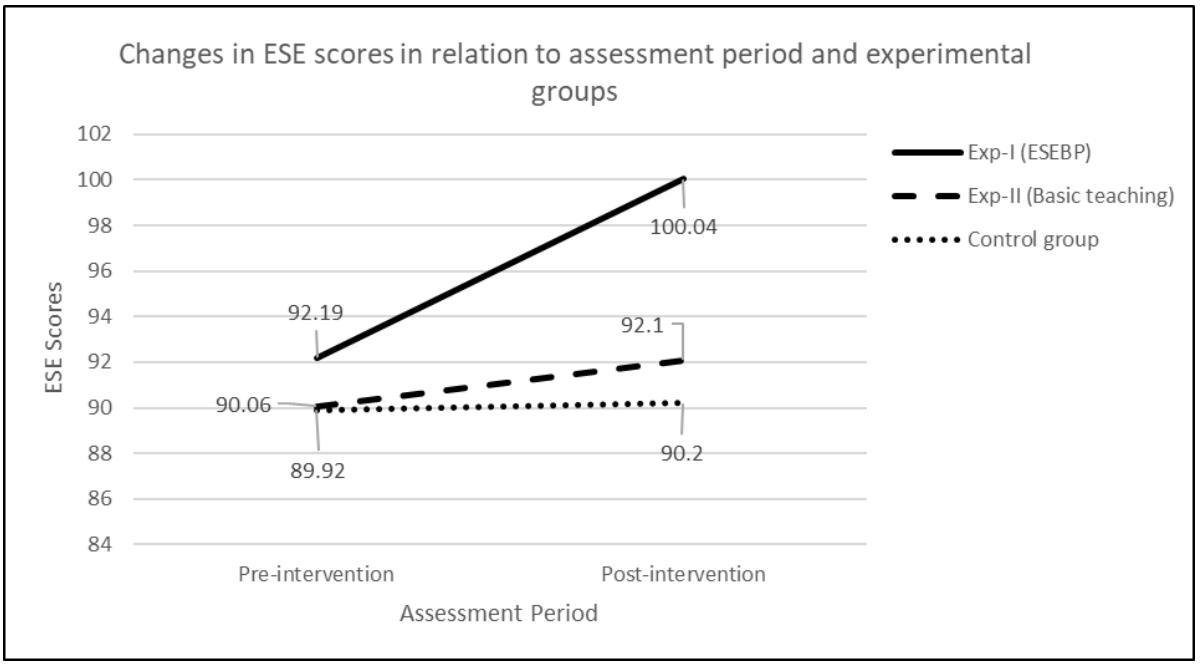
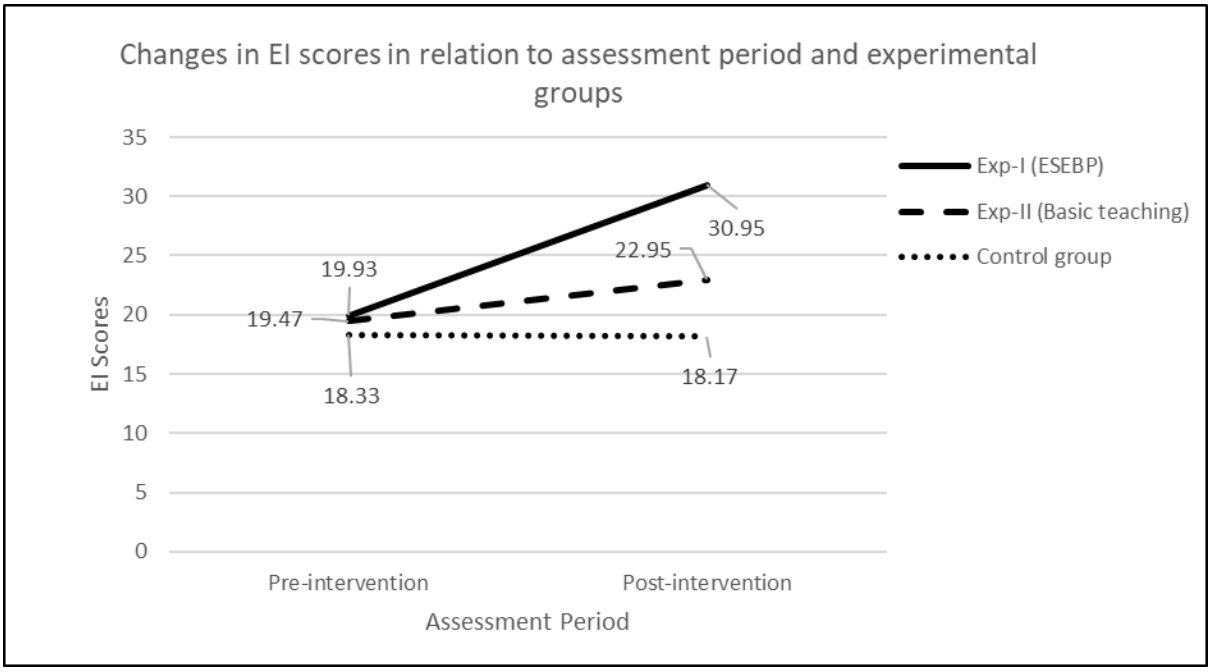


**Figure 4.2:** ***Comparison of experimental I, experimental II and control groups on EI at baseline and after intervention***



# Chapter 5

# Summary, Limitations and Recommendations

Entrepreneurship is one of the most significant solutions to the unemployment and resulting social issues prevailing in the country. It paves the way for creating more jobs, and technological advancements and boosting the overall economic progress (Farukh et al., 2017; Mukesh et al., 2021). Recognizing the benefits of entrepreneurship for the economy, policymakers and educators in the field of entrepreneurship domain have prioritized fostering an entrepreneurial mindset in both developed and developing economies. In developing economies like India, unemployment and other related social issues pose a significant challenge. Specifically, unemployment among the educated youth remains a pressing issue in India. To tackle the current unemployment, the Indian government has implemented various measures to encourage entrepreneurship through initiatives such as Make in India, Skill India Mission and others. Despite substantial efforts by the state government, there's a lack of motivation among the youth to choose entrepreneurship as a career. In an effort to promote entrepreneurial behaviour among individuals, academia has also focused on identifying the determinants influencing career-related decisions. Prior research has highlighted factors such as social, contextual, demographic and psychological, that play a significant role in shaping entrepreneurial behaviour (Sherman, 2018; Meek et al., 2010; Grilo & Irigoyen, 2005). Among these determinants, psychological attributes have emerged as critical drivers, due to their direct impact on an individual's decision-making process (McClelland, 1961; Krueger, 2003). Understanding the individual-level attributes that influence the decision to pursue entrepreneurship is crucial; given that it is the individual who ultimately chooses to engage in entrepreneurial pursuits. Among various psychological predictors, EI has been identified as the most proximal predictor of entrepreneurial behaviour (Krueger et al., 2000; Linan &

Chen, 2009; Zhao et al., 2010). Authors have extensively focussed on unravelling the determinants and the underlying dynamics of EI, aiming to craft effective programs to enhance EI. There have been studies investigating the association between certain psychological attributes and EI. Some of the identified significant factors are entrepreneurial alertness (Nguyen et al., 2022), psychological capital, i.e., hope, optimism, resilience (Mahama et al., 2023; Welter & Scrimpshire, 2023), innovativeness & creativity (Pandit et al., 2018; Biswas & Verma, 2021; Ugwueze et al., ·2022), entrepreneurial passion (Li et al., 2022a; Neneh, 2020), resilience (Wu et al., 2023; Steinbrink & Strohle, 2023), proactive personality (Kumar & Shukla, 2019; Zhang et al., 2022), locus of control (Gurol & Atsan, 2006), and Big-five traits (Awwad et al., 2021; Biswas & Verma, 2021). However, despite the plethora of research, the literature suggests that the discussion regarding the association between psychological attributes and EI continues (Hassan et al., 2020; Salameh, 2022).

Researchers continue their pursuit to identify the most influential factors, realizing that targeting these factors could significantly foster EI (Karimi et al., 2019; Ndoferepi, 2020; Newman et al., 2019). Moreover, the existing research has mainly focussed on testing the direct relationship between psychological attributes and EI. The mediating mechanism underlying the dynamics behind the greater EI has not been thoroughly investigated especially in the Indian context (Miao et al., 2015; Naz et al., 2020; Tiwari et al., 2020). This ongoing exploration holds promise for the development of more precise and impactful interventions aimed at fostering an entrepreneurial mindset within individuals.

As far as the existing interventions in the field of entrepreneurship education are considered, most of the research has focussed on imparting conventional knowledge about entrepreneurship using traditional forms of teaching and providing practical training primarily to individuals already inclined towards entrepreneurship. The existing interventions have predominantly overlooked the utilization of psychological resources within

entrepreneurship education. There's a notable absence of emphasis on identifying and targeting specific psychological aspects that could enhance the effectiveness of entrepreneurship education programs (Burnette et al., 2020; Bachmann et al., 2021). Furthermore, the existing studies have reflected contradictory findings regarding the impact of entrepreneurship education on EI. There are lack of experimental/interventional designs that might have led to inconsistent results regarding the association of entrepreneurship education and EI (Bae et al., 2014).

Therefore, to fill the above research gaps, the current research work tried to extensively investigate the association between certain psychological attributes and an individual's intention to initiate a new venture. For this purpose, the research work was conducted in three phases. The first phase dealt with exploring the association between a few psychological attributes namely, EQ, CF, RP, conscientiousness, ILOC, self-regulation and EI among undergraduate engineering students. Also, the study investigated the mediating role of ESE in the relationships between these psychological attributes and EI. The second phase explored and confirmed this relationship among the budding entrepreneurs (students who showed interest in entrepreneurial activities by submitting start-up proposals). This study further aimed to explore the difference between budding entrepreneurs and students on selected psychological attributes. The study also identified the most significant predictor of EI among budding entrepreneurs. The last phase of the research work aimed to devise an intervention and assess its effectiveness in increasing both ESE and EI among undergraduate engineering students.

## 5.1 Key Findings

In the initial study of the present research work, the results showcased a positive and significant relationship between selected psychological attributes and EI among engineering students. The study also highlighted the indirect role of ESE in the relationship between the

above-mentioned psychological attributes and EI, underscoring the pivotal role of ESE as a fundamental driver of EI. Particularly, the findings indicated that certain predictors, such as EQ, CF, ILOC, and conscientiousness, were not directly linked to EI but had an indirect link through ESE. This indirect pathway highlights the importance of considering not only the stable psychological attributes, that directly impact EI but also the intermediary role of ESE in this relationship. The overall findings demonstrated that ESE was found to partially mediate the association between EQ and EI. This mediating effect was confirmed in other models as well, wherein ESE served as the full mediator between the relationship of CF, ILOC, conscientiousness, and EI, implying that boosting an individual's ESE could enhance an individual's intention to engage in entrepreneurial endeavours. Recognizing the mediating role of ESE, the study sheds light on the mechanisms through which stable personality factors impact the development of EI among engineering students. ESE, which is a relatively more malleable attribute in comparison to other stable personality traits, can be targeted through different interventions to enhance EI among individuals.

To substantiate the findings of the first phase, another study was conducted, wherein, the main objective was to explore the differences between the students (who were not interested in entrepreneurship) and the budding entrepreneurs (students who showed interest by submitting start-up proposals or were engaged in early entrepreneurial activities) on selected psychological attributes. Further, the study also delved into identifying the most influential factors that shape EI. In this particular study, it was observed that EI exhibited a positive association with EQ, CF, RP, ESE, ILOC, conscientiousness, and promotion focus. A significant difference was noted between Group I (Budding entrepreneurs) and Group II (students who did not show any interest in entrepreneurship) concerning ESE, RP, self-regulation, and EI. Regression analysis further established that 38% of the variance in EI could be attributed to the included factors. Particularly, budding entrepreneurs demonstrated

high ESE as compared to students, aligning with existing literature that underscores ESE as a crucial factor, directly and indirectly influencing entrepreneurial behaviour. The results also indicated that budding entrepreneurs exhibited a higher inclination towards risk propensity compared to students. RP could be a significant motivating factor propelling certain individuals to embark on an entrepreneurial path. The study also revealed that budding entrepreneurs scored higher in EI compared to students, suggesting that EI could significantly influence entrepreneurial behaviour. Another finding reflected self-regulatory focus as a distinguishing factor between budding entrepreneurs and students. Budding entrepreneurs scored lower in prevention focus, and the results are in alignment with previous research. Individuals with a prevention focus are less likely to engage in entrepreneurial activities due to their inclination towards stability and safety. Another noteworthy finding in this study was that, among the three predictors considered, ESE stood out as the most influential predictor of EI in budding entrepreneurs. This suggests that individuals with higher levels of self-efficacy in entrepreneurial tasks are more likely to exhibit heightened EI. ESE serves as a powerful motivator, driving budding entrepreneurs to approach entrepreneurial activities with increased determination and enthusiasm as they gain confidence in their entrepreneurial abilities. This, in turn, contributes to the increased EI and associated behaviours. Unlike other enduring personality traits that may remain relatively stable, ESE is amenable to development and enhancement through targeted interventions and programs.

As per the findings of Studies I and II, ESE came out to be the most significant factor influencing EI. This finding substantiates the basis for devising an intervention aimed at augmenting students' inclination towards entrepreneurship. The literature indicated the dearth of studies in the field of entrepreneurship education with experimental/interventional designs and focusing on the psychological aspects of entrepreneurship. Therefore, an intervention grounded in social cognitive theory (Bandura, 1989) emphasizing self-efficacy was devised

and tested in the third study. The results demonstrated the effectiveness of the Entrepreneurial Self-efficacy Booster Program (ESEBP) in enhancing both ESE and EI among students. The intervention aimed initially to inculcate a growth mindset regarding the entrepreneurial process through verbal persuasion sources. By instilling the belief that entrepreneurial abilities can be acquired and improved with continuous effort, the ESEBP positively impacted participants' confidence in their entrepreneurial capabilities. Feedback experiences, demonstration of role models, positive visualization related to entrepreneurial tasks and exposure to successful entrepreneurial stories further augmented ESE scores. The study also underscored that basic entrepreneurship education alone is not adequate in boosting ESE; however, when combined with self-efficacy booster modules, it yields more promising results in enhancing ESE and EI among students. The four-session intervention was efficacious in raising ESE and EI among undergraduate engineering students.

The current research delved deeper into understanding the underlying dynamics of EI by exploring the mediating mechanism between psychological attributes and EI. By comprehensively investigating these dynamics, this research has provided valuable insights into the intricate relationship between EI and the influential factors that shape them. Exploration of psychological attributes linked to EI and subsequently designing and testing the efficacy of intervention programs, this study has significantly contributed to our understanding of fostering entrepreneurial behaviour. The findings underscore the pivotal role of ESE in nurturing EI among students, highlighting the effectiveness of the ESEBP in elevating both self-efficacy and EI. Ultimately, these outcomes emphasize the importance of targeted interventions in nurturing a mindset conducive to entrepreneurial pursuits among the younger generation, thus fostering innovation, economic growth, and societal advancement. In conclusion, the research outcomes present valuable implications across various domains, each offering opportunities for tailored activities and interventions.

## 5.2 Theoretical Implications

Theoretical implications of this research work extend across several key areas within the field of entrepreneurship research. Firstly, by delving deeper into the relationship between psychological attributes and EI, this study contributes to a deeper understanding of the complex dynamics that underpin entrepreneurial behaviour.

The results from Study I have added to the existing findings by incorporating the less explored psychological factors/traits in relation to EI among engineering students in the Indian context. The results showed that EQ, CF, ILOC and conscientiousness might indirectly affect EI through ESE. The study has revealed the motivating function of ESE in determining EI. Literature shows that EQ, CF, ILOC and Conscientiousness are important predictors of EI, however, these factors are less malleable, and it may be difficult to modify them. Study I proposed an alternative and provided preliminary data about the potential mediational association of ESE in the relationship between EQ, CF, ILOC, Conscientiousness and EI. ESE, which is relatively more malleable, can be targeted through different interventions. As ESE has shown a significant association with EI, and many approaches are available for enhancing self-efficacy, e.g., the social cognitive approach, the study findings may be used as a support for devising a special programme and inculcating it into the academic curriculum of college students.

The positive association observed between EI and various psychological factors, such as EQ, RP, ESE, ILOC, conscientiousness, and promotion focus among budding entrepreneurs (Study II) underscores the multidimensional nature of EI and its determinants. These findings contribute to theoretical frameworks within entrepreneurship research by highlighting the importance of considering a diverse array of psychological attributes in understanding and predicting EI. The identification of ESE as the most influential predictor of EI in budding entrepreneurs highlights the theoretical significance of self-efficacy beliefs

in driving EI. This finding aligns with Bandura's Self-Efficacy Theory, which posits that individuals with higher levels of self-efficacy are more likely to set challenging goals, persevere in the face of obstacles, and ultimately succeed in entrepreneurial endeavours. Moreover, the malleability of ESE through targeted interventions and programs suggests theoretical implications for entrepreneurship education and training, emphasizing the importance of fostering self-efficacy beliefs among aspiring entrepreneurs to enhance their EI and behaviours.

Furthermore, The present research work has demonstrated that ESEBP is effective in enhancing ESE and EI among students, which fills an existing gap in the literature regarding experimental/interventional studies in the area of entrepreneurship education. The study also asserts that basic entrepreneurship education among engineering students alone is not sufficient in increasing ESE; however, if combined with self-efficacy booster modules, it could give more promising results to enhance ESE and EI among the students. Our study provides a foundation to gain valuable insights for teaching practice in an educational setting.

## 5.3 Practical Implications

The findings imply that the integration of relevant psychological elements into entrepreneurial education may foster an entrepreneurial mindset among students. Identifying the mediating role of ESE adds another layer of existing understanding. This could inform targeted interventions to boost self-efficacy, potentially increasing the likelihood of students pursuing entrepreneurial ventures. Distinguishing psychological attributes between budding entrepreneurs and other students could help in refining entrepreneurship education. Knowing the most significant predictors of EI among budding entrepreneurs could guide personalized development strategies.

The present research work offers a blueprint for educational institutions to implement effective interventions aimed at boosting both self-efficacy and EI. The study highlights the

significance of structured verbal persuasion for enhancing ESE. Interventions can use the 'Growth Vs Fixed Mindset' theme to persuade students concerning entrepreneurial activities that can foster a growth mindset and strengthen self-efficacy. Activities to showcase the difference between a growth mindset and a fixed mindset in the entrepreneurial domain could be demonstrated through real-life examples or videos to the students. Additionally, the study implies that students should be provided with mastery experiences related to entrepreneurial activities. Providing individuals with opportunities to experience success in small tasks can reinforce self-efficacy beliefs. It suggests that the students need to be presented with real-world entrepreneurial challenges in a classroom setting. Using certain case studies, students should be encouraged to explore solutions and use entrepreneurial thinking to tackle the difficulties. Moreover, simulation exercises could be planned for the students where they can make decisions and face challenges in controlled settings employing scenario-based games. The study supports the use of self-reflection exercises focusing on strengths, accomplishments, and lessons learned in order to build self-awareness and confidence.

The findings imply that by highlighting the success stories of entrepreneurs, focusing on their entrepreneurial journey and practising positive affirmations with positive visualization related to entrepreneurial aspirations one can enhance one's ESE. Role-playing scenarios where students can mimic the entrepreneurial situations emphasizing decision-making and problem-solving and receiving feedback on the tasks. Establishing special incubator or support programs that offer mentorship in promoting an entrepreneurial mindset by incorporating the components of self-efficacy, before individuals engage in practical training related to entrepreneurship, may improve ESE and EI. Educators can utilize the present psychological intervention as a therapeutic intervention to assist individuals in overcoming their fears and obstacles. Addressing self-doubts may boost their self-efficacy related to entrepreneurial activities. Programs or activities should be conducted aiming at

shifting mindsets embracing risk-taking, understanding one's and other emotions, and being adaptable to various situations.

Thus, the present research work provides valuable insights for entrepreneurial education. From the early stages, educators in schools and higher education institutes can include intervention modules in their curriculum when targeting students' cognition to make them pro-entrepreneurship. Entrepreneurship educators in different organizations can employ the intervention to create awareness and sensitize individuals towards entrepreneurship, which would increase their intention to pursue an entrepreneurial career.

## 5.4 Limitations

Despite adequate planning and execution of research ideas, some conditions remain that may limit the generalization of the findings. Some of the limitations are presented below. The use of self-report measures introduces the potential for sociably desirable responses, which might have affected the reliability of the data collected. However, literature has highlighted that self-report measures are best suitable for measuring intentions (Linan & Chen, 2006).

Another potential drawback is the cross-sectional design used in the first and second phases of the research work. Drawing causal conclusions based solely on the observed relationships might not be justified; however, strong theoretical relationships among variables are the primary requirement for establishing cause-and-effect relationships. Further, the research was conducted in a specific context, namely the regions of Punjab, and India, which limits the generalizability of the findings. Cultural context may play a significant role in influencing EI, and therefore, it is crucial to replicate the study in different contexts that encompass more diverse geographical regions, ethnicities, genders, and age groups. The sample used in the present research consisted primarily of engineering students. While this allowed for a focused investigation within a specific population, it is important to consider the potential variations in findings when studying individuals from different disciplines such as business, arts, and

commerce. Attrition rates or biases in participant selection might have affected the representativeness or validity of the study's outcomes. The present study did not include follow-up sessions to assess the long-term effects of the intervention. The success of the intervention may be dependent on resources (financial, human, and technological) that are not always accessible for wider implementation.

### 5.5 Recommendations for Future Research

Future studies need to include diverse samples to test the applicability, efficacy of the intervention and generalizability of findings. Future research could also incorporate follow-up evaluations or longitudinal designs that would provide insights regarding the persistence of the intervention's effects over time. It is further recommended to conduct qualitative studies which are lacking in the existing entrepreneurship literature. Qualitative research methods, such as interviews, focus groups, and case studies can provide valuable insights into participant's experiences, perceptions and interpretations of the intervention. It can also provide detailed descriptions of the specific aspects of intervention modules that participants found most beneficial. Therefore, incorporating qualitative research methods with quantitative measurements can offer a more complete and holistic assessment of the effectiveness of the intervention in promoting EI. It can provide insightful information that supports the quantitative findings and can guide future interventions and educational initiatives in the field of entrepreneurship education. One can utilize recent technological advances (e.g., virtual reality, AI-based platforms) to improve the delivery and effectiveness of the intervention programme extending its reach to wider audiences.

Future investigation could take into account the comparative analyses across different age groups, industries, or educational backgrounds to understand variations in the impact of the intervention on different cohorts. Collaborating with diverse fields allows for the integration of insights from various disciplines, enriching the design and development of

ESEBP with diverse perspectives. Since entrepreneurship is a complex process, therefore, multidisciplinary studies can address complex challenges in entrepreneurship by considering various aspects, such as psychological traits, social dynamics and economic factors. To grasp the understanding of social and green entrepreneurship intentions and behaviours, in the context of sustainability, future studies could utilize the conceptual framework explored in this research. The area of social and green entrepreneurship represents an emerging area in the entrepreneurship domain.

Self-efficacy booster programmes could be implemented at the community level which may encourage entrepreneurial behaviour within the local ecosystem. Policies supporting initiatives that foster ESE among potential entrepreneurs need to be focused upon. Resources and grants for interventions targeting entrepreneurship should be generated.

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## Appendix-I: Intervention modules

**Experimental group I- The sessions consisted of the following modules (*Entrepreneurial Self-efficacy Booster Program*- ESEBP)**

| Modules | Content |
|---|---|
| **Session I** (Verbal Persuasion) Employing Implicit theory (adapted from Brunette et al., 2020) | • Basics of Mindsets<br>• Fixed v/s Growth Mindset<br>• How these mindsets develop<br>• Overcoming obstacles with a Growth mindset in the entrepreneurship process (Scientific articles, short videos)<br>• Activities to differentiate between the growth and fixed mindset |
| **Session II** (Mastery Experiences) | • Creating a situation where people can experience a "small win" becomes a catalyst for further performance.<br>• The participants are asked to complete some-decision making tasks related to business dilemmas.<br>• Mastery experience among participants is induced by giving pre-defined *positive feedback* about the work accomplished on the decision-making task, irrespective of the answers they mark. |
| **Session III** (Vicarious Experience) (Demonstrating Role models) | • Demonstrating successful experiences and the journey of successful Indian entrepreneurs as role models. (Stories and videos).<br>• Ten Indian entrepreneurs are included with various social and educational backgrounds, start-up ideas, overcoming challenges etc.<br>• Through story-telling and case studies, the participants are stimulated and inspired to make decisions and achieve certain goals regarding entrepreneurship. |
| **Session IV** Visualization (Imaginal experience) | • Students are directed through the written script to have imaginal experiences.<br>• Fostering an optimistic outlook towards new-venture<br>• Interaction about the imaginary experience with the participants<br>• Briefing all the sessions and learning outcomes |

# Appendix I

**Experimental group II- (*Basic Entrepreneurship Education*).**

| Modules | Content |
|---|---|
| **Session I** | • Meaning and importance of entrepreneurship.<br>• Factors influencing entrepreneurship (social, psychological, political and environmental)<br>• Stages of entrepreneurship, characteristics of entrepreneurs.<br>• Benefits of entrepreneurship for the economy. |
| **Session II** | • Business opportunity identification<br>• Creating a business plan, steps of writing a business plan<br>• Methods of generating business ideas. |
| **Session III** | • Financing and managing new ventures, sources of funding etc.,<br>• Factors to be considered by a venture capitalist in the selection of investment proposal. |
| **Session IV** | • Discussion about the various government schemes for financial assistance in various sectors as health, agriculture, solving social issues etc. |

# Appendix-II

## MANIPULATION CHECKS (ESEBP Group)

**Session 1:**

1. The kind of person someone is, is something very basic about them, and can't be changed very much.

1=Strongly disagree Neutral 7=Strongly agree

2. People can do things differently, but the important parts of who they are can't really be changed.

1=Strongly disagree Neutral 7=Strongly agree

3. Everyone is a certain kind of person, and there is not much that can be done to really change that.

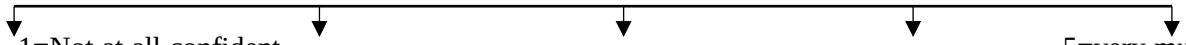
1=Strongly disagree Neutral 7=Strongly agree

Do you believe adopting a growth mindset can steer individuals toward engaging in entrepreneurial pursuits? If so, elaborate on the attributes of a growth mindset and its role in overcoming challenges along the entrepreneurial journey.

……..

**Session 2:**

After the feedback that you received based on your responses to above problems and scenarios, rate on the scale given below that how confident do you feel to respond to similar situations effectively in real-life scenarios?



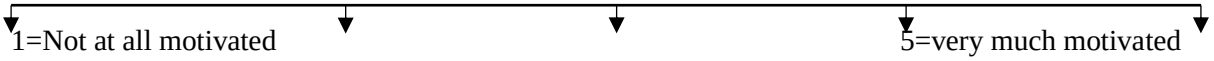
1=Not at all confident 5=very much confident

How do you feel about the feedback that you received after answering the above problems and scenarios? In what way it might be helpful for you in real life while confronting similar situations? Please answer in a few words.

**……..**

**Session 3:**

Since you have watched the video depicting success stories of many entrepreneurs how motivated do you find yourself in case you think of starting a new venture yourself?



1=Not at all motivated 5=very much motivated

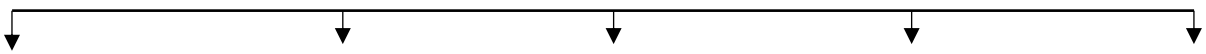
Considering yourself an aspiring entrepreneur what learning did you derive from these stories? Please answer in few words.

**……..**

**Session 4:**

Rate your experience following this imaginal exercise as to what extent do you feel that

you were able to imagine the narrated scenario?



1=Not at all 5=Very much

We would like you to write a few words about how did you feel after doing this imaginal exercise.

**……..**