



---

---

## BEYOND DEMOGRAPHICS: PSYCHOLOGICAL SELF-APPRAISALS AND INDIVIDUAL ENTREPRENEURIAL ORIENTATION AMONG UNIVERSITY STUDENTS IN AN EMERGING ECONOMY

<sup>1</sup>Dr. Tushar K Panchal, <sup>2</sup>Dr. Pankajray Patel

<sup>1</sup>Assistant Professor, GTU School of Management Studies, Ahmedabad, Gujarat, India

Email: ap\_tushar@gtu.edu.in

<sup>2</sup>Professor, GTU School of Management Studies, Ahmedabad, Gujarat, India

Email: prof\_pankajraypatel@gtu.edu.in

---

### Article History

**Received:** 2026-02-24

**Revised:** 2026-07-26

**Accepted:** 2026-09-18

**Published:** 2026-10-29

---

### Abstract

*This study examines whether individual entrepreneurial orientation (IEO) differs across demographic groups and whether psychological self-appraisals are associated with IEO in a student-dominant sample from Gujarat, India.*

*A cross-sectional survey yielded 429 usable responses. IEO was measured with the ten-item Bolton–Lane scale covering risk-taking, innovativeness and proactiveness. State self-esteem and seven entrepreneurial self-ratings were also assessed. Reliability analysis, exploratory component analysis, Kruskal–Wallis tests, Spearman correlations and hierarchical ordinary least-squares regression with HC3 robust standard errors were used.*

*Findings – Overall IEO was moderately high ( $M=3.776$ ,  $SD=0.479$ ) and internally consistent ( $\alpha=.748$ ). Sampling adequacy was strong ( $KMO=.860$ ; Bartlett  $\chi^2(45)=971.430$ ,  $p<.001$ ), although the reverse-worded innovativeness item weakened the intended subscale. Age, education, family income and role did not significantly differentiate overall IEO or its dimensions. Entrepreneurial confidence had the largest convergent association with overall IEO ( $\rho=.419$ ,  $p<.001$ ), followed by persistence ( $\rho=.369$ ), satisfaction ( $\rho=.356$ ), mindset ( $\rho=.348$ ) and opportunity proactivity ( $\rho=.345$ ). State self-esteem contributed incremental explanatory power beyond demographics, especially performance and appearance self-esteem.*

*Research limitations/implications – The non-probability, geographically concentrated and student-dominant sample limits population inference. Cross-sectional self-reports do not support causal claims. The reverse-worded item requires cognitive testing before future bilingual administration. Entrepreneurship education should develop confidence, persistence, opportunity enactment and reflective self-appraisal rather than segmenting learners mainly by demographics.*

*The study positions IEO within an entrepreneurial-agency framework, distinguishes demographic context from proximal psychological self-appraisals, and identifies a reverse-wording measurement artefact relevant to cross-context scale use.*

**Keywords:** individual entrepreneurial orientation; entrepreneurial confidence; state self-esteem; entrepreneurship education; emerging adults; India

## **1. INTRODUCTION**

Entrepreneurship research has started to acknowledge that entrepreneurial action is not only a function of opportunities and institutions, but also of the individuals' typical way of sensing uncertainty, creating novelty and taking action prior to events. The tradition of organisational entrepreneurial-orientation can be applied to the person level by individual entrepreneurial orientation (IEO) which consists of three behavioural dispositions: risk-taking, innovativeness and proactiveness (Bolton and Lane, 2012). Such dispositions are particularly pertinent when it comes to higher education, as many students have yet to establish a business, but they are developing the behavioural repertoire from which subsequent entrepreneurial decisions will be made.

As the innovation and start-up ecosystem in India is growing, the interest among the youth in entrepreneurial mindset has increased. However, there are still two types of analysis shortcuts that are widely used. First, demographic groups are sometimes used as proxies to account for the differences in entrepreneurial behavior, without specifying the mechanisms or when groups are not balanced. Second, composite IEO scores are provided, but without examining how translated and reverse-worded items function. Both shortcuts can cause teachers to focus on groups of students instead of the malleable psychological resources, and to inflate the precision of a measure.

In this study we intend to resolve those concerns from 429 survey responses collected from Gujarat. It addresses the questions of whether IEO and its dimensions are different for people of different ages and educational levels, and for individuals with different levels of family income and occupational roles; whether entrepreneurial self-ratings and the validated IEO measure converge; and whether state self-esteem contributes incremental variance beyond the demographic control variables. The study has three contributions. It offers evidence in a student-driven emerging economy context, offers clear psychometric diagnostics, and separates out a description of the demographics from correlates that are psychologically actionable.

## **2. THEORETICAL BACKGROUND AND CONCEPTUAL MODEL**

### **2.1 Individual entrepreneurial orientation**

Entrepreneurial orientation was initially developed as a strategic posture of how firms innovate, take risk and act proactively (Miller, 1983; Covin and Slevin, 1989). Lumpkin and Dess (1996) expanded the organisational construct and suggested that the dimensions of it can be varied independently depending on the context. Bolton and Lane (2012) then operationalised IEO as a ten item individual level measure, risk-taking, innovativeness and proactiveness. Risk taking: willingness to invest resources, to take action under uncertainty; innovativeness: experimenting, preferring original solutions; proactiveness: anticipatory, initiating behaviour. IEO is not a history of venture performance, but rather a dispositional tendency. This separation does make a difference in the student body: respondents may exhibit opportunity-seeking and experimental behaviour prior to being proprietors of a firm. Perceived capability can affect goal choice, effort and persistence from the social-cognitive standpoint (Bandura, 1997). Perceived behavioural control is also part of the theory of planned behaviour, which posits that attitude and social norms are equally important with perceived behavioural control in determining intention (Ajzen, 1991). In this way, IEO should approach with confidence, persistence and opportunity pursuit, but not be the same.

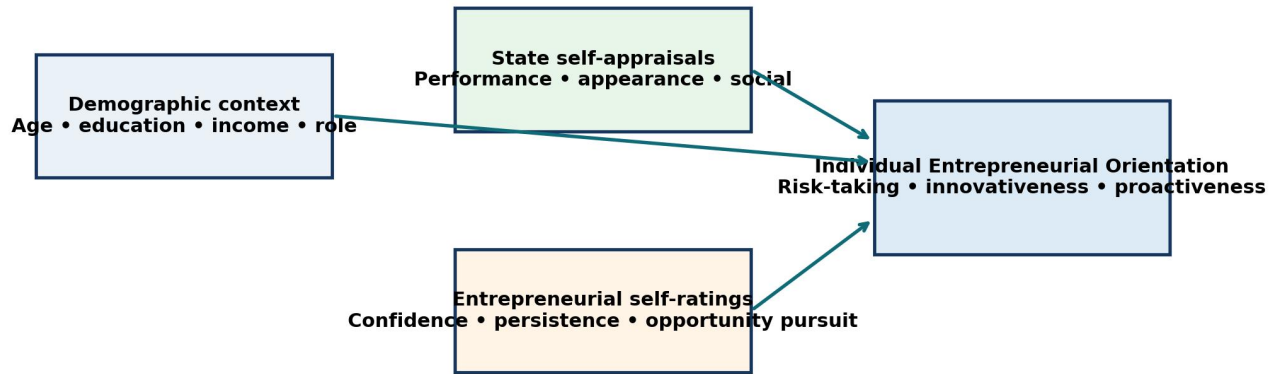
### **2.2 Demographics as contextual rather than deterministic predictors**

Human-capital and life-course approaches posited that age, education, work experience and household support can influence the access to knowledge, networks and acceptable risk. But the impact of demography is not always uniform nor straightforward. Entrepreneurship-intention research has demonstrated that psychological mechanisms and perceived feasibility often explain more in explaining variance than do demographic labels alone (Krueger, Reilly and Carsrud, 2000; Zhao, Seibert and Hills, 2005). With a relatively homogeneous sample with respect to demographic characteristics, and one that is largely young and highly educated, group differences may be even more muted. Demographic comparisons, therefore, are only exploratory contextual tests and not determinant explanations.

### **2.3 State self-esteem and entrepreneurial agency**

State self-esteem reflects transient appraisals of performance, appearance and social status (Heatherton and Polivy, 1991). There is self-esteem in performance, in appearance and in social. Competence related self appraisal should encourage initiative and experimentation and make people more willing to take action regardless of feedback received. Having high self-esteem can also help minimise the personal cost of failure. On the other hand, when learning is more inclined towards anticipated judgement, social-evaluative concern

may hinder experimentation. Entrepreneurial self-efficacy is not the same as self-esteem. Self-efficacy is specific to tasks while self-esteem is an overall evaluation of worth and adequacy. Both, however, are positive self-beliefs that can energise action. Meta-analytic and longitudinal entrepreneurship studies have been related to entrepreneurial intentions and behaviour with self-efficacy and proactivity personality traits (Rauch and Frese, 2007; Zhao, Seibert and Lumpkin, 2010). Thus, the current model assumes that self-appraisals will make a contribution to the explanation of the data within the framework of the demographic control variables, but not use causal language due to the cross-sectional nature of the data.



Demographics are treated as contextual controls; psychological self-appraisals are expected to show stronger associations with IEO.

**Figure 1. Conceptual framework linking demographic context and psychological self-appraisals with IEO.**

### 3. LITERATURE REVIEW AND HYPOTHESIS DEVELOPMENT

#### 3.1 Evolution from entrepreneurial orientation to individual entrepreneurial orientation

The literature on entrepreneurial orientation originated at the organisational level. According to Miller (1983), an entrepreneurial company is a business that pursues product-market innovation, takes relatively risky actions and is proactive (takes action before rivals). The significance of this formulation is that it brought entrepreneurship research from a narrow focus on 'ownership' towards observable 'strategic behaviour'. Covin and Slevin (1989) later showed that the meaning of an entrepreneurial strategic posture needs to be understood within the context of the environment. Their research suggested that entrepreneurial behaviour is not always positive as it can have both positive and negative outcomes depending on the fit of the organisation and environment. Lumpkin and Dess (1996) have further broken down the construct to state that its dimensions can vary independently. This multi-dimensional perspective is pertinent to the current study as students in universities can be very proactive and innovative, but not necessarily willing to risk their finances or career.

These dimensions can be understood by the opportunity-based perspective as well. Shane and Venkataraman (2000) put the concept of entrepreneurship in the context of the discovery, evaluation and exploitation of opportunities. In this process the innovativeness facilitates the emergence of ideas and/or the combination of ideas, the proactiveness pushes the person to look for new needs and take the initiative to act and the risk-taking allows to make the commitment even if there is lack of information. Venkataraman (1997) also noted the link between entrepreneurial individuals and opportunity structures. These views indicate that entrepreneurial orientation refers to a way of doing business and not just an intention to start up a business, and that it is a way of dealing with uncertain opportunities.

Bolton and Lane (2012) extended the organisational construct to individuals and developed and validated a ten item IEO instrument which included risk taking, innovativeness and proactiveness. Their work enabled to look at entrepreneurial attitude among students, employees and other people who may not be entrepreneurs. The scale is particularly relevant for university environments, as it reflects behavioural preferences instead of having to have experience starting up a business. Meanwhile, in other linguistic and cultural contexts, reliability and factors must be re-evaluated, as the original validation does not automatically apply to the other context.

### **3.2 Innovativeness risk-taking and proactiveness among university students**

Innovativeness means taking a positive attitude to experimentation, originality and new ways of problem solving. For students in university it can manifest itself in the form of new learning approaches, new solutions, challenging of traditional practices or in the merging of knowledge from different disciplines. Innovation thus encompasses more than just a technological invention. It involves being able to try a new way that has not been tried and tested before and take on board suggestions. This attitude is usually cultivated in entrepreneurship education using design thinking, opportunity identification, prototyping, problem-based learning.

Risk Taking relates to the readiness to invest time, effort, reputation or resources in an activity or situation where the results are not guaranteed. Initiatives by students to become entrepreneurs often start with relatively small investments – the more immediate risks might be presenting an unfinished idea, attempting to approach potential customers, engaging in an uncertain project or opting for an entrepreneurial career path. Miller (1983) and Lumpkin and Dess (1996) focused on the role of risk-taking in entrepreneurial action and Rauch and Frese (2007) demonstrated that specific traits that are closer to the actual tasks of entrepreneurship are more useful in predicting entrepreneurial action than broad personality traits. This means that educational interventions should focus on making informed and calculating risk-taking as opposed to indiscriminate boldness.

Proactiveness is a mindset that involves anticipating, taking initiative and doing things before they are necessitated by circumstances. It is tightly coupled with opportunity recognition as students need to take the step from identifying a problem to collecting evidence, identifying potential partners and testing a potential solution. In addition to demonstrating that the relationship between entrepreneurial orientation and performance is dependent upon context, Rauch et al. (2009) revealed that entrepreneurial orientation is related to performance. At a university, proactiveness can then manifest itself in projects started by oneself, customer discovery, competitions, internships and early experiments in the field of entrepreneurship without any enterprise being registered.

### **3.3 Psychological foundations of entrepreneurial behaviour**

Social-cognitive theory provides an understanding of why self-beliefs are linked with entrepreneurial orientation. Bandura (1997) suggests that perceived capability influences the goals that people choose, the effort they put in and how they persevere after failure. Perceived behavioural control is also a key factor in the theory of planned behaviour of Ajzen (1991). In the context of entrepreneurship, these theories argue that students with the belief of comprehending issues, engaging stakeholders and bouncing back from failure will be more inclined to take proactive actions and explore out-of-the-box concepts.

This is what empirical research on entrepreneurship suggests. Krueger, Reilly and Carsrud (2000) contrasted various models of intention and found that perceived feasibility and desirability are more direct predictors of entrepreneurial intention than background variables. Zhao, Seibert and Hills (2005) discovered that entrepreneurial self-efficacy played a mediation role between the influence of learning, risk propensity and gender on entrepreneurial intention. Their results suggest that education and experience can impact entrepreneurship, at least in part by altering the beliefs of what people think they can achieve. Zhao, Seibert and Lumpkin (2010) also found systematic relationships between personality and entrepreneurial intention and performance in a meta-analysis, which revealed varying degrees of such relationships depending on the type of outcome and construct.

From a systematic review of the literature on entrepreneurial self-efficacy, Newman et al. (2019) reached the conclusion that entrepreneurial self-efficacy is influenced by prior entrepreneurial experience, education, social context and role models, and that it is linked to entrepreneurial intentions and behaviours. This evidence gives a grounding for optimism that entrepreneurial confidence, persistence, adaptability and opportunity proactivity will have a positive correlation with IEO. However, IEO and self-efficacy are conceptually different – IEO represents likes/dislikes of entrepreneurial actions while self-efficacy represents perceived ability to execute specific actions.

### **3.4 State self-esteem and entrepreneurial self-appraisal**

State self-esteem is also included in the present study as a more general type of psychological self-appraisal. Heatherton and Polivy (1991) thought of state self-esteem in terms of performance, appearance and social aspects. Performance self-esteem is related to how a person feels about him or herself at the moment. Appearance self-esteem is a sense of satisfaction and comfort with one's appearance and social self-esteem is a sense of acceptance and evaluation from others. These evaluations might be relevant in the context of

entrepreneurship because starting an entrepreneurial venture brings with it uncertainty, failure, and exposure to the public.

Self-esteem in performance is likely to be especially pertinent since entrepreneurial activities involve the person to make decisions and keep learning without full instructions. Appearance self-esteem can also help to build confidence for pitching, networking, and putting an idea out there for others to see. The social-evaluative concerns can work in more intricate ways. A certain amount of sensitivity to others' reactions might lead to preparation and responsiveness, while too much might lead to a disincentive to experiment or to a fear of failure. Therefore, the three self-esteem dimensions are investigated separately as well as merely as a global score.

### **3.5 Demographic influences and the emerging-economy context**

The determinants of exposure to entrepreneurship, the access to networks and risk absorption capacity may include age, education, occupational role, and household income. Work experience can enhance the understanding of the industry and problem awareness whereas education can enhance analytical and opportunity recognition skills. While household income can afford them a financial margin for experimentation, scarcity of resources can also motivate them to take action due to necessity. The direction of the demographic effects is not clear due to these competing mechanisms. Demographic categories should thus be analyzed in an empirical way instead of being rigidly considered as predictors of entrepreneurial potential. There are also indications that social and cultural processes can legitimise apparent demographic differences. As an example, Goktan and Gupta (2015) analysed sex and gender roles and IEO at the country level and found that the understanding of entrepreneurial orientation cannot be limited to sex only. Psychological identification and cultural expectations also come into play. Liñán and Chen (2009) confirmed that the measurement of entrepreneurship should be carefully applied in different cultures, due to the different meanings and predictive relevance of scale items. The developing ecosystem in India is accompanied by the disparity in exposure to education, family resource, and role models as entrepreneurs. This renders the context theory relevant and not just a geographical description.

### **3.6 Youth entrepreneurship measurement and research gap**

University students are a key segment for IEO research since entrepreneurial dispositions can be shaped prior to entering a venture. Geldhof et al. (2014) found a correlation between entrepreneurial intent of youth and intentional self-regulation and innovation, which is in line with the developmental perspective of entrepreneurship. In addition, Kollmann et al. (2017) demonstrated that the entrepreneurial orientation of individuals in entrepreneurial teams may differ and that these differences make a difference in the collective results. In combination, these studies suggest that overall averages can obscure important patterns at the level of the different dimensions and that researchers should consider the dimensions separately and jointly in terms of risk taking, innovativeness, and proactiveness.

There are three gaps that are still relevant, despite the literature. First, there is limited research that has investigated IEO in the university population within Indian or similar emerging economy settings with detailed psychometric diagnostics. Second, many demographic comparisons are presented without also analyzing more proximal psychological self-appraisals. Third, items in reverse-order and in both languages might create method effects that are not captured when only a global reliability score is reported. The current study aims to fill these gaps by comparing demographic groups and examining entrepreneurial self-ratings and state self-esteem in one analytical framework, while evaluating the IEO scale.

As a whole, previous studies suggest that demographic background can give context, while perceived capability, self-regulation and positive self-appraisal might be more related with entrepreneurial orientation. The literature also suggests that the three IEO dimensions can be analysed separately and that the quality of measurement needs to be checked in each new context. These arguments lead to the following hypotheses.

H1. Overall IEO and/or its dimensions differ significantly across age, education, family-income and occupational-role groups.

H2. Positive entrepreneurial self-ratings (mindset, opportunity proactivity, adaptability, innovation, persistence, confidence and satisfaction) are positively associated with overall IEO.

H3. State self-esteem dimensions explain incremental variance in overall IEO beyond demographic controls.

## **4. RESEARCH METHODOLOGY**

### **4.1 Objectives**

The study has three objectives: (1) to assess the reliability and empirical structure of the IEO measure; (2) to test whether overall IEO and its dimensions differ across demographic groups; and (3) to examine convergent relationships between IEO, entrepreneurial self-ratings and state self-esteem, including incremental prediction beyond demographic controls.

#### 4.2 Design, universe and sample

A quantitative, cross-sectional survey design was used. The practical universe comprised students and other emerging or employed adults reachable through participating educational and professional networks in Gujarat. The survey generated 429 responses. No duplicate email records were detected. Every respondent completed all ten IEO items; therefore, the final IEO analytical sample was  $N=429$ . Eleven missing cells occurred only across optional general self-rating variables. These were coded 99 in the data workbook and excluded pairwise; they were not mean-imputed. The sample was student-dominant (411 students, 13 employees and five professionals) and concentrated in the 15–25-year category ( $n=405$ ). Consequently, the dataset is appropriate for studying a young, education-linked context but not for estimating population prevalence.

#### 4.3 Measures and coding

IEO was measured using the ten items developed by Bolton and Lane (2012): three risk-taking items, four innovativeness items and three proactiveness items. Responses ranged from 1 (strongly disagree) to 5 (strongly agree). The negatively worded innovativeness item was reverse-scored as 6 minus the original response. Dimension and overall scores were arithmetic means, retaining the 1–5 metric.

State self-esteem was measured with 20 items based on Heatherton and Polivy (1991). Negatively worded items were reverse-coded so that higher values consistently represented higher state self-esteem. Performance, appearance and social scores were computed as means. Seven single-item entrepreneurial self-ratings used ordered five-point categories. Text labels such as “very proactive” and “very adaptable” were coded 5 through their least-positive alternatives coded 1. The spelling variant “Nuetral” was harmonised to Neutral=3.

#### 4.4 Analytical strategy

The analysis was done in five steps. Auditing was carried out for frequencies and missingness first. Second, Cronbach's alpha was used to measure internal consistency. Thirdly, factorability and item behaviour were examined using the Kaiser–Meyer–Olkin statistic and Bartlett's test and a three-component principal-component solution with varimax rotation. The component analysis is diagnostic in nature and not a confirmatory validation. Fourth, Kruskal–Wallis tests were used to assess group differences as several of the demographic groups were very small and the outcomes were bounded ordinal composites. Fifth, monotonic convergence was examined by the use of Spearman correlations, and the incremental contribution of the dimensions of self-esteem after dummy coded demographic controls was estimated by the use of hierarchical OLS regression with HC3 robust standard errors. Significance was set at  $\alpha=0.05$ , and effect sizes and design limitations were used to interpret the results.

#### 4.5 Reliability and validity considerations

Overall IEO reliability was acceptable ( $\alpha=0.748$ ) and proactiveness reliability was acceptable for a three item scale ( $\alpha=.694$ ). The reverse-worded item had a negative correlation with the rest of the total after theoretically reversing, and risk-taking was modest ( $\alpha=0.554$ ) and innovativeness was weak ( $\alpha=0.364$ ). When that item was omitted, the overall alpha was 0.814. The item was still kept in primary scores as it was part of the published specification and would not change post hoc. Hence, conclusions about innovativeness should be interpreted with caution. The overall state self-esteem reliability was strong ( $\alpha=0.847$ ), social strong ( $\alpha=0.873$ ), appearance acceptable ( $\alpha=0.680$ ) and performance modest ( $\alpha=0.592$ ).

#### 4.6 Limitations

The evidence has four limitations. The sample was geographically restricted and highly skewed toward students 15 to 25, and was non-probability. All constructs were self-reported and filled out in a single questionnaire, which might cause common-method and social-desirability bias. A cross sectional design is not able to determine causal relationships or temporal order. Finally, bilingual presentation and reverse wording

may have created method variance, particularly for IN2R. Future studies should use cognitive interviews, back-translation, confirmatory factor analysis on a new sample and longitudinal or behavioural outcomes.

## 5. DATA ANALYSIS AND RESULTS

### 5.1 Descriptive results

**Table 1. Descriptive statistics for IEO and its dimensions.**

| Construct      | N   | Mean  | SD    |
|----------------|-----|-------|-------|
| Risk Taking    | 429 | 3.797 | 0.632 |
| Innovativeness | 429 | 3.657 | 0.522 |
| Proactiveness  | 429 | 3.912 | 0.652 |
| Overall IEO    | 429 | 3.776 | 0.479 |

Overall IEO was moderately high ( $M=3.776$ ,  $SD=.479$ ). Proactiveness recorded the highest mean ( $M=3.912$ ), followed by risk-taking ( $M=3.797$ ) and innovativeness ( $M=3.657$ ). The lower innovativeness mean partly reflects theoretically correct reversal of the negatively worded item, whose response pattern diverged from the other items.

### 5.2 Factorability and exploratory structure

The correlation matrix was suitable for dimension-reduction analysis:  $KMO=.860$  and Bartlett's test was significant,  $\chi^2(45)=971.430$ ,  $p<.001$ . The first three components explained 56.76% of standardised variance. Proactiveness items formed a clear component, while the reverse-worded innovativeness item loaded strongly on a separate method-like component (.929). Several positively worded risk and innovation items loaded together, suggesting that respondents may have perceived a broad entrepreneurial action tendency rather than sharply separating novelty from risk. These findings support use of an overall IEO score but counsel against strong claims based on the innovativeness subscale.

**Table 2. Varimax-rotated three-component loadings.**

| Item | Component 1 | Component 2 | Component 3 |
|------|-------------|-------------|-------------|
| RT1  | 0.566       | -0.256      | 0.082       |
| RT2  | 0.651       | 0.076       | 0.127       |
| RT3  | 0.539       | 0.017       | 0.427       |
| IN1  | 0.587       | -0.301      | 0.147       |
| IN2R | -0.021      | 0.929       | -0.069      |
| IN3  | 0.704       | 0.067       | 0.303       |
| IN4  | 0.687       | -0.092      | 0.278       |
| PR1  | 0.145       | -0.216      | 0.741       |
| PR2  | 0.140       | -0.037      | 0.845       |
| PR3  | 0.359       | 0.054       | 0.646       |

### 5.3 Demographic differences

Table 3 presents a consolidated cross-tabulation of the three principal demographic variables against the IEO factors. The cells report group-wise mean scores on the common 1–5 scale, allowing direct comparison of risk-taking, innovativeness, proactiveness and overall IEO across education, age and family-income categories. Because some groups contain very few respondents, the descriptive means should be interpreted together with the non-parametric significance tests reported below.

**Table 3. Cross-tabulation of education, age and family income with IEO factor mean scores.**

| Demographic variable | Category                      | N   | Risk-taking | Innovativeness | Proactiveness | Overall IEO |
|----------------------|-------------------------------|-----|-------------|----------------|---------------|-------------|
| Education            | Any other like CS/ICWA/CA etc | 4   | 3.667       | 3.812          | 3.917         | 3.800       |
|                      | Bachelor's Degree             | 212 | 3.822       | 3.719          | 3.931         | 3.814       |

|               |                        |     |       |       |       |       |
|---------------|------------------------|-----|-------|-------|-------|-------|
|               | Diploma                | 7   | 3.857 | 3.679 | 4.190 | 3.886 |
|               | Master 's Degree       | 193 | 3.779 | 3.585 | 3.879 | 3.732 |
|               | Ph.D                   | 10  | 3.867 | 3.650 | 3.967 | 3.810 |
|               | School (Class 9 to 12) | 3   | 3.000 | 3.583 | 3.889 | 3.500 |
| Age group     | 15 to 25 Years         | 405 | 3.789 | 3.651 | 3.902 | 3.768 |
|               | 25 to 35 Years         | 16  | 4.146 | 3.875 | 4.167 | 4.044 |
|               | Above 35 Years         | 7   | 3.571 | 3.536 | 3.952 | 3.671 |
|               | Below 15 Years         | 1   | 3.000 | 3.500 | 3.667 | 3.400 |
| Family income | 3 to 6 Lakh            | 88  | 3.818 | 3.662 | 3.913 | 3.784 |
|               | 6 to 9 Lakh            | 24  | 3.875 | 3.604 | 4.056 | 3.821 |
|               | Above 9 Lakh           | 11  | 3.970 | 3.818 | 4.121 | 3.955 |
|               | Less than 3 Lakh       | 306 | 3.779 | 3.654 | 3.893 | 3.763 |

Kruskal–Wallis tests provided no evidence that role, education, family income or age group differentiated overall IEO at the 5% level. For overall IEO, role  $H(2)=3.283$ ,  $p=.194$ ; education  $H(5)=4.118$ ,  $p=.533$ ; income  $H(3)=2.426$ ,  $p=.489$ ; and age  $H(3)=5.946$ ,  $p=.114$ . No dimension-level comparison reached  $p<.05$ . The closest patterns were age with risk-taking,  $H(3)=7.194$ ,  $p=.066$ , and role with proactiveness,  $H(2)=5.280$ ,  $p=.071$ . Given the very small numbers in several categories, these near-threshold results should not be presented as effects. H1 was not supported.

**Table 4. Kruskal–Wallis tests for demographic comparisons of overall IEO.**

| Grouping variable | Outcome     | H     | df | p     | Decision        |
|-------------------|-------------|-------|----|-------|-----------------|
| Role              | Overall IEO | 3.283 | 2  | 0.194 | Not significant |
| Education         | Overall IEO | 4.118 | 5  | 0.533 | Not significant |
| Family income     | Overall IEO | 2.426 | 3  | 0.489 | Not significant |
| Age group         | Overall IEO | 5.946 | 3  | 0.114 | Not significant |

#### 5.4 Convergent relationships

**Table 5. Entrepreneurial self-ratings and overall IEO.**

| Variable                     | Valid N | Spearman $\rho$ | p     |
|------------------------------|---------|-----------------|-------|
| Entrepreneurial mindset      | 428     | 0.348           | <.001 |
| Opportunity proactivity      | 426     | 0.345           | <.001 |
| Adaptability                 | 428     | 0.267           | <.001 |
| Self-rated innovation        | 425     | 0.281           | <.001 |
| Persistence                  | 428     | 0.369           | <.001 |
| Entrepreneurial confidence   | 428     | 0.419           | <.001 |
| Entrepreneurial satisfaction | 429     | 0.356           | <.001 |

All seven entrepreneurial self-ratings were positively associated with overall IEO. Entrepreneurial confidence showed the strongest relationship ( $\rho=.419$ ), followed by persistence ( $\rho=.369$ ), entrepreneurial satisfaction ( $\rho=.356$ ), entrepreneurial mindset ( $\rho=.348$ ), opportunity proactivity ( $\rho=.345$ ), self-rated innovation ( $\rho=.281$ )

and adaptability ( $p=.267$ ); all  $p<.001$ . These small-to-moderate coefficients demonstrate convergence without redundancy. H2 was supported.

### 5.5 State self-esteem and hierarchical regression

Overall state self-esteem correlated positively with overall IEO ( $\rho=.217$ ,  $p<.001$ ). Appearance self-esteem ( $\rho=.290$ ,  $p<.001$ ) and performance self-esteem ( $\rho=.244$ ,  $p<.001$ ) were significant, whereas the bivariate association for social self-esteem was small and nonsignificant ( $\rho=.083$ ,  $p=.087$ ). Demographic controls alone explained 3.39% of IEO variance. Adding the three self-esteem dimensions increased  $R^2$  to 14.65%, an increment of 11.26 percentage points. With HC3 robust standard errors, performance self-esteem ( $B=.179$ ,  $p<.001$ ) and appearance self-esteem ( $B=.174$ ,  $p=.001$ ) were positive predictors. Social self-esteem became negative ( $B=-.083$ ,  $p=.016$ ) conditional on the other dimensions, which is consistent with statistical suppression and should not be interpreted as evidence that low social self-esteem causes IEO. H3 was supported in terms of incremental explanation.

**Table 6. Psychological terms in hierarchical regression predicting overall IEO (demographic controls included).**

| Model term              | B      | HC3 SE | t      | p      |
|-------------------------|--------|--------|--------|--------|
| Performance self-esteem | 0.179  | 0.046  | 3.917  | <0.001 |
| Appearance self-esteem  | 0.174  | 0.050  | 3.479  | 0.001  |
| Social self-esteem      | -0.083 | 0.035  | -2.415 | 0.016  |

### 5.6 Interpretation through entrepreneurial agency

The empirical pattern suggests a distinction between distal demographic markers and proximal psychological resources. Age, education, family income and occupational role did not reliably differentiate IEO in this student-dominant sample; however, confidence, persistence and opportunity-directed self-ratings showed consistent positive associations. This does not imply that psychological factors are necessarily causal in the development of IEO or that there are no differences in demographic characteristics in the general population. Instead, it seems to be worthwhile to consider the evidence of self-appraisals in relation to entrepreneurial action orientations in this sample.

The hierarchical model provides parallel evidence: the addition of state self-esteem dimensions to demographic controls accounted for an additional 14.65% of the variance, as compared to 3.39% for the demographic controls alone. Performance and appearance self-esteem were positively correlated, and social self-esteem was negatively correlated (after adjusting). This may be due to suppression or overlap of the predictors and cannot be interpreted causally. Longitudinal and experimental designs are required to determine temporal ordering and the effects of the intervention.

### 5.7 Cross-context measurement implications

While the overall internal consistency was satisfactory ( $\alpha = 0.748$ ), and the sampling adequacy was good ( $KMO = 0.860$ ), one reverse-worded innovativeness item did not fit the intended construct. Factorability does not confirm the three-factor structure hypothesized. Cognitive interviews, language pretests, confirmatory factor analysis and measurement invariance testing should be conducted in future studies prior to comparisons between demographic and/or language groups. Post-hoc item deletion should be accompanied by transparent sensitivity analysis rather than presented as an automatic correction.

## 6. DISCUSSION

The main finding is not a clear cut-off between the demographic groups, but a gradation of psychological responses. There were no significant differences in IEO by age, education, family role or income in this sample, which was dominated by students. In contrast, confidence, persistence, pursuit of opportunity and positive appraisal of performance were always related with IEO. This trend is consistent with social-cognitive theories where the beliefs about capability and anticipatory action are more proximal to behaviour than background categories (Bandura, 1997; Zhao, Seibert and Hills, 2005).

Even if there is no demographic significance, this should not be interpreted as meaning that demographics don't matter. The majority of the respondents were of the same age and in the same jobs and some

comparison cells were very small. The defensible interpretation is more limited: In this data set, there was no statistically reliable separation of the demographics. This diverts the focus from the learner to the resources which educational interventions might generate.

The result of the measurement is of equal significance. Factorability was determined by a high KMO and significant Bartlett test, but the reverse worded innovation item was a method factor which lowered reliability. Instruments that use reverse wording may be confusing to the respondent, especially when completing the instrument in a different language or completing it in a short amount of time online. Its removal would enhance alpha, but can cause a restriction of content and capitalise on chance if it is done after the fact. Therefore, retention with transparent sensitivity reporting is preferable for the present study, revision and pretesting for the next study.

The results of the regression show that performance and appearance self-esteem account for variance in IEO beyond that of demographic controls. The competence interpretation of performance self-esteem is quite simple. Appearance self-esteem could be an indicator of overall comfort with being seen and sharing new concepts, which is applicable to pitching, networking and putting new concepts out there for feedback. It is noteworthy that the conditional negative coefficient for social self-esteem does not reflect the same relationship in the bivariate correlation and should be considered as suppression caused by the overlap of the dimensions of self-esteem. Theory must be preceded by replication.

## **7. MAJOR FINDINGS**

### **7.1 Contribution to entrepreneurship scholarship**

First, IEO is not a demographic variable in this study but rather an attitude of a pre-venture orientation towards entrepreneurial agency. Second, it connects individual entrepreneurial orientation with confidence, persistence and self-appraisal in the context of a higher education in the emerging economy, serving as a foundation for future testing of the mediating mechanisms and behavioural outcomes. Third, it shows the sensitivity of a widely used IEO measure to the reverse-wording effects, emphasizing the need for contextual validation. These contributions are associative and methodological and do not provide developmental change or predictive validity.

### **7.2 Directions for future research**

Future studies should test a preregistered model with respondents from several universities and regions, incorporate venture behaviour and outcomes of opportunity search and track respondents over time. Multigroup measurement-invariance testing across language, gender and education categories is needed before asserting equivalence of IEO scores. Intervention studies may test if calibrated confidence is altered, and if so, if entrepreneurial behaviour is altered, as a result of customer discovery, prototype experimentation, and reflective feedback.

- Overall IEO was moderately high ( $M=3.776$ ) with acceptable internal consistency ( $\alpha=0.748$ ).
- $KMO=0.860$  and Bartlett's test was significant, but the reverse-worded innovativeness item created a method-like component and weakened the innovativeness subscale.
- No age, education, income or role comparison was statistically significant at  $\alpha=0.05$ .
- Entrepreneurial confidence had the largest convergent association with IEO ( $\rho=0.419$ ), followed by persistence, satisfaction, mindset and opportunity proactivity.
- State self-esteem increased explained variance from  $R^2=0.034$  to  $R^2=0.146$  beyond demographic controls; performance and appearance self-esteem were the clearest positive predictors.

## **8. CONCLUSION AND PRACTICAL IMPLICATIONS**

This study demonstrates that IEO is much more related to psychological self-appraisal than with the available demographic categories of a young education-linked Gujarat sample. The evidence points to a learning approach based on mastery experiences, confidence calibration, persistence in the face of failure, enactment of opportunities and repeated experimentation. The pre and post IEO profiles could be used as a developmental input for programmes, but the individual should not be ranked or a single score used as an entrepreneurial fate.

The results indicate a set of four design decisions for entrepreneurship educators and incubators: (1) teach entrepreneurship concepts through low-cost experiments that make uncertainty manageable; (2) give repeated practice in pitching and customer-discovery to develop calibrated confidence; (3) evaluate persistence by reflecting on milestones, not motivational claims; and (4) offer mentoring feedback that distinguishes the

quality of an idea from the value of the person. While demographic outreach is still essential for access and equity, developmental content should be attuned to not stereotype but to psychological needs.

## 9. SCOPE FOR FURTHER STUDY

Future research should begin with the following balanced strata: Age, Gender (not captured in the present instrument), Discipline, Region, and Entrepreneurial Experience. IEO scale should be bilingual cognitively interviewed and back translated and then confirmatory factor analyzed and measurement-invariant tested. Longitudinal designs should explore how changes in confidence and IEO relate to subsequent behaviours like opportunity interviews, prototype development, applications, venture formation, revenues or failure persistence. Variable centred averages may also be masking the identification of different IEO profiles using person centred techniques. Finally, experiments in entrepreneurship education could be conducted to determine if mastery-based interventions have an impact on IEO, and if they do, whether that impact is sustained.

## References

1. Ajzen, I. (1991), "The theory of planned behavior", *Organizational Behavior and Human Decision Processes*, Vol. 50 No. 2, pp. 179–211.
2. Bandura, A. (1997), *Self-Efficacy: The Exercise of Control*, W.H. Freeman, New York, NY.
3. Bolton, D.L. and Lane, M.D. (2012), "Individual entrepreneurial orientation: development of a measurement instrument", *Education + Training*, Vol. 54 Nos 2/3, pp. 219–233.
4. Covin, J.G. and Slevin, D.P. (1989), "Strategic management of small firms in hostile and benign environments", *Strategic Management Journal*, Vol. 10 No. 1, pp. 75–87.
5. Geldhof, G.J., Weiner, M., Agans, J.P., Mueller, M.K. and Lerner, R.M. (2014), "Understanding entrepreneurial intent in late adolescence: the role of intentional self-regulation and innovation", *Journal of Youth and Adolescence*, Vol. 43, pp. 81–91.
6. Goktan, A.B. and Gupta, V.K. (2015), "Sex, gender, and individual entrepreneurial orientation: evidence from four countries", *International Entrepreneurship and Management Journal*, Vol. 11, pp. 95–112.
7. Hair, J.F., Black, W.C., Babin, B.J. and Anderson, R.E. (2019), *Multivariate Data Analysis*, 8th ed., Cengage, Andover.
8. Heatherton, T.F. and Polivy, J. (1991), "Development and validation of a scale for measuring state self-esteem", *Journal of Personality and Social Psychology*, Vol. 60 No. 6, pp. 895–910.
9. Kaiser, H.F. (1974), "An index of factorial simplicity", *Psychometrika*, Vol. 39, pp. 31–36.
10. Kollmann, T., Stöckmann, C., Meves, Y. and Kensbock, J.M. (2017), "When members of entrepreneurial teams differ: linking diversity in individual-level entrepreneurial orientation to team performance", *Small Business Economics*, Vol. 48, pp. 843–859.
11. Krueger, N.F., Reilly, M.D. and Carsrud, A.L. (2000), "Competing models of entrepreneurial intentions", *Journal of Business Venturing*, Vol. 15 Nos 5/6, pp. 411–432.
12. Liñán, F. and Chen, Y.W. (2009), "Development and cross-cultural application of a specific instrument to measure entrepreneurial intentions", *Entrepreneurship Theory and Practice*, Vol. 33 No. 3, pp. 593–617.
13. Lumpkin, G.T. and Dess, G.G. (1996), "Clarifying the entrepreneurial orientation construct and linking it to performance", *Academy of Management Review*, Vol. 21 No. 1, pp. 135–172.
14. Miller, D. (1983), "The correlates of entrepreneurship in three types of firms", *Management Science*, Vol. 29 No. 7, pp. 770–791.
15. Newman, A., Obschonka, M., Schwarz, S., Cohen, M. and Nielsen, I. (2019), "Entrepreneurial self-efficacy: a systematic review of the literature on its theoretical foundations, measurement, antecedents, and outcomes, and an agenda for future research", *Journal of Vocational Behavior*, Vol. 110, pp. 403–419.
16. Podsakoff, P.M., MacKenzie, S.B., Lee, J.Y. and Podsakoff, N.P. (2003), "Common method biases in behavioral research: a critical review of the literature and recommended remedies", *Journal of Applied Psychology*, Vol. 88 No. 5, pp. 879–903.
17. Rauch, A. and Frese, M. (2007), "Let's put the person back into entrepreneurship research: a meta-analysis on the relationship between business owners' personality traits, business creation, and success", *European Journal of Work and Organizational Psychology*, Vol. 16 No. 4, pp. 353–385.
18. Rauch, A., Wiklund, J., Lumpkin, G.T. and Frese, M. (2009), "Entrepreneurial orientation and business performance: an assessment of past research and suggestions for the future", *Entrepreneurship Theory and Practice*, Vol. 33 No. 3, pp. 761–787.

19. Shane, S. and Venkataraman, S. (2000), "The promise of entrepreneurship as a field of research", *Academy of Management Review*, Vol. 25 No. 1, pp. 217–226.
20. Tabachnick, B.G. and Fidell, L.S. (2019), *Using Multivariate Statistics*, 7th ed., Pearson, New York, NY.
21. Venkataraman, S. (1997), "The distinctive domain of entrepreneurship research", in Katz, J.A. and Brockhaus, R.H. (Eds), *Advances in Entrepreneurship, Firm Emergence and Growth*, Vol. 3, JAI Press, Greenwich, CT, pp. 119–138.
22. Zhao, H., Seibert, S.E. and Hills, G.E. (2005), "The mediating role of self-efficacy in the development of entrepreneurial intentions", *Journal of Applied Psychology*, Vol. 90 No. 6, pp. 1265–1272.
23. Zhao, H., Seibert, S.E. and Lumpkin, G.T. (2010), "The relationship of personality to entrepreneurial intentions and performance: a meta-analytic review", *Journal of Management*, Vol. 36 No. 2, pp. 381–404.