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The Moderating Effect Of Entrepreneurial Aptitude On Incubation Center Effectiveness: Individual Differences In Engineering Students' Entrepreneurial Development

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While business incubators have become ubiquitous in engineering education, their effectiveness varies considerably across students. This study examines whether entrepreneurial aptitude moderates the relationships among incubator facilities, student engagement, and entrepreneurial intentions. Using multi-group analysis with Partial Least Squares Structural Equation Modeling (PLS-SEM) on data from 460 engineering students in Coimbatore, India, the researcher categorized respondents into high-aptitude (n=231) and low-aptitude (n=229) groups based on a validated entrepreneurial aptitude assessment. Results reveal significant moderation effects across all paths. For high-aptitude students, incubator facilities demonstrate stronger influence on engagement ($\beta = 0.834$, $p < 0.001$) compared to low-aptitude students ($\beta = 0.615$, $p < 0.001$), with the difference being statistically significant ($\Delta\beta = 0.219$, $p < 0.01$). Similarly, engagement exerts stronger effects on intentions for high-aptitude students ($\beta = 0.871$, $p < 0.001$) versus low-aptitude students ($\beta = 0.693$, $p < 0.001$), $\Delta\beta = 0.178$, $p < 0.05$. The moderated mediation analysis demonstrates that the indirect effect of facilities on intentions through engagement is significantly stronger for high-aptitude students ($\beta = 0.726$) compared to low-aptitude students ($\beta = 0.426$), $\Delta\beta = 0.300$, $p < 0.001$. The model explains substantially more variance for high-aptitude students ($R^2 = 0.756$ for intentions) compared to low-aptitude students ($R^2 = 0.476$). These findings advance person-environment fit theory by demonstrating that individual differences critically shape the effectiveness of institutional entrepreneurship support mechanisms, with important implications for targeted program design and resource allocation.

Keywords: Entrepreneurial aptitude, moderation analysis, business incubators, person-environment fit, multi-group analysis.

1. Introduction

The proliferation of business incubators in university settings reflects widespread recognition of entrepreneurship's importance in economic development and graduate employability. However, a persistent challenge confronts entrepreneurship educators and incubation center managers: identical programs and facilities yield dramatically different outcomes across students. While some students enthusiastically engage with available resources and develop strong entrepreneurial intentions, others remain disengaged despite exposure to the same opportunities. This variability suggests that institutional inputs alone cannot fully explain entrepreneurial development; rather, individual differences likely moderate the effectiveness of environmental support mechanisms.

Entrepreneurial aptitude-comprising cognitive capabilities, personality traits, and behavioral predispositions favorable to entrepreneurial activity-represents a potentially critical moderating variable. The concept draws from individual differences research demonstrating that people vary in their receptivity to and benefit from environmental interventions (Shirokova et al., 2016). In the entrepreneurship domain, Shah et al. (2020) demonstrated that personality traits moderate relationships between environmental factors and entrepreneurial intentions, suggesting that 'one-size-fits-all' approaches to entrepreneurship support may be suboptimal.

While prior research has established that both environmental factors (such as incubator facilities) and individual factors (such as aptitude) influence entrepreneurial outcomes, limited research has systematically examined their interactions. Person-environment fit theory suggests that optimal outcomes emerge from congruence between individual characteristics and environmental contexts (Kristof-Brown & Guay, 2011). Applied to entrepreneurship education, this framework implies that students with higher entrepreneurial aptitude should derive greater benefit from incubator facilities compared to those with lower aptitude. However, empirical evidence for such moderation effects in the incubation context remains scarce, particularly in emerging economy settings.

This study addresses this gap by investigating whether and how entrepreneurial aptitude moderates the relationships among incubator facilities, student engagement, and entrepreneurial intentions. Building on the mediation model established in prior research, the researcher examines whether the entire chain of relationships-from facilities to engagement to intentions-operates differently across aptitude levels. The multi-group analysis approach employed enables rigorous testing of whether path coefficients, indirect effects, and explained variance differ significantly between high-aptitude and low-aptitude students.

The Indian context provides a valuable setting for this investigation. Engineering institutions in India serve diverse student populations with varying entrepreneurial backgrounds, family business exposure, and personality profiles. Understanding how aptitude moderates incubation effectiveness can inform more targeted and efficient program design, moving beyond universal provision toward differentiated support strategies matched to student characteristics. This research therefore addresses three key questions: (1) Does entrepreneurial aptitude moderate

the relationship between incubator facilities and student engagement? (2) Does aptitude moderate the relationship between engagement and entrepreneurial intentions? (3) Does aptitude moderate the indirect effect of facilities on intentions through engagement (moderated mediation)?

2. Review of Literature

2.1 Entrepreneurial Aptitude: Conceptualization and Measurement

Entrepreneurial aptitude refers to the constellation of cognitive abilities, personality traits, motivational orientations, and behavioral tendencies that predispose individuals toward entrepreneurial activity and increase the likelihood of entrepreneurial success (Rauch & Frese, 2007). Unlike entrepreneurial intentions, which represent conscious decisions to pursue venture creation, aptitude encompasses relatively stable individual characteristics that shape how people perceive, process, and respond to entrepreneurial opportunities and challenges.

Research has identified several core components of entrepreneurial aptitude. Cognitive dimensions include creativity, opportunity recognition capability, risk assessment skills, and strategic thinking. Personality dimensions encompass traits such as need for achievement, risk-taking propensity, internal locus of control, innovativeness, and proactiveness. Motivational dimensions include intrinsic interest in entrepreneurship, passion for problem-solving, and drive for independence. The multidimensional nature of aptitude distinguishes it from single-trait approaches while recognizing common variance among these components.

Empirical research demonstrates that individuals higher in entrepreneurial aptitude exhibit greater awareness of entrepreneurial opportunities, stronger entrepreneurial self-efficacy, higher persistence in the face of obstacles, and ultimately higher rates of venture creation and success (Shirokova et al., 2016). Importantly, aptitude appears to influence not only direct entrepreneurial behavior but also the extent to which individuals benefit from entrepreneurship education and support programs.

2.2 Person-Environment Fit Theory in Entrepreneurship

Person-environment fit theory posits that individual outcomes are optimized when personal characteristics align with environmental contexts (Kristof-Brown & Guay, 2011). In organizational behavior research, fit theory has explained variations in job satisfaction, performance, and turnover as functions of congruence between person and job, person and organization, or person and vocation. Applied to entrepreneurship education, this framework suggests that the effectiveness of environmental support mechanisms depends critically on their match with individual student characteristics.

Fit can operate through multiple mechanisms. Selection mechanisms suggest that individuals gravitate toward environments suited to their characteristics. Socialization mechanisms propose that environments shape individuals to increase congruence over time. Most relevant to the present research, interaction mechanisms suggest that environments exert differential effects depending on individual characteristics-a classic moderation pattern. In the incubation

context, interaction fit implies that students with characteristics suited to entrepreneurship will derive greater benefit from incubator facilities compared to those lacking such characteristics.

Recent entrepreneurship research has begun to apply fit theory explicitly. Shah et al. (2020) demonstrated that personality traits moderate environmental influences on entrepreneurial intentions among Pakistani students. Shirokova et al. (2016) found that the relationship between entrepreneurship education and intentions varies across personality profiles in Russia. These studies support the general principle that individual differences condition environmental effects, yet systematic investigation of aptitude as a moderator of incubation center effectiveness remains limited.

2.3 Moderation Hypotheses Development

Building on person-environment fit theory and prior moderation research, this study proposes that entrepreneurial aptitude moderates the key relationships in the incubation effectiveness model. First, the relationship between incubator facilities and student engagement should be stronger for high-aptitude students. These students, possessing greater cognitive readiness, motivational orientation, and personality alignment with entrepreneurship, are likely more attuned to recognize the value of available facilities, more motivated to explore offerings, and more prone to envision how facilities could support their aspirations. Thus:

H1: Entrepreneurial aptitude moderates the relationship between incubator facilities and student engagement, such that the relationship is stronger for high-aptitude students.

Second, the relationship between student engagement and entrepreneurial intentions should be stronger for high-aptitude students. When these students engage with incubation centers, their higher cognitive capabilities enable faster learning, their personality traits facilitate better networking and resource acquisition, and their motivational orientations translate experiences more directly into intentions. Low-aptitude students may engage but extract less developmental value. Therefore:

H2: Entrepreneurial aptitude moderates the relationship between student engagement and entrepreneurial intentions, such that the relationship is stronger for high-aptitude students.

Third, examining the indirect pathway, the mediating effect of engagement linking facilities to intentions should be stronger for high-aptitude students. This moderated mediation hypothesis combines the previous two moderation effects to test whether the entire indirect path operates more powerfully for students with entrepreneurial aptitude. Thus:

H3: Entrepreneurial aptitude moderates the indirect effect of incubator facilities on entrepreneurial intentions through student engagement, such that the indirect effect is stronger for high-aptitude students.

3. Statement of the Problem

Despite substantial investments in business incubation infrastructure across Indian engineering institutions, considerable heterogeneity exists in students' responses to these facilities. While some students actively engage and develop strong entrepreneurial intentions, others remain disengaged despite identical resource availability. This variability suggests that universal provision of facilities may be insufficient; rather, effectiveness likely depends on individual student characteristics, particularly entrepreneurial aptitude.

Current practice in most institutions follows a universal access model where incubation facilities are made available to all students equally, with limited consideration of individual differences. This approach may result in suboptimal resource utilization and missed opportunities for targeted support strategies. Moreover, limited empirical evidence exists regarding whether and how entrepreneurial aptitude moderates the effectiveness of incubation facilities, especially in emerging economy contexts.

This study addresses these gaps by examining: (1) whether relationships among incubator facilities, student engagement, and entrepreneurial intentions differ significantly across aptitude levels; (2) the magnitude of moderation effects and their practical significance; and (3) implications for differentiated program design and targeted resource allocation strategies.

4. Objectives of the Study

1. To assess entrepreneurial aptitude levels among engineering students and categorize students into high-aptitude and low-aptitude groups.
2. To examine whether entrepreneurial aptitude moderates the relationship between incubator facilities and student engagement.
3. To investigate whether entrepreneurial aptitude moderates the relationship between student engagement and entrepreneurial intentions.
4. To test for moderated mediation by determining whether the indirect effect of incubator facilities on entrepreneurial intentions through student engagement differs significantly across aptitude levels.
5. To compare model explanatory power (R^2) across high-aptitude and low-aptitude groups.

5. Research Design and Methodology

5.1 Research Design and Sample

This study employed a quantitative research design with multi-group analysis to examine moderation effects. The sample comprised 460 engineering students from institutions in Coimbatore district, Tamil Nadu, India. The same dataset utilized in prior mediation analysis was employed, ensuring consistency while enabling examination of moderation effects through subgroup comparisons.

5.2 Entrepreneurial Aptitude Assessment

Entrepreneurial aptitude was measured using a validated 10-item scale assessing multiple dimensions including creativity, risk-taking propensity, need for achievement, internal locus

of control, innovativeness, and proactiveness. Items were rated on five-point Likert scales. The scale demonstrated strong internal consistency ($\alpha = 0.897$, CR = 0.921, AVE = 0.623). Median-split methodology was employed to categorize respondents into high-aptitude (n = 231, scores above median) and low-aptitude (n = 229, scores below median) groups. This dichotomization approach, while involving some information loss, facilitates clear interpretation of moderation patterns and is widely employed in moderation research.

5.3 Measurement of Other Constructs

Incubator facilities, student engagement, and entrepreneurial intentions were measured using the same instruments as the mediation study. Incubator facilities comprised five dimensions (infrastructure, marketing, training, networking, consultancy) with 27 total items. Student engagement included three dimensions (awareness, perceived value, intention to utilize) with 13 items. Entrepreneurial intentions encompassed three dimensions (perceived desirability, perceived feasibility, self-efficacy) with 15 items. All constructs demonstrated strong psychometric properties in both subgroups as detailed in the analysis section.

5.4 Aptitude Group Characteristics

Table 1 presents the characteristics and descriptive statistics for high-aptitude and low-aptitude groups.

Characteristic	High-Aptitude Group (n=231)	Low-Aptitude Group (n=229)	Difference
Mean Aptitude Score	4.32 (SD=0.41)	3.14 (SD=0.48)	t=27.34***
Male %	62.3%	53.7%	χ^2=3.51†
Average Age	20.8 years	20.6 years	t=1.12 ns
Family Business Background %	38.1%	24.5%	χ^2=10.23**
Prior Entrepreneurship Course %	41.6%	28.4%	χ^2=8.92**
Academic Performance (Mean %)	73.4%	70.8%	t=2.41*

Table 1: Comparison of High-Aptitude and Low-Aptitude Groups

Note: ***p<0.001; **p<0.01; *p<0.05; †p<0.10; ns = not significant

The high-aptitude group differed significantly from the low-aptitude group on several characteristics. As expected, mean aptitude scores differed substantially (4.32 vs. 3.14, $p < 0.001$). High-aptitude students were marginally more likely to be male, significantly more likely to have family business backgrounds and prior entrepreneurship coursework, and demonstrated slightly higher academic performance. These differences align with prior research linking entrepreneurial aptitude to family exposure and educational engagement.

5.5 Multi-Group Analysis Approach

Multi-group analysis (MGA) in PLS-SEM was employed to test moderation hypotheses. This approach estimates separate structural models for high-aptitude and low-aptitude groups, then tests whether path coefficients differ significantly across groups. The analysis proceeded in three stages: (1) measurement invariance assessment using MICOM procedure to ensure constructs are measured equivalently across groups; (2) separate structural model estimation for each group; and (3) significance testing of path coefficient differences using permutation-based tests (5,000 permutations). Moderated mediation was assessed by comparing indirect effects across groups.

6. Analysis and Results

6.1 Measurement Invariance Assessment

Before conducting multi-group analysis, measurement invariance was assessed using the MICOM procedure. Step 1 (configural invariance) was established by identical algorithm specifications across groups. Step 2 (compositional invariance) showed correlation values > 0.95 for all constructs, with permutation p-values > 0.05, confirming equivalence. Step 3 (equality of composite mean values and variances) revealed some differences, which is acceptable for PLS-MGA. Results confirmed partial measurement invariance, indicating that constructs are measured comparably across aptitude groups, enabling valid multi-group comparisons.

6.2 Measurement Model Assessment by Group

Table 2 presents measurement model assessment results for both aptitude groups, confirming construct reliability and validity in each subgroup**.**

Construct	**High-Aptitude Group**			**Low-Aptitude Group**		
	α	CR	AVE	α	CR	AVE
Incubator Facilities	0.956	0.961	0.782	0.948	0.953	0.754
Student Engagement	0.951	0.958	0.826	0.941	0.950	0.798
Entrepreneurial Intentions	0.958	0.966	0.893	0.950	0.958	0.869

Table 2: Measurement Model Reliability and Validity by Aptitude Group

All constructs demonstrated excellent psychometric properties in both groups. Cronbach's alpha exceeded 0.90, composite reliability exceeded 0.95, and AVE exceeded 0.75 in all cases, confirming strong internal consistency and convergent validity. Discriminant validity was also established in both groups using Fornell-Larcker criterion (results available upon request).

6.3 Multi-Group Structural Model Analysis

Table 3 presents the core multi-group analysis results, showing path coefficients for each aptitude group and tests of coefficient differences.

Hypothesis	Path	High-Aptitude β	Low-Aptitude β	Δβ	p-value	Decision
H1	Incubator Facilities → Student Engagement	0.834***	0.615***	0.219	<0.01	Supported
		(t=28.45)	(t=18.32)			
H2	Student Engagement → Entrepreneurial Intentions	0.871***	0.693***	0.178	<0.05	Supported
		(t=32.15)	(t=16.87)			
	Incubator Facilities → Entrepreneurial Intentions	0.145**	0.303***	-0.158	<0.10	
		(t=2.98)	(t=6.14)			

Table 3: Multi-Group Analysis of Path Coefficients

Note: ***p<0.001; **p<0.01; *p<0.05; Δβ = difference in path coefficients; positive values indicate stronger effects for high-aptitude group

The results provide strong support for moderation hypotheses H1 and H2. For H1, the path from incubator facilities to student engagement was significantly stronger for high-aptitude students ($\beta = 0.834$, $p < 0.001$) compared to low-aptitude students ($\beta = 0.615$, $p < 0.001$), with the difference being statistically significant ($\Delta\beta = 0.219$, $p < 0.01$). This indicates that incubator facilities are approximately 35% more effective at generating engagement among students with high entrepreneurial aptitude.

For H2, the path from student engagement to entrepreneurial intentions was also significantly stronger for high-aptitude students ($\beta = 0.871$, $p < 0.001$) versus low-aptitude students ($\beta = 0.693$, $p < 0.001$), $\Delta\beta = 0.178$, $p < 0.05$. This demonstrates that when students with higher aptitude engage with incubation centers, they develop entrepreneurial intentions approximately 26% more strongly than their low-aptitude counterparts.

Interestingly, the direct path from facilities to intentions showed the opposite pattern, being weaker for high-aptitude students ($\beta = 0.145$) than low-aptitude students ($\beta = 0.303$), $\Delta\beta$ = -

0.158, $p < 0.10$. This suggests that for high-aptitude students, the influence of facilities operates primarily through engagement, whereas for low-aptitude students, facilities exert more direct effects independent of engagement levels.

Table 4 compares the explanatory power of the model across aptitude groups.

Endogenous Variable	High-Aptitude R^2	Low-Aptitude R^2	Difference	% Increase
Student Engagement	0.689	0.372	0.317	85.2%
Entrepreneurial Intentions	0.756	0.476	0.280	58.8%

Table 4: Coefficient of Determination (R^2) Comparison Across Groups

The model explains substantially more variance for high-aptitude students compared to low-aptitude students. For student engagement, $R^2 = 0.689$ in the high-aptitude group versus 0.372 in the low-aptitude group, an 85.2% increase. For entrepreneurial intentions, $R^2 = 0.756$ versus 0.476, a 58.8% increase. These dramatic differences in explanatory power indicate that the incubation effectiveness model is considerably more applicable to students with entrepreneurial aptitude.

6.4 Moderated Mediation Analysis

Table 5 presents the moderated mediation analysis, examining whether the indirect effect of facilities on intentions through engagement differs across aptitude groups (H3).

Group	Indirect Effect β	Std. Error	t-value	p-value	95% CI
High-Aptitude	0.726***	0.031	23.42	<0.001	[0.665, 0.787]
Low-Aptitude	0.426***	0.042	10.14	<0.001	[0.344, 0.508]
Difference (Δβ)	0.300***	0.052	5.77	<0.001	[0.198, 0.402]

Table 5: Moderated Mediation Analysis Results

Note: ***p<0.001; Indirect effect = Facilities → Engagement → Intentions

The moderated mediation analysis strongly supports H3. The indirect effect of incubator facilities on entrepreneurial intentions through student engagement is significantly stronger for high-aptitude students ($\beta = 0.726$, $p < 0.001$) compared to low-aptitude students ($\beta = 0.426$, $p < 0.001$). The difference ($\Delta\beta = 0.300$, $p < 0.001$) is substantial and statistically significant, indicating that the mediating mechanism of engagement operates approximately 70% more powerfully for students with entrepreneurial aptitude. While engagement mediates for both

groups, its mediating role is markedly enhanced when students possess entrepreneurial characteristics.

7. Discussion and Implications

7.1 Discussion of Findings

This study examined whether entrepreneurial aptitude moderates the relationships among incubator facilities, student engagement, and entrepreneurial intentions in engineering education. The findings provide robust evidence for moderation across all hypothesized paths, with important theoretical and practical implications.

The significant moderation of the facilities-engagement relationship (H1 supported: $\Delta\beta = 0.219$, $p < 0.01$) demonstrates that students with higher entrepreneurial aptitude are substantially more responsive to incubator facilities. This aligns with person-environment fit theory (Kristof-Brown & Guay, 2011), suggesting that individuals with characteristics suited to entrepreneurship are more attuned to recognize, value, and engage with relevant environmental resources. High-aptitude students likely possess greater cognitive schemas for entrepreneurship, making them more capable of recognizing how facilities align with their aspirations. Their personality traits, such as proactiveness and need for achievement, may also motivate active exploration of available resources.

The moderation of the engagement-intentions relationship (H2 supported: $\Delta\beta = 0.178$, $p < 0.05$) reveals that engagement translates more powerfully into intentions for high-aptitude students. This finding extends Shah et al.'s (2020) work on personality moderation by demonstrating differential learning and development rates. When high-aptitude students engage with incubation centers, they likely extract greater value through faster skill acquisition, more effective networking, and stronger entrepreneurial identity formation. Their cognitive capabilities enable them to better synthesize experiences into actionable intentions, while their motivational orientations ensure sustained focus on entrepreneurial goals.

The moderated mediation finding (H3 supported: $\Delta\beta = 0.300$, $p < 0.001$) represents perhaps the most theoretically significant contribution. The indirect pathway from facilities through engagement to intentions operates approximately 70% more strongly for high-aptitude students. This demonstrates that aptitude moderates not just individual paths but the entire mediating mechanism. For high-aptitude students, the engagement-mediated pathway becomes the dominant route of influence, whereas for low-aptitude students, direct effects remain more prominent. This pattern suggests qualitatively different processes of entrepreneurial development across aptitude levels.

The dramatic differences in model explanatory power (R^2 of 0.756 vs. 0.476 for intentions) indicate that the incubation effectiveness framework is substantially more applicable to high-aptitude populations. For low-aptitude students, other factors not captured in the model-such as alternative career aspirations, family pressures, or economic constraints-likely play larger roles in shaping entrepreneurial intentions.

7.2 Theoretical Contributions

This research makes several theoretical contributions. First, it empirically demonstrates the applicability of person-environment fit theory to entrepreneurship education, showing that environmental interventions exert differential effects based on individual characteristics. Second, it extends prior moderation research by examining not just direct moderation but moderated mediation, revealing how aptitude shapes entire causal pathways rather than isolated relationships. Third, it challenges universal provision models implicit in much entrepreneurship education research, demonstrating that 'what works' depends critically on 'for whom.' Fourth, it contributes to the emerging literature on individual differences in entrepreneurship education effectiveness, providing quantitative evidence to complement qualitative insights from prior research.

7.3 Practical Implications

The findings have important practical implications for incubation center design and management. First, institutions should consider implementing differentiated support strategies matched to student aptitude levels. For high-aptitude students, emphasis should be on providing high-quality facilities and fostering deep engagement, as these students will convert such experiences into strong entrepreneurial intentions. For low-aptitude students, alternative approaches may be needed, perhaps focusing on foundational entrepreneurial mindset development before introducing advanced incubation services.

Second, aptitude assessment could be integrated into incubation center intake processes, not to exclude students but to tailor support. High-aptitude students might be fast-tracked into intensive incubation programs, mentorship relationships, and venture competitions. Low-aptitude students might benefit from preparatory programs building entrepreneurial awareness, self-efficacy, and foundational skills before engaging with full incubation services. This differentiated approach could optimize resource utilization and maximize developmental outcomes across diverse student populations.

Third, the findings suggest that institutions with limited resources might strategically prioritize recruitment and support of high-aptitude students into incubation programs, where return on investment is demonstrably higher. However, this should be balanced against equity considerations, as low-aptitude students do benefit from facilities and engagement, albeit to a lesser degree. Universal access should be maintained while recognizing that intensive support resources may yield differential returns.

Fourth, for low-aptitude students specifically, the stronger direct effect of facilities on intentions (compared to high-aptitude students) suggests that exposure and awareness-building may be sufficient to generate some entrepreneurial interest, even without deep engagement. Marketing and showcasing incubator facilities broadly may therefore serve a valuable function in sparking initial entrepreneurial curiosity among students who might not otherwise consider this path.

8. Conclusions, Limitations, and Future Research

This study investigated whether entrepreneurial aptitude moderates the relationships among incubator facilities, student engagement, and entrepreneurial intentions using multi-group analysis with data from 460 engineering students. Results strongly support all moderation hypotheses, demonstrating that incubation effectiveness depends critically on student characteristics. High-aptitude students show stronger responses to facilities, convert engagement more effectively into intentions, and exhibit substantially higher explained variance compared to low-aptitude peers.

These findings challenge universal provision assumptions in entrepreneurship education and support differentiated approaches to incubation center design and management. From a theoretical perspective, the research validates person-environment fit theory in entrepreneurship education contexts and extends understanding of how individual differences shape the effectiveness of institutional support mechanisms.

Several limitations warrant acknowledgment. First, the median-split categorization of aptitude, while facilitating interpretation, involves information loss compared to continuous moderation approaches; future research could employ Hayes' PROCESS macro or latent moderated structural equations for more nuanced analysis. Second, aptitude was measured at a single time point; longitudinal designs could reveal whether aptitude itself develops through incubation experiences or remains stable. Third, the study focused on a single emerging economy context; cultural and institutional factors may influence the strength and pattern of moderation effects across contexts. Fourth, actual entrepreneurial behavior was not examined, leaving questions about whether aptitude also moderates the intentions-behavior relationship.

Future research could extend this work in several directions. Comparative studies across different institutional, geographic, and cultural contexts would establish boundary conditions for aptitude moderation. Investigation of specific components of aptitude (cognitive vs. personality vs. motivational) could reveal which dimensions drive moderation effects most strongly. Examination of other potential moderators such as gender, family business background, or prior entrepreneurial experience could identify additional contingencies. Longitudinal designs tracking students from aptitude assessment through incubation participation to actual venture creation would strengthen causal inferences and reveal dynamic patterns. Finally, experimental or quasi-experimental designs implementing differentiated incubation programs matched to aptitude could provide causal evidence for the effectiveness of tailored approaches suggested by this correlational research.

References

1. Botha, M. (2020). Prior entrepreneurial exposure and action of women entrepreneurs: Exploring the moderation effects of entrepreneurial competencies in a developing country context. Frontiers in Psychology, 11, 922. https://doi.org/10.3389/fpsyg.2020.00922
2. Chlosta, S., Patzelt, H., Klein, S. B., & Dormann, C. (2012). Parental role models and the decision to become self-employed: The moderating effect of personality. Small Business Economics, 38(1), 121–138. https://doi.org/10.1007/s11187-010-9270-y

3. Cui, J., Sun, J., & Bell, R. (2021). The impact of entrepreneurship education on the entrepreneurial mindset of college students in China: The mediating role of inspiration and the role of educational attributes. The International Journal of Management Education, 19(1), 100296. https://doi.org/10.1016/j.ijme.2019.04.001
4. Fernández-Pérez, V., Montes-Merino, A., Rodríguez-Ariza, L., & Galicia, P. E. A. (2019). Emotional competencies and cognitive antecedents in shaping student's entrepreneurial intention: The moderating role of entrepreneurship education. International Entrepreneurship and Management Journal, 15(1), 281–305. https://doi.org/10.1007/s11365-017-0438-7
5. Krueger, N. F., Reilly, M. D., & Carsrud, A. L. (2000). Competing models of entrepreneurial intentions. Journal of Business Venturing, 15(5-6), 411–432. https://doi.org/10.1016/S0883-9026(98)00033-0
6. Koe, W. L., Sa'ari, J. R., & Abdul Majid, I. (2024). The mediating role of online student engagement between entrepreneurship education and entrepreneurial intention: A comparative study of public and private universities. Education + Training, 66(2), 285-302.
7. Kristof-Brown, A. L., & Guay, R. P. (2011). Person-environment fit. In S. Zedeck (Ed.), APA handbook of industrial and organizational psychology (Vol. 3, pp. 3-50). American Psychological Association.
8. Rauch, A., & 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, 16(4), 353-385.
9. Sansone, G., Battaglia, D., Landoni, P., & Paolucci, E. (2021). Academic spinoffs: The role of entrepreneurship education. International Entrepreneurship and Management Journal, 17(1), 369-399.
10. Shah, N., Soomro, B. A., & Kumar, M. (2020). Entrepreneurial orientation and entrepreneurial intentions: A moderated mediation model. International Journal of Entrepreneurship and Innovation, 21(3), 159-170.
11. Shirokova, G., Osiyevskyy, O., & Bogatyreva, K. (2016). Exploring the intention-behavior link in student entrepreneurship: Moderating effects of individual and environmental characteristics. European Management Journal, 34(4), 386-399.
12. Souitaris, V., Zerbinati, S., & Al-Laham, A. (2007). Do entrepreneurship programmes raise entrepreneurial intention of science and engineering students? The effect of learning, inspiration and resources. Journal of Business Venturing, 22(4), 566-591.
13. Mei, H., Ma, Z., Jiao, S., Chen, X., Lv, X., & Zhan, Z. (2017). The sustainable personality in entrepreneurship: The relationship between big six personality, entrepreneurial self-efficacy, and entrepreneurial intention in the Chinese context. Sustainability, 9(9), 1649. https://doi.org/10.3390/su9091649
14. Shah, I. A., Amjed, S., & Jaboob, S. (2020). The moderating role of entrepreneurship education in shaping entrepreneurial intentions. Journal of Economic Structures, 9(1), 19. https://doi.org/10.1186/s40008-020-00195-4
15. Shirokova, G., Osiyevskyy, O., & Bogatyreva, K. (2016). Exploring the intention–behavior link in student entrepreneurship: Moderating effects of individual and

environmental characteristics. European Management Journal, 34(4), 386–399. https://doi.org/10.1016/j.emj.2015.12.007
16. Shi, Y., Yuan, T., Bell, R., & Wang, J. (2020). Investigating the relationship between creativity and entrepreneurial intention: The moderating role of creativity in the theory of planned behavior. Frontiers in Psychology, 11, 1209. https://doi.org/10.3389/fpsyg.2020.01209
17. Souitaris, V., Zerbinati, S., & Al-Laham, A. (2007). Do entrepreneurship programmes raise entrepreneurial intention of science and engineering students? The effect of learning, inspiration and resources. Journal of Business Venturing, 22(4), 566–591. https://doi.org/10.1016/j.jbusvent.2006.05.002
18. Zhang, J., & Huang, J. (2021). Entrepreneurship education and entrepreneurial intention among college students: The mediating role of entrepreneurial self-efficacy and the moderating role of grit. SAGE Open, 11(3). https://doi.org/10.1177/21582440211032510