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Fear of Failure as a Gendered Barrier to Building Sustainable Entrepreneurial Ecosystems

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ABSTRACT

Drawing on four well-established theoretical perspectives, this paper proposes an intersectional, emotionally grounded framework for understanding how gender and age jointly shape entrepreneurial perceptions across psychological, social, and cultural domains. Using 2024 Italian Global Entrepreneurship Monitor data and ordinal logistic regression, we find that women are approximately 30% more likely to report fear of failure and 20% less likely to feel self-efficacious, despite perceiving high social respect for entrepreneurs. These emotional constraints persist across age, suggesting that gendered affective barriers are stable over time. We also demonstrate that composite indices, commonly used in entrepreneurial research, partially obscure gendered nuances that are better revealed through disaggregated analysis. This study contributes to entrepreneurship theory by integrating emotional risk into socially embedded models of entrepreneurial cognition. By addressing gendered emotional barriers, we contribute to building more socially sustainable and resilient entrepreneurial ecosystems, in line with the UN Sustainable Development Goals (SDGs). We further frame these barriers as strategic obstacles to environmentally responsible entrepreneurship, underscoring their relevance to SDGs 5, 8, 9, and 12. Finally, we highlight managerial implications: Incubators, accelerators, and firms should design gender-sensitive interventions, such as inclusive training, mentorship, and financial instruments, to foster innovation, responsible production, and the resilience of entrepreneurial ecosystems.

1 | Introduction

Entrepreneurship is a cornerstone of economic development, strongly contributing to technological progress, new job creation, productivity, and social mobility (Borah and Bhowal 2023). It is also increasingly recognized as a driver of sustainable development, not only in economic and technological terms but also in advancing social sustainability and resilience of entrepreneurial ecosystems. This view builds on foundational work in *Business Strategy and the Environment*, where Schaltegger and Wagner (2011) conceptualize sustainable entrepreneurship as a critical mechanism linking business innovation with sustainability transformation. Our study extends this tradition by focusing on gendered emotional

barriers, highlighting how fear of failure constrains the inclusive potential of sustainable entrepreneurial ecosystems. Yet, despite its macroeconomic importance, engagement in entrepreneurship remains uneven across demographic lines, particularly in relation to gender and age, which influence how individuals perceive opportunities, risks, and their own entrepreneurial capabilities (Shinnar et al. 2017; Ilie et al. 2021; Matricano 2021; Abbasianchavari and Block 2022; Chang et al. 2022; Gurieva et al. 2022; Stephan et al. 2022; Simmons et al. 2024; Syed et al. 2024). These inequalities are strong barriers to individual participation but, above all, also limit the inclusiveness and long-term sustainability of entrepreneurial ecosystems, undermining the potential contribution of entrepreneurship to the Sustainable Development Goals (SDGs),

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especially Goal 5 (Gender Equality) and Goal 8 (Decent Work and Economic Growth). In addition, inclusive entrepreneurial ecosystems contribute to SDG 9 (Industry, Innovation, and Infrastructure) by fostering innovation and sustainable infrastructure and SDG 12 (Responsible Consumption and Production) by promoting responsible production and consumption through diverse entrepreneurial participation. Finally, recent data suggest that women entrepreneurs are more likely than men to consider sustainability issues in their business decisions, particularly in high- and middle-income economies (Potluri et al. 2024; Global Entrepreneurship Monitor 2025; female entrepreneurship and sustainability: behavioral insights 2025). Yet emotional barriers such as fear of failure may prevent this potential from fully translating into sustainable entrepreneurial practice.

Although earlier research predominantly emphasized differences in perceived skills or access to resources, hence attributing this gap to cognitive factors (Langowitz and Minniti 2007; Kör et al. 2021), recent research has highlighted the role of emotional barriers, and in particular the fear of failure, as a critical yet undertheorized determinant shaping entrepreneurial intentions (Morgan and Sisak 2015; Simmons et al. 2024; Shahid et al. 2024). However, mainstream models continue to prioritize skills-based explanations, relegating emotional deterrents to a peripheral role (Jennings et al. 2022; Mathur and Phillips 2024).

This study addresses these limitations by placing emotional barriers, and specifically fear of failure, at the center of the analysis of gendered entrepreneurial perceptions. We extend existing literature theoretically, empirically, and methodologically. Theoretically, we integrate and extend social role theory, risk aversion theory, fear of failure theory, and life course theory to propose an intersectional, emotionally grounded framework for understanding entrepreneurial cognition. We reposition fear of failure as a socially embedded, gendered constraint rather than a downstream outcome of cognitive bias. This reframing challenges dominant cognition-focused models and calls for more emotionally grounded and gender-sensitive perspectives. By framing gendered emotional barriers as obstacles to building inclusive and sustainable entrepreneurial ecosystems, we link individual-level perceptions to broader debates on sustainable business strategy and social resilience. Importantly, these role expectations also constrain women's participation in sustainability-oriented entrepreneurship, where innovation is increasingly tied to environmental and social responsibility. Empirically, we analyze newly released microdata from the 2024 Global Entrepreneurship Monitor (GEM) Adult Population Survey for Italy, a context marked by persistent gender inequality and cultural ambivalence toward entrepreneurship yet understudied in cross-national entrepreneurship research. Methodologically, we combine rigorous quantitative statistical analysis with an intersectional life-course perspective to examine how gender and age interact to shape entrepreneurial perceptions across psychological, social, and cultural domains. By bringing these theoretical and empirical perspectives together, we contribute to ongoing debates on how demographic categories such as gender and age interact with affective and cognitive mechanisms to shape entrepreneurial engagement. Our findings inform both entrepreneurship theory and ecosystem design by revealing the structural and emotional underpinnings

of gendered entrepreneurial perceptions. In doing so, we reposition entrepreneurial perception as not only a cognitive and emotional process but also a critical dimension of business sustainability, with implications for both policy and strategy. From a managerial standpoint, enhancing the sustainability and resilience of entrepreneurial ecosystems requires the strategic adoption of gender-sensitive interventions, including inclusive training, structured mentorship, and adaptive financial instruments, that can mitigate emotional barriers and expand equitable participation.

2 | Theoretical Background

Entrepreneurial engagement is shaped by a constellation of psychological, social, and cultural factors that vary across demographic lines. Gender and age, in particular, influence perceptions of feasibility, desirability, and capability in relation to entrepreneurship (Koellinger et al. 2011; Chang et al. 2022). Although traditional perspectives emphasized cognitive constraints such as self-efficacy or opportunity recognition, recent work highlights affective barriers—fear, uncertainty, and anticipated failure—as key deterrents, especially among women and other underrepresented groups (Simmons et al. 2024).

We integrate four theoretical perspectives to build a framework that explains how gendered psychological and social dynamics shape entrepreneurial perception.

1. **Social role theory:** Gendered social expectations constrain behavior by reinforcing role-congruent norms. Women are socialized to be risk-averse, communal, and modest, diverging from dominant entrepreneurial archetypes that valorize assertiveness and autonomy (Eagly and Wood 2012; del Carmen Triana et al. 2023; Sundermeier et al. 2024). These misalignments reduce entrepreneurial self-efficacy and generate psychological dissonance (Díaz García and Welter 2011; Jennings et al. 2022; Boddington 2023). Crucially, role expectations also limit women's participation in sustainability-oriented entrepreneurship, where innovation is increasingly tied to environmental and social responsibility. Although women entrepreneurs have been shown to exhibit greater sensitivity to sustainability concerns in business design, structural barriers and affective constraints limit their ability to enact these values in practice
2. **Risk aversion and fear of failure theories:** Gender differences in opportunity pursuit are partly explained by asymmetric perceptions of financial and reputational risk (Dohmen et al. 2011). Fear of failure further emphasizes emotional inhibition, where anticipation of failure generates avoidance (Atkinson 1957). We interpret fear of failure as a socially embedded, gendered construct, shaped by norms and expectations rather than purely personal disposition.
3. **Social capital and opportunity perception:** Entrepreneurial opportunities and networks are mediated by social position. Women's access is constrained by occupational segregation, caregiving responsibilities, and exclusion from male-dominated networks, reducing the

likelihood of seeing entrepreneurship as feasible or desirable (Davidsson and Honig 2003; Noguera et al. 2013). Institutional theory adds that gendered narratives shape who “belongs” in entrepreneurship (Ahl 2002), further limiting women's visibility of opportunities. These barriers also restrict participation in sustainability-focused industries, where networks and role models are essential to innovation. Finally, signaling theory research shows that sustainability-focused entrepreneurs must rely on specific institutional and relational signals to attract resources (Yang et al. 2024)

4. Life course theory: Entrepreneurial perceptions evolve across the lifespan (Settersten 2003; Azoulay et al. 2020; Lanh et al. 2024). Younger individuals emphasize creativity and independence, whereas older individuals bring greater human capital but face higher opportunity costs. Yet emotional barriers such as fear of failure often persist, suggesting that gendered affective inequalities remain stable over time.

Together, these perspectives provide a strong foundation, but none fully capture how gendered emotional responses, and particularly fear of failure, are socially constructed, persist across the life course, and constrain participation in sustainability-oriented entrepreneurship. Our contribution lies in bridging these perspectives to provide a more comprehensive account of gendered entrepreneurial deterrents as barriers to inclusive and resilient ecosystems.

3 | Hypotheses

Building on the theories outlined above, we propose five hypotheses examining how gender and age shape entrepreneurial perceptions across emotional, cognitive, social, and cultural dimensions.

Hypothesis 1. *Women report higher levels of fear of failure than men in the context of entrepreneurship.*

This hypothesis is grounded in risk aversion theory and fear of failure theory, which suggest that women may perceive greater emotional and reputational costs from entrepreneurial failure, leading to heightened psychological inhibition (Dohmen et al. 2011; Morgan and Sisak 2015). According to fear of failure theory (Conroy 2002), this emotion arises when individuals anticipate that failure will lead to shame, loss of status, or social judgment. In entrepreneurial contexts, where success is public, uncertain, and personally tied to identity, these fears are amplified. For women, such emotional deterrents are intensified by gendered social expectations and stereotype threat. Empirical research consistently finds that women report greater fear of failure than men, even when they regard entrepreneurship as a respected career path (Arenius and Minniti 2005; Simmons et al. 2024). When women consider entering this domain, they face the dual burden of proving competence and avoiding reputational damage. This increases the emotional cost of potential failure, leading to elevated fear even when objective risk is constant. Therefore, the gender gap in fear of failure is not merely psychological but socially embedded: a product of cultural

narratives that impose asymmetric penalties for failure based on gender.

Hypothesis 2. *Women report lower perceived entrepreneurial skills compared to men.*

Social role theory posits that competence in assertive, technical, or risk-intensive domains is stereotypically ascribed to men. These gendered expectations shape women's internal self-concept, especially when external cues (e.g., media portrayals, peer norms, and lack of female role models) reinforce male-dominated entrepreneurial archetypes (Eagly and Wood 2012; Jennings et al. 2022). Even when equally qualified, women often internalize doubts about their competence. This is a well-documented phenomenon in self-efficacy theory and stereotype threat literature (Wilson et al. 2007; Gupta and Bhawe 2007). In entrepreneurship, this manifests as a systematic underestimation of capabilities due to perceived mismatch between self and role. Thus, perceived skills gaps among women are not merely cognitive errors but structural consequences of role incongruence and stereotype reinforcement. Research shows that entrepreneurship is still culturally perceived as a masculine-coded domain, associated with traits like assertiveness and dominance (Koellinger et al. 2011). Prior studies have found that women consistently underestimate their entrepreneurial capabilities relative to men, regardless of objective qualifications (Madawala et al. 2023; Nguyen et al. 2023).

Hypothesis 3a. *Women are less likely than men to know other entrepreneurs.*

Hypothesis 3b. *Women are less likely than men to perceive local entrepreneurial opportunities.*

Hypothesis 3c. *Perceptions of environmental ease of starting a business do not significantly differ by gender.*

Access to social capital, including knowing other entrepreneurs and perceiving opportunities in one's immediate environment, is a critical factor in entrepreneurial engagement. However, structural and cultural barriers often constrain women's access to entrepreneurial networks and role models, limiting both opportunity recognition and peer influence (Lucarelli et al. 2025; Noguera et al. 2013; Stoker et al. 2024). Drawing from social capital theory, entrepreneurial intent is strongly influenced by exposure to entrepreneurial role models and networks (Davidsson and Honig 2003). Yet women often face network segregation due to occupational clustering, exclusion from male-dominated sectors, and time constraints from unpaid care work. These barriers reduce women's access to entrepreneurial reference groups, limiting the flow of encouragement, advice, and tacit knowledge. This lack of embeddedness in entrepreneurial communities reinforces perceptions of entrepreneurship as distant or inaccessible, especially for women without direct exposure to relatable success stories (Langowitz and Minniti 2007). Opportunity perception is not only an individual cognitive process but also socially constructed. Gendered occupational paths and cultural narratives can limit women's exposure to diverse market gaps, making opportunities less visible.

According to institutional theory, norms around who “belongs” in entrepreneurship influence what people view as viable or desirable opportunities (Ahl 2002; Welter and Smallbone 2010). Additionally, gender-based constraints (e.g., safety, mobility, and industry fit) reduce the perceived feasibility of local opportunities. Thus, social conditioning and structural filtering jointly dampen opportunity recognition for women—even when formal conditions are identical. At the same time, institutional theory also suggests that perceptions of the business environment, including regulatory burden, procedural complexity, and infrastructure, influence entrepreneurial intention. These macrolevel perceptions are often framed as gender-neutral in public discourse and media, especially in advanced economies like Italy. Although emotional and cognitive variables are shaped by gendered expectations, institutional perceptions may reflect a shared environmental reality. We therefore expect no significant gender-based variation in perceived ease of starting a business, highlighting the specificity of gender gaps to affective and social perception domains, rather than structural ones.

Hypothesis 4. *Age moderates the relationship between gender and entrepreneurial perceptions, with gender differences decreasing across older age groups.*

Life course theory posits that entrepreneurial perceptions evolve with age as individuals accumulate experience, face shifting opportunity costs, and assume different social roles (Settersten 2003; Azoulay et al. 2020). Younger individuals may lack confidence or fear social scrutiny, whereas older individuals often acquire greater resilience, decision autonomy, and psychological capital. Thus, fear of failure or low self-efficacy may naturally decline with age. However, persistent societal norms and institutional barriers, such as internalized stereotypes or unequal role expectations, may sustain gendered perceptual gaps throughout the life course. If aging reduces perceptual gaps, it would imply that experience can partially offset gendered emotional constraints. Conversely, if gender gaps remain constant with age, it suggests that these perceptions are deeply institutionalized and not easily mitigated by time or experience. Testing this interaction allows us to assess whether aging attenuates or reproduces gendered entrepreneurial inequalities.

Hypothesis 5. *Composite indices (INDSUP24 and CULSUP24) partially capture gender and age disparities but obscure important differences evident in individual psychological variables.*

Large-scale surveys often rely on composite indices, such as INDSUP24 and CULSUP24, to assess entrepreneurial perceptions. These composite indices are designed to capture broad individual and cultural support for entrepreneurship but often exclude affect-laden constructs such as fear of failure. According to theories of construct validity and emotional salience in entrepreneurial cognition (Cronbach and Meehl 1955; Bagozzi et al. 1991), such omissions risk masking significant perceptual differences across gender and age. Specifically, emotional deterrents, which are disproportionately reported by women, are not adequately reflected in these indices, which focus on more neutral or cognitive aspects (e.g., opportunity recognition and media visibility). We therefore expect gender and age disparities

to emerge more strongly in disaggregated variables than in aggregate indices, as composite measures risk flattening important psychological variation.

4 | Data and Framework

We draw on the 2024 Global Entrepreneurship Monitor (GEM) Adult Population Survey (APS) for Italy, which provides a nationally representative sample of 2004 adults (aged 18–65). GEM APS is widely recognized for its methodological rigor and comprehensive coverage of entrepreneurial activity, including demographic characteristics, motivations, perceived capabilities, and societal attitudes (Reynolds et al. 2005; Global Entrepreneurship Monitor 2025). Italy offers a relevant context given its persistent gender inequalities and cultural ambivalence toward entrepreneurship, combined with policy efforts to promote inclusive and sustainable business ecosystems.

Our analysis focuses on 12 variables that capture entrepreneurial perceptions across psychological, social, and cultural domains. These include 10 individual-level indicators (e.g., fear of failure, self-assessed skills, opportunity recognition, and perceived ease of starting a business) and two composite indices developed by GEM: INDSUP24 (individual-level support) and CULSUP24 (cultural support). Although these indices summarize broad patterns, they omit critical affective components such as fear of failure. To address this limitation, we analyze both indices and disaggregated variables, enabling a more precise assessment of gendered and age-based disparities. This dual approach ensures alignment between theoretical constructs and empirical measures while capturing barriers that affect the inclusiveness and sustainability of entrepreneurial ecosystems.

Table 1 describes the variables and their mapping to the hypotheses, whereas Figure 1 summarizes the conceptual framework underpinning our analysis.

5 | Methodology

We assess gender- and age-related differences in entrepreneurial perceptions using ordinal logistic regression. When dealing with ordered categories, such as variables measured on Likert scales, ordinal logistic regression is both statistically appropriate and substantively meaningful, as it allows us to estimate the probability of respondents reporting higher or lower levels of entrepreneurial perceptions (O’Connell 2006; Agresti 2010; Kissell 2020). This design not only fits the structure of the data but also makes it possible to identify how demographic inequalities manifest in perceptions that underpin the inclusiveness and sustainability of entrepreneurial ecosystems.

Before estimating models, we ran descriptive analyses for all variables included in the study. Table 2 reports the mean, standard deviation, valid count, and range of values for each variable, first for the full sample and then disaggregated by gender. The valid count refers to the number of respondents who provided valid answers, excluding “refuse to respond” and “do not know.” The full sample comprises 2004 Italian adults (1060 women and 944 men). All variables were recoded to reflect

TABLE 1 | Variables measuring individual perception of entrepreneurship.

Variable	Scale	Question	Linked hypothesis	Domani
<i>fearfailL</i>	Likert (−2 to 5)	You would not start a business for fear it might fail.	Hypothesis 1	Psychological
<i>suskillL</i>	Likert (−2 to 5)	You personally have the knowledge, skill, and experience required to start a new business.	Hypothesis 2	Psychological
<i>knowentR</i>	Ordinal (0–3)	How many people do you know personally who have started a business or become self-employed in the past 2 years?	Hypothesis 3a	Social
<i>oppism</i>	Likert (−2 to 5)	You rarely see business opportunities, even if you are very knowledgeable in the area.	Hypothesis 3b	Psychological
<i>oportL</i>	Likert (−2 to 5)	In the next 6 months, there will be good opportunities for starting a business in the area where you live.	Hypothesis 3b	Social/territorial
<i>easystartL</i>	Likert (−2 to 5)	In your country, it is easy to start a business.	Hypothesis 3b	Territorial
<i>proact</i>	Likert (−2 to 5)	Even when you spot a profitable opportunity, you rarely act on it.	Hypothesis 3b	Psychological
<i>nbgoodcL</i>	Likert (−2 to 5)	Most people consider starting a new business a desirable career choice.	Hypothesis 5	Cultural
<i>nbstatusL</i>	Likert (−2 to 5)	Those successful at starting a new business have high status and respect.	Hypothesis 5	Cultural
<i>nbmediaL</i>	Likert (−2 to 5)	You often see stories in the public media/internet about successful new businesses.	Hypothesis 5	Cultural
<i>INDSUP24</i>	Composite Index (0–3)	Sum of binary yes-scores on SUSKIL24, KNOWEN24, and OPPORT24.	Hypothesis 5	Perceived individual support
<i>CULSUP24</i>	Composite Index (0–3)	Sum of binary yes-scores on NBGOOD24, NBSTAT24, and NBMEDI24.	Hypothesis 5	Perceived cultural support

Source: GEM APS Italy 2024.

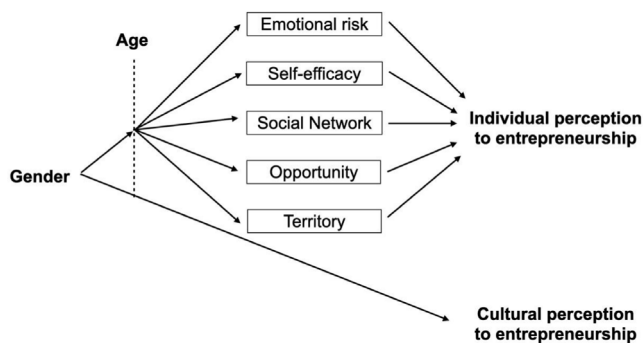


FIGURE 1 | Conceptual model of intersectional entrepreneurial perception.

ordinal response levels. Interestingly, valid counts for the integrated indices *INDSUP24* and *CULSUP24* are substantially lower than those for individual variables, which further justifies our complementary focus on disaggregated measures.

Descriptive insights already reveal modest but consistent gender differences, particularly in fear of failure (*fearfailL*) and access to entrepreneurial networks (*knowentR*). In contrast, cultural support indicators such as *CULSUP24* appear less affected by gender. Table 2 also highlights age-related variation: Female respondents are, on average, slightly older than male respondents.

Figure 2 illustrates this age distribution by gender, showing an overrepresentation of women in the 44–54 age group, whereas younger age bins include relatively more men. We also note that, both for females and males, the percentage of respondents grows for older age bins.

Finally, Figure 3 further visualizes the distribution of all 12 perception variables by gender, highlighting gender-specific skews in some items, particularly at distributional tails.

These descriptive patterns inform the regression analyses presented below.

TABLE 2 | Descriptive statistics for each variable, first cumulative, and then grouped by gender.

Variable	Gender	Valid count	Mean	Standard deviation	Min value (valid)	Max value (valid)
<i>age</i>	All	2000	44.67 ± 0.31	13.67	18	64
<i>age</i>	Female	1058	45.74 ± 0.41	13.295	18	64
<i>age</i>	Male	942	43.46 ± 0.46	13.986	18	64
<i>fearfailL</i>	All	1987	3.23 ± 0.03	1.408	1	5
<i>fearfailL</i>	Female	1050	3.40 ± 0.04	1.379	1	5
<i>fearfailL</i>	Male	937	3.05 ± 0.05	1.419	1	5
<i>suskillL</i>	All	1975	3.05 ± 0.03	1.307	1	5
<i>suskillL</i>	Female	1041	2.92 ± 0.04	1.320	1	5
<i>suskillL</i>	Male	934	3.20 ± 0.04	1.276	1	5
<i>oppism</i>	All	1952	3.53 ± 0.03	1.179	1	5
<i>oppism</i>	Female	1025	3.59 ± 0.04	1.165	1	5
<i>oppism</i>	Male	927	3.47 ± 0.04	1.193	1	5
<i>knowentR</i>	All	1935	0.90 ± 0.02	1.036	0	3
<i>knowentR</i>	Female	1019	0.78 ± 0.03	0.982	0	3
<i>knowentR</i>	Male	916	1.03 ± 0.04	1.078	0	3
<i>opportL</i>	All	1864	2.58 ± 0.03	1.263	1	5
<i>opportL</i>	Female	975	2.47 ± 0.04	1.252	1	5
<i>opportL</i>	Male	889	2.69 ± 0.04	1.265	1	5
<i>easystartL</i>	All	1948	2.20 ± 0.03	1.190	1	5
<i>>easystartL</i>	Female	1025	2.19 ± 0.04	1.198	1	5
<i>easystartL</i>	Male	923	2.21 ± 0.04	1.181	1	5
<i>proact</i>	All	1939	3.24 ± 0.03	1.236	1	5
<i>proact</i>	Female	1019	3.32 ± 0.04	1.229	1	5
<i>proact</i>	Male	920	3.15 ± 0.04	1.237	1	5
<i>nbgoodcL</i>	All	1945	3.38 ± 0.03	1.151	1	5
<i>nbgoodcL</i>	Female	1027	3.37 ± 0.04	1.128	1	5
<i>nbgoodcL</i>	Male	918	3.39x000B1;0.04	1.176	1	5
<i>nbstatusL</i>	All	1973	3.28 ± 0.03	1.151	1	5
<i>nbstatusL</i>	Female	1043	3.28 ± 0.04	1.139	1	5
<i>nbstatusL</i>	Male	930	3.28 ± 0.04	1.166	1	5
<i>nbmediaL</i>	All	1954	3.23 ± 0.03	1.168	1	5
<i>nbmediaL</i>	Female	1028	3.21 ± 0.04	1.173	1	5
<i>nbmediaL</i>	Male	926	3.25 ± 0.04	1.162	1	5
<i>INDSUP24</i>	All	1263	1.41 ± 0.03	1.120	0	3
<i>INDSUP24</i>	Female	676	1.29 ± 0.04	1.023	0	3
<i>INDSUP24</i>	Male	587	1.54 ± 0.04	0.984	0	3
<i>CULSUP24</i>	All	1135	2.01 ± 0.03	1.004	0	3
<i>CULSUP24</i>	Female	594	2.03 ± 0.04	1.021	0	3
<i>CULSUP24</i>	Male	541	2.00 ± 0.04	0.986	0	3

We perform 12 separate regression models, using each perception variable as the dependent outcome and gender (coded 1 = male; 2 = female) as the main predictor. We then estimate an extended version of each model that includes age as a moderator. All models are estimated using the “OrderedModel” function from the “statsmodels” Python package,¹ with a “probit” link function. We also tested logit specifications and obtained substantively identical results. A mathematical explanation of the foundation of the models is provided in the appendix.

To assess whether the strength or direction of gender differences in entrepreneurial perceptions changes as a function of age, we introduce an interaction term (gender × age) in our ordinal logistic regression framework, maintaining the “probit” link function. A statistically significant interaction coefficient

would suggest that the influence of gender is not constant across age groups but instead varies systematically. A positive coefficient means the effect of gender increases with age, whereas a negative one means the effect of gender decreases with age. Age was mean-centered prior to interaction to improve interpretability and reduce multicollinearity (Jaccard et al. 1990; Aiken and West 1991).

The following statistical outputs are reported for each model:

- Gender coefficient: Positive values indicate women are more likely to report higher perception scores. A positive (negative) coefficient indicates that female (male) score higher on average.
- Age coefficient: direct effect of age (in moderated models).
- Interaction coefficient captures variation in gender effects across age. A positive coefficient suggests that the gender effect increases with age, whereas a negative coefficient implies that it decreases.
- Odds ratios (OR): interpretable effect sizes. A value above 1 indicates a greater likelihood of higher scores for women; values below 1 indicate the opposite.
- *p* values: testing the null hypothesis, with a significance threshold of $p < 0.05$.
- Akaike information criterion (AIC): used to compare model fit, computed as $AIC = -2 \log(L) + 2k$, where L is the Likelihood and k is the number of parameters in the model.

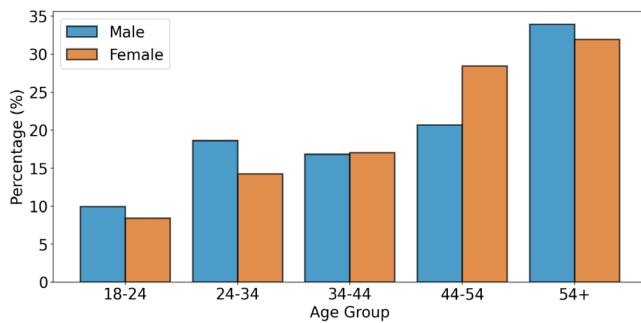


FIGURE 2 | The age distribution of the respondents grouped in five age bins and split by gender.

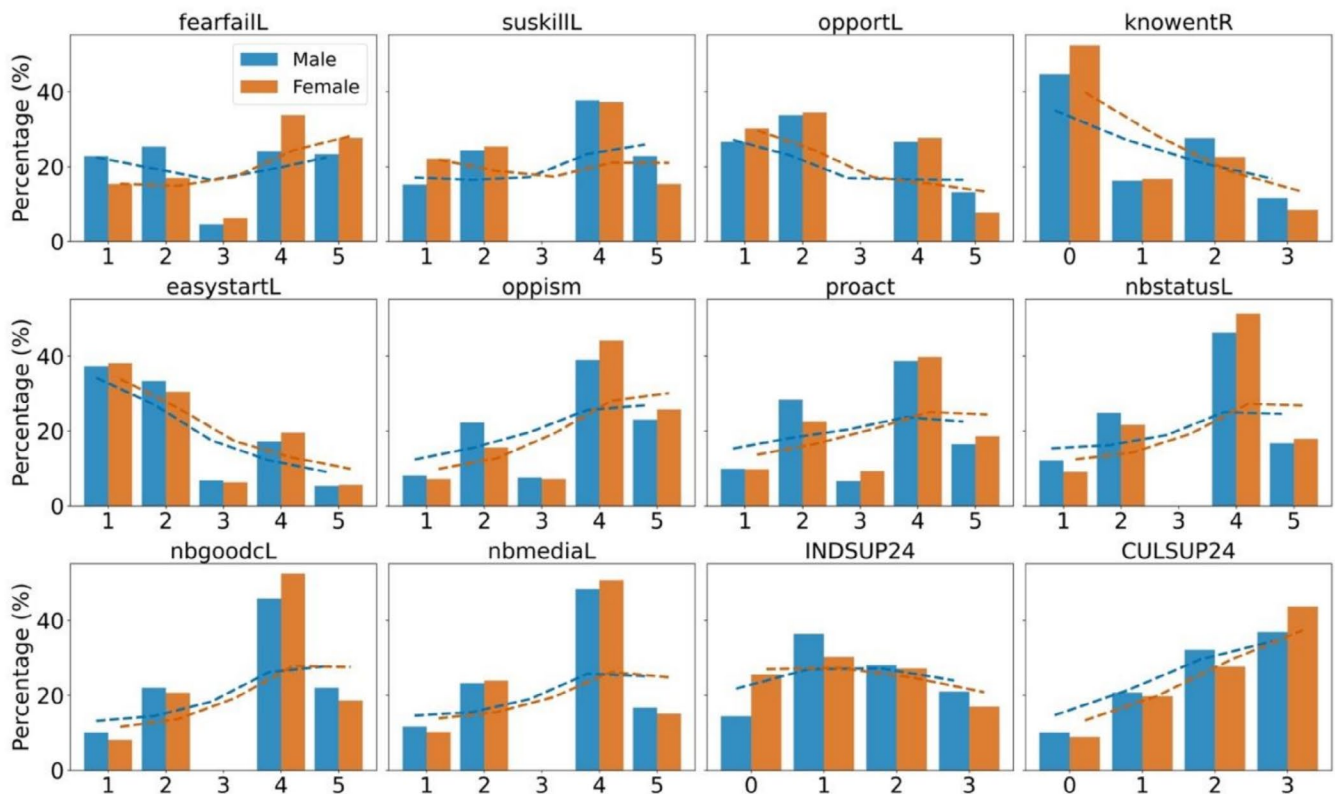


FIGURE 3 | The distribution of answers for the considered variables split by gender.

This methodological design strengthens construct validity by combining analyses of disaggregated variables with composite indices, ensuring that affective dimensions such as “fear of failure” are not overlooked. More broadly, our empirical strategy connects individual-level perceptions to systemic challenges for sustainable entrepreneurship, positioning emotional, and cognitive barriers as both microlevel deterrents and macrolevel constraints on the resilience of entrepreneurial ecosystems.

6 | Results

The results of the baseline models including only gender as a predictor are presented in Table 3.

The strongest and most statistically significant gender differences (p values $\ll 0.05$) are observed in fear of failure, followed by the perceived entrepreneurial skills. Specifically, women are approximately 30% more likely than men to report fear of failure (OR = 1.301, $p < 0.001$) and roughly 20% less likely to perceive themselves as having the necessary skills to start a business (OR = 0.784, $p = 0.001$). These findings provide robust support for Hypotheses 1 and 2, indicating that psychological and self-perception factors represent key gendered barriers in the Italian context. Such barriers also constrain the inclusiveness and long-term sustainability of entrepreneurial ecosystems, as they systematically limit the participation of underrepresented groups.

Gender also significantly affects social capital and opportunity recognition, though to a lesser extent. Women are less likely to know other entrepreneurs (*knowentR*, OR = 0.817, $p = 0.01$) and slightly less likely to perceive good local entrepreneurial opportunities (*opportL*, OR = 0.859, $p = 0.04$). These results partially support Hypotheses 3a–3c, suggesting that access to entrepreneurial networks and opportunity perception are also gendered, albeit with smaller effect sizes. This highlights how unequal

TABLE 3 | Regression results summary for each of the variables, for the model with only gender.

Variable	β_1	p	OR	Log-L	AIC
<i>fearfailL</i>	0.263	0.0004	1.301	-1239	2488
<i>suskillL</i>	-0.243	0.001	0.784	-1103	2213
<i>knowentR</i>	-0.202	0.01	0.817	-1006	2021
<i>opportL</i>	-0.152	0.04	0.859	-1081	2170
<i>easystartL</i>	0.018	0.82	1.018	-1139	2289
<i>oppism</i>	0.144	0.05	1.155	-1163	2337
<i>proact</i>	0.084	0.25	1.088	-1196	2402
<i>nbstatusL</i>	0.125	0.10	1.133	-1013	2034
<i>nbgoodcL</i>	0.010	0.26	1.088	-1196	2402
<i>nbmediaL</i>	0.0009	0.89	1.010	-1006	2020
<i>INDSUP24</i>	-0.223	0.003	0.800	-1117	2243
<i>CULSUP24</i>	0.123	0.107	1.131	-1049	2106

access to social capital undermines not only individual opportunity recognition but also the resilience and sustainability of business environments.

By contrast, cultural and institutional support factors (e.g., *CULSUP24* and its components) show either nonsignificant or marginal gender differences. This suggests that although institutional conditions may appear neutral, underlying psychological and social disparities continue to shape inclusiveness, limiting the contribution of entrepreneurship to sustainable ecosystem development.

Table 4 reports the extended models including age and the interaction between gender and age. We present the effect of gender and age independently (first two blocks of columns) as well as their interaction (last block). For each effect, we list the coefficient, the p values and the odds ratios (ORs), as done previously. As expected, the gender coefficients are consistent with the baseline results (Table 3).

In line with Hypothesis 4, the direct effect of age is not statistically significant, whereas the interaction effects reach significance only for *INDSUP24* and *CULSUP24*. Overall, age has always a much smaller influence than gender, and *CULSUP24* is the only index for which the interaction between gender and age is the most significant one. This modest age effect is consistent with recent evidence showing that it is not chronological age itself, but rather accumulated entrepreneurial experience, that is positively associated with environmental and social sustainability in new firms (Grolleau et al. 2025).

Interestingly, the strongest gender difference overall remains in fear of failure, which is not included in the *INDSUP24*, although this is the variable built and used by the GEM global consortium to measure the individual perception of entrepreneurship. *INDSUP24* captures self-perceived skills, opportunity perception, and knowledge of other entrepreneurs but omits fear of failure.² Looking at the ordinal logistical regression results, *INDSUP24* has a significant dependency on gender with a negative coefficient, hence demonstrating that in this cumulative sense, men have a higher individual perception of entrepreneurship than women. However, using the combined index, one misses two nuances important effects: The first one is that the strongest gender dependency appears to be with the fear of failure, which is not used in building the *INDSUP24*. The second is that not all three single variables depend on gender (significantly). Although *suskillL*, *knowentR*, and *opportL* all have negative coefficients (i.e., favoring men over women), only the first two have p values < 0.05 . Finally, although the individual ones do not show a significant age–gender interaction, the combined index does.

Similarly, *CULSUP24*, which measures the cultural perceptions of entrepreneurship, shows no significant gender effect when analyzed as an aggregate, although one of its components, the *nbstatusL*, shows a weak gender difference (OR = 1.133, $p = 0.10$), hinting toward the fact that women believe that in Italy being an entrepreneur brings a high status and respect, but they do not do so themselves mainly because of their fear of failure and the belief that they are not good enough. These findings lend support to Hypothesis 5: Composite indices may obscure psychologically

TABLE 4 | Regression results summary for each of the variables, for the models with age as moderator.

Variable	Gender			Age			Interaction			Log-L	AIC
	β_1	p	OR	β_2	p	OR	β_3	p	OR		
<i>fearfailL</i>	0.265	0.0004	1.303	-0.015	0.09	0.985	0.001	0.07	1.01	-1237	2488
<i>suskillL</i>	-0.233	0.002	0.792	0.008	0.35	1.008	-0.011	0.05	0.990	-1097	2206
<i>knowentR</i>	-0.188	0.017	0.828	-0.007	0.41	0.993	-0.004	0.52	0.996	-996	2005
<i>opportL</i>	-0.144	0.055	0.866	0.0013	0.88	1.001	-0.004	0.44	0.996	-1079	2170
<i>easystartL</i>	0.022	0.776	1.022	-0.0009	0.91	0.999	-0.001	0.87	0.999	-1139	2291
<i>oppism</i>	0.147	0.048	1.159	0.003	0.73	1.003	-0.003	0.55	0.997	-1163	2340
<i>proact</i>	0.083	0.262	1.087	-0.011	0.21	0.989	0.008	0.16	1.008	-1195	2404
<i>nbstatusL</i>	0.137	0.069	1.147	0.009	0.28	1.009	-0.011	0.06	0.990	-1008	2029
<i>nbgoodcL</i>	0.014	0.855	1.014	0.009	0.30	1.009	-0.007	0.18	0.993	-1005	2022
<i>nbmediaL</i>	0.010	0.990	1.010	0.004	0.63	1.004	-0.006	0.26	0.994	-1006	2025
<i>INDSUP24</i>	-0.209	0.005	0.812	0.005	0.53	1.005	-0.012	0.03	0.989	-1106	2224
<i>CULSUP24</i>	0.135	0.078	1.145	0.014	0.11	1.014	-0.013	0.23	0.987	-1045	2102

meaningful gender differences that are evident in disaggregated measures.

The last two columns of Tables 3 and 4 list the value of the logarithm of the likelihood and the Akaike information criterion (AIC), useful to compare the two models and establish whether the moderating effect of age improves the relations. Overall, we observe very little variation in these two parameters, with the second model (which includes age and interaction effects) providing a slightly better fit than the simpler one for all variables.

Figure 4 provides a visual summary of the key results, plotting inverse p values (top), odds ratios (middle), and coefficients (bottom) for all models. The different columns show the results for each of the variables, whereas the different colors represent different coefficients. Gender effects (green) are generally stronger than those of age (yellow) or the interaction term (red). The horizontal lines show the threshold for the p value to be significant (above the line) and the one to one (no gender changes) in the top and middle panels, respectively. For the sign of the coefficient, we remind the reader that because female = 2 and male = 1, a positive value would indicate a woman's propensity, whereas a negative value indicates a male prevalence. To interpret effect size, recall that an odds ratio (OR) greater than 1 indicates a higher likelihood for women, whereas ORs less than 1 suggest a lower likelihood relative to men. Hence, an OR of 1.3 for fear of failure indicates that women are about 30% more likely than men to express this barrier. Conversely, an OR of 0.8 for "suskillL" suggests women are 20% less likely to believe they have the necessary skills to start a new business.

Overall, these results confirm that gender significantly shapes entrepreneurial perceptions across psychological and social domains, whereas age plays only a modest moderating role. The findings support Hypotheses 1-5 and underscore that psychological and social barriers function not only as individual-level

constraints but also as systemic sustainability challenges. By limiting inclusiveness and resilience, these barriers weaken the contribution of entrepreneurial ecosystems to the UN Sustainable Development Goals (SDGs).

In the next sections, we interpret these findings in light of the theoretical frameworks outlined in the introduction, also discussing which of these theories our results support, where our findings offer new insights or extensions, and the implications for advancing both scholarly understanding and practical action in fostering inclusive entrepreneurial ecosystems.

7 | Discussion

Our findings underscore that gender-sensitive entrepreneurial ecosystems are not only socially inclusive but also vital drivers of sustainable business strategies and environmental innovation, directly supporting the transition to a resilient, low-carbon economy (Stephan et al. 2022; Graham and Dacin 2023). Indeed, evidence from the latest GEM report shows that women are often more inclined than men to prioritize sustainability. Emotional barriers may therefore represent a hidden bottleneck limiting the translation of sustainability awareness into sustainable business strategies.

This study developed and empirically tested an intersectional, emotionally grounded framework for understanding how gender and age jointly shape entrepreneurial perceptions across psychological, social, and cultural domains. Using ordinal logistic regression on the 2024 Italian GEM Adult Population Survey (APS), we explored how gendered and age-based inequalities manifest in entrepreneurial self-perception.

The results consistently highlight the centrality of emotional barriers, particularly fear of failure, as a key determinant of gendered disparities in entrepreneurship (Dohmen et al. 2011;

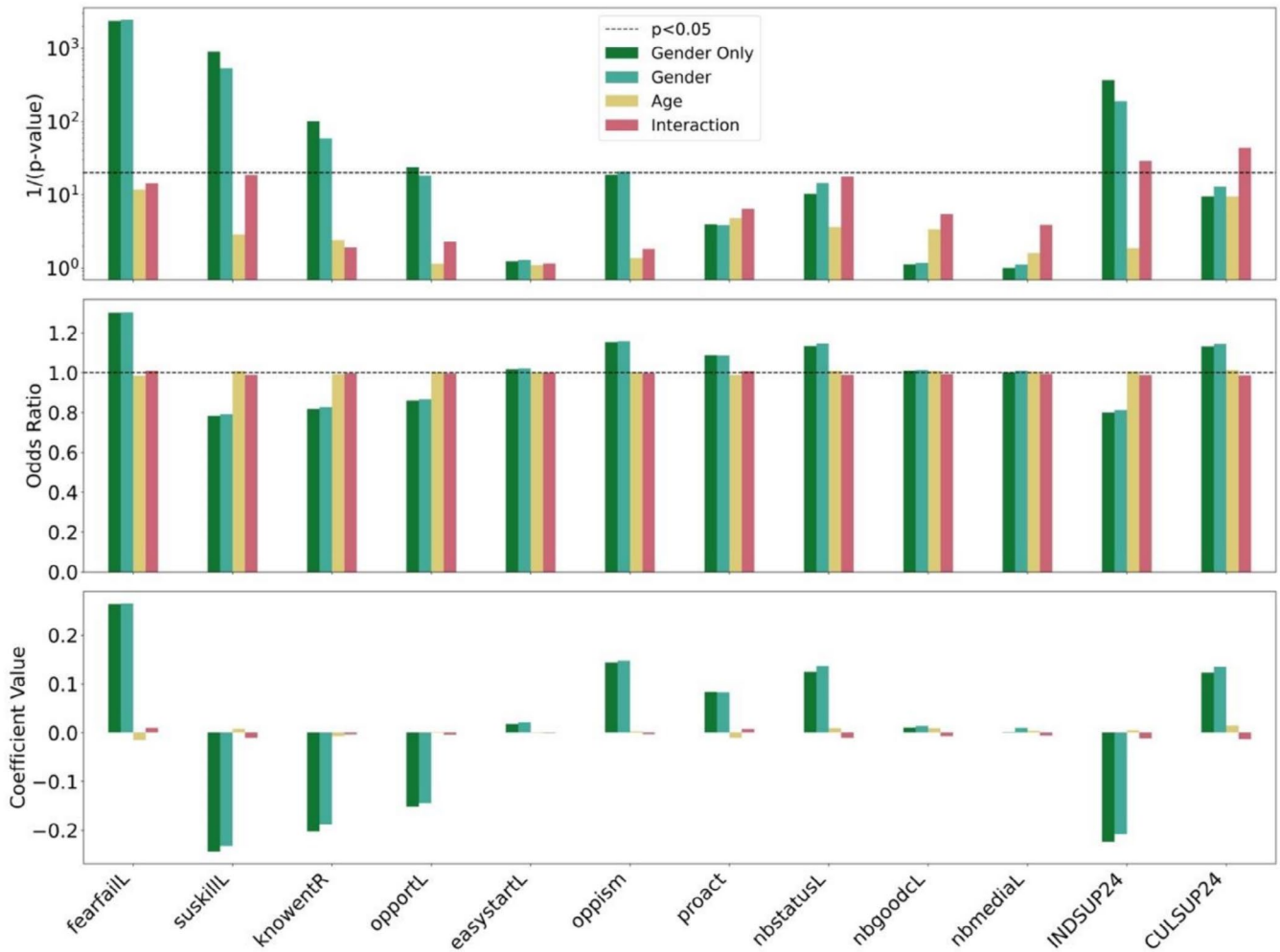


FIGURE 4 | A visual summary of the regression results.

Morgan and Sisak 2015; Simmons et al. 2024; Shahid et al. 2024). Women are more likely to experience fear of failure and less likely to perceive themselves as skilled (Koellinger et al. 2011; Nguyen et al. 2023). This latter point matters because orientation and perceived capability strongly condition the environment (Zhang et al. 2022).

Women also report weaker access to entrepreneurial networks and opportunities (Davidsson and Honig 2003; Noguera et al. 2013; Lucarelli et al. 2025). By contrast, perceptions of environmental feasibility (e.g., ease of starting a business) show no significant gender differences (Welter and Smallbone 2010), suggesting that gender gaps are most pronounced in affective and social dimensions rather than institutional conditions.

Age plays a much smaller role. Although some aggregate indices (*INDSUP24* and *CULSUP24*) show significant gender–age interactions, disaggregated variables reveal little moderation by age. This indicates that emotional and social barriers persist across the life course (Settersten 2003; Azoulay et al. 2020; Seo et al. 2023; Gashi et al. 2024), suggesting that experience does not fully eliminate gendered constraints.

Finally, our analysis of composite indices revealed their limitations. Although useful for broad comparison, they mask

critical affective differences—particularly fear of failure—that drive much of the gender gap. This supports the argument (Cronbach and Meehl 1955; Bagozzi et al. 1991; Ciaffoni et al. 2025) that entrepreneurship research should move beyond composite indices and adopt more nuanced, disaggregated measures when examining inclusiveness and sustainability.

8 | Theoretical contribution: Toward an Intersectional Theory of Entrepreneurial Cognition

This study contributes to the entrepreneurship literature by advancing our understanding of how entrepreneurial perceptions are shaped by demographic variables, particularly gender and age. Our intersectional framework proposes a reframing of entrepreneurial theory that integrates psychological, sociological, and developmental perspectives to challenge dominant cognitive framings and advance a more relational and affective understanding of gendered entrepreneurial engagement.

This study advances entrepreneurial theory in several important ways. First, our findings reframe fear of failure not as a residual emotion but as a structurally embedded, gendered constraint (Atkinson 1957; Arenius and Minniti 2005; Mathur

and Phillips 2024). This challenges dominant skill-based framings of entrepreneurial intention (Langowitz and Minniti 2007; Jennings et al. 2022) and calls for models of entrepreneurial cognition that place emotional risk perceptions, including fear, shame, and reputational anxiety, at their core. Second, we extend life course theory by showing that gendered emotional barriers remain relatively stable across the life span (Azoulay et al. 2020; Syed et al. 2024). Rather than being reduced by age or accumulated experience, these barriers persist, underscoring the need to incorporate enduring structural and normative influences into life-course approaches. Third, our results reveal the importance of relational dynamics: Disparities in access to social capital, such as knowing other entrepreneurs or perceiving opportunities, indicate that entrepreneurial engagement must be theorized as relational and socially embedded rather than as an outcome of individual cognition alone (Davidsson and Honig 2003; Noguera et al. 2013). Finally, our analysis highlights the limitations of composite indices. Although such indices offer efficiency, they obscure psychologically meaningful differences and risk underestimating gendered affective disparities. We argue for a more disaggregated and psychologically nuanced measurement strategy in entrepreneurship research (Cronbach and Meehl 1955; Bagozzi et al. 1991; Ciaffoni et al. 2025), ensuring that emotional barriers are not overlooked in sustainability-oriented studies. Collectively, these contributions reposition entrepreneurial perception as a dynamic, emotionally charged, and socially embedded process. Future theory must therefore move beyond static, trait-based models toward intersectional, affectively grounded, and life-course-sensitive frameworks (Crenshaw 1991; Henry et al. 2021).

In summary, this paper contributes to the theoretical discourse by shifting attention from skill-based explanations of gender gaps to the primacy of fear of failure as a structural barrier; extending life course theory by showing that affective inequalities persist across age groups; highlighting the need for disaggregated, psychologically nuanced measures of entrepreneurial perceptions; and advancing a model of entrepreneurial cognition that situates affective barriers within their social and life-course context.

9 | Practical and Policy Implications

Our findings also carry significant implications for policy and practice. The observed disparities in social networking, where men are more likely to know other entrepreneurs, reflect structural barriers that limit women's integration into entrepreneurial ecosystems (Noguera et al. 2013; Lucarelli et al. 2025). These barriers stem from gender biases in networking opportunities, male-dominated industry sectors, and the competing demands of care responsibilities. Limited social capital restricts women's access to mentorship, funding, and entrepreneurial knowledge flows, whereas the scarcity of visible female role models reinforces these gaps (Avnimelech and Rechter 2023). Corporate evidence also shows that gender diversity in leadership correlates with improved environmental outcomes, including reduced emissions (Kyaw et al. 2022), reinforcing the case for gender-sensitive interventions in entrepreneurship ecosystems.

Addressing such barriers requires dedicated initiatives that create safe, inclusive, and opportunity-rich networking spaces, while also promoting the visibility of successful women entrepreneurs to normalize female leadership and inspire confidence among aspiring founders. In addition, our results reveal that psychological barriers, and in particular fear of failure and lower self-confidence, play a more substantial role than previously recognized (Dohmen et al. 2011; Morgan and Sisak 2015; Madawala et al. 2023). These emotional deterrents must be directly targeted through training programs that incorporate business simulations, storytelling interventions, and mentorship designed to strengthen self-efficacy (Dimov and Pistrui 2023). Because women entrepreneurs frequently report stronger orientation toward sustainability, interventions that reduce fear of failure and build self-efficacy could unlock disproportionately large sustainability dividends.

Ecosystem builders, including incubators, accelerators, and co-working spaces, should design gender-sensitive interventions such as women-focused education programs and intergenerational mentorship schemes that connect young entrepreneurs with experienced leaders. Public visibility campaigns that highlight successful women entrepreneurs can also disrupt stereotypes and foster a more inclusive entrepreneurial culture. At the policy level, reliance on aggregate indices for monitoring entrepreneurial disparities is insufficient. National strategies should incorporate gender-disaggregated data collection, intersectional impact assessments, and qualitative indicators such as trust, inclusion, and perceived support (Jennings et al. 2022). Multilevel responses are required: public-private partnerships can combine microfinance with literacy programs tailored to women, whereas municipalities can support women-led start-ups by providing dedicated infrastructure, subsidized workspaces, and embedded entrepreneurship training. Broader social policies that address childcare, mobility, and digital divides are also essential for dismantling the systemic obstacles that hinder women's entrepreneurial participation (Butticè and Vismara 2021; Graham and Dacin 2023; Fox-Robertson and Wójcick 2024). By tackling both psychological and structural barriers, policymakers and practitioners can contribute to building vibrant, resilient, and inclusive entrepreneurial ecosystems aligned with the UN Sustainable Development Goals.

In summary, policy responses should expand women's access to entrepreneurial networks, directly address emotional barriers through confidence-building and training, promote gender-sensitive ecosystem design, improve monitoring frameworks with gender-disaggregated and qualitative indicators, and tackle structural bottlenecks such as childcare, mobility, and digital access.

10 | Limitations and Future Research Agenda

This study is limited to the Italian context, which may constrain the generalizability of our findings (Micozzi and Micozzi 2020). Future research should replicate this approach across diverse cultural and institutional settings to test its external validity (Arshed et al. 2022; Sica et al. 2025). Our exclusive reliance on quantitative data also limits our ability to capture how individuals interpret risk, construct entrepreneurial identities,

and navigate barriers. Mixed-method and qualitative designs (Naeem et al. 2024) could therefore deepen insights into the lived experiences of entrepreneurs.

Further research should explore how gendered emotional barriers evolve across critical life transitions such as education, parenthood, and retirement (Seo et al. 2023; Syed et al. 2024). Comparative and intersectional studies (Omran and Yousafzai 2023) would provide a richer understanding of entrepreneurial inequalities. Building on our approach, future research could also examine sustainability-oriented entrepreneurship, testing whether gendered emotional barriers similarly influence participation in green and socially responsible ventures. Finally, intervention-based research is needed to evaluate programs aimed at reducing fear of failure, boosting confidence, and expanding women's access to networks (Hunter et al. 2020). Understanding which strategies most effectively dismantle barriers will be critical for building inclusive and sustainable entrepreneurial ecosystems.

11 | Conclusions

This study reframes entrepreneurial perception as a dynamic, emotionally grounded, and socially embedded process shaped by the intersection of gender and age. By moving beyond skill-based explanations (Koellinger et al. 2011; Jennings et al. 2022), we highlight the primacy of emotional barriers—particularly fear of failure—in shaping entrepreneurial intention (Morgan and Sisak 2015; Simmons et al. 2024; Mathur and Phillips 2024). Our findings also reveal that composite indices, although efficient, obscure disaggregated psychological patterns that are critical for understanding gendered entrepreneurial deterrents (Cronbach and Meehl 1955; Bagozzi et al. 1991; Ciaffoni et al. 2025).

We call for a paradigmatic shift in entrepreneurship research and policy: from static, individualist perspectives to frameworks that recognize emotional inequality, demographic embeddedness, and broader social forces (Crenshaw 1991; Henry et al. 2021; Omran and Yousafzai 2023). As entrepreneurship becomes an increasingly central driver of sustainable development, addressing gendered emotional and relational barriers is not only an academic challenge but also a societal imperative. Building inclusive and psychologically informed entrepreneurial ecosystems will be essential for achieving resilient, low-carbon, and socially sustainable futures (Stephan et al. 2022; Graham and Dacin 2023). Supporting women entrepreneurs is not only an issue of inclusion but also of sustainability: GEM data suggest women are more likely to prioritize environmental and social responsibility in their ventures. Reducing gendered emotional barriers is therefore critical to advancing the SDGs.

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Conflicts of Interest

The authors declare no conflicts of interest.

Endnotes

¹https://www.statsmodels.org/stable/examples/notebooks/generated/ordinal_regression.html.

²The index is constructed from the binary variables (“SUSKIL24,” “KNOWEN24,” and “OPPORT24”) rather than the Likert-scale ones.

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Appendix

Ordinal logistic regression is designed to model the probability of an observation falling into a particular category or any lower category. Instead of treating the response variable as continuous (as in ordinary least squares regression) or unordered categorical (as in multinomial logistic regression), the model assumes the presence of a latent continuous variable that determines the observed ordinal responses. The regression estimates a set of thresholds (cut points) that separate these ordinal categories along this unobserved continuous scale. This approach allows us to estimate the probability of an individual reporting, for example, a higher level of fear of failure based on their gender, while preserving the ordinal nature of the response variable.

The simple ordinal logistic regression used to assess how gender (alone) influences the variables measuring individual and cultural perception of entrepreneurship is described below from a mathematical point of view.

The model assumes an unobserved latent variable Y^* , which is modeled as

$$Y^* = \beta_0 + \beta_1 \times Gender + \varepsilon,$$

where β_0 is the intercept whereas $\beta_1 \times Gender$ represents the effect of gender on the dependent variable. Finally, ε is the error term, which in the case of the probit model we use is assumed to follow a standard normal distribution. Mathematically, the model assumes that the observed variable (Y) is mapped from the underlying latent variable (Y^*) based on estimated thresholds ($\tau_1, \tau_2, \dots, \tau_{K-1}$):

$$Y = \begin{cases} 1, & \text{if } Y^* \leq \tau_1 \\ 2, & \text{if } \tau_1 < Y^* \leq \tau_2 \\ \dots & \\ K, & \text{if } \tau_{K-1} < Y^* \end{cases}.$$

The model including also the interaction coefficient is instead described by the following equation:

$$Y^* = \beta_0 + \beta_1 \times Gender + \beta_2 \times Age + \beta_3 \times (Gender \times Age) + \varepsilon,$$

where β_0 is the intercept, β_1 represents the main effect of gender, β_2 captures the direct effect of age, and β_3 quantifies the interaction between gender and age. As in the previous case, the error term (ε) follows a standard normal distribution, as assumed in the probit model, and the Y^* is the underlying latent variable, relating to the observed one (Y) through estimated thresholds.