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Family firm entrepreneurship: An experimental study

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ABSTRACT

Family managers' entrepreneurial intentions (EI) play a crucial role in the long-term success of family firms. Previous research has highlighted education as a key driver of EI but has failed to consider the unique socialization processes within business families and their impact on the education-EI relationship. This study aims to fill this gap by examining the direct and indirect effects of education on family managers' EI. By combining the integrated model of EI and research on business families' socialization patterns, a study was conducted with a role-playing experimental design involving 412 family firm managers. The results indicate that entrepreneurial self-efficacy (ESE) serves as a mediator between education and EI, while the ESE-EI relationship is further mediated by risk perceptions. Interestingly, no direct effect of education on EI was found, suggesting that the influence of education on EI follows distinct patterns within business families.

KEYWORDS

Family managers;
entrepreneurship;
entrepreneurial intention;
experiment; education; self-
efficacy

Introduction

The long-term performance and survival of family firms strongly depend on the entrepreneurial intention (EI) of family managers (Eddleston et al., 2012; Fayolle & Liñán, 2014; Kellermanns & Eddleston, 2006; Kotlar & Sieger, 2019; Kuratko et al., 2005; Soleimanof et al., 2019), that is, on their willingness to pursue entrepreneurial opportunities to create value for the family firm (Fini et al., 2012; Goel et al., 2018), such as startup investments, corporate venture capital, family succession planning, new product development and entry into new markets. Relative to nonfamily managers, managers who are also members of the business family are better positioned to pursue entrepreneurial opportunities that align with family firms' goals because they have a greater understanding of the complexity of family priorities (Chrisman et al., 2014; Kano & Verbeke, 2015; Kotlar & Sieger, 2019). Furthermore, nonfamily

managers often have fundamental conflicts of interest with family owners (Chua et al., 2009; Gomez-Mejia et al., 2001; Pinelli et al., 2022).

While these insights suggest that the contribution of family managers' EI to family firms' long-term prospects is significant, we know little about the determinants of its emergence. On the one hand, this is due to the limited applicability of insights from research on EI that was conducted in nonfamily firm contexts. The emergence of EI, in fact, is strongly affected by subjective norms, that is, by the expectations of and pressures from relevant others such as family, friends and role models (Ajzen, 1991; Schlaegel & Koenig, 2014). Since nonfamily managers are not exposed to the long-term influence of the business family with the intensity that family managers are, an examination of the unique socialization processes that take place within business families is necessary to improve our understanding of the mechanisms through which family managers' EI emerges. On the other hand, our knowledge is also limited by the predominant focus of past research on organization-level factors (Kotlar & Sieger, 2019; Soleimanof et al., 2019), such as ownership concentration, the CEO's family membership, the size and age of the firm or the presence of a board of directors (Eddleston et al., 2012; Kellermanns et al., 2008; Randolph et al., 2017; Stanley et al., 2019). As a result, an examination of underinvestigated individual-level determinants of family managers' EI could also be especially revealing.

To overcome these limitations and take advantage of related research opportunities, the present study focuses on the relationship between family managers' education and EI. A large body of research points to education as a fundamental driver of EI (Liñán & Fayolle, 2015; Liñán et al., 2011; Passaro et al., 2018; Souitaris et al., 2007) due to its positive effect on the development of individuals' human (Dimov & Shepherd, 2005) and social capital (Adler & Kwon, 2002). Theoretically, we build our analysis on Schlaegel and Koenig's (2014) integrated model of EI, which identifies the desirability and feasibility of entrepreneurial behavior as the main drivers of EI. Importantly, the integrated model also emphasizes the important influence of subjective on the processes through which EI emerges, which suggests that the effect of education on EI may be neither ubiquitous nor universal but may rather vary with an individual's social context. Bae et al. (2014), for instance, found that the relationship between education and EI is strongly affected by people's culture, while Meoli et al. (2020) show that students' social context affects the extent to which they are able to learn and build social capital. In other words, empirical evidence shows that the effect of education on the two main drivers of EI – and thus the causal links through which education affects EI – varies significantly depending on an individual's social context. On this premise, we contend that the link between education and EI follows unique processes in a family firm context, exactly because of the intense and idiosyncratic socialization patterns that take place within family firms and that shape family members' beliefs and

behaviors (Kellermanns et al., 2008; Pearson et al., 2008). In a business family, for instance, children acquire knowledge informally from their elders through experiential learning (Boyd et al., 2015). Elder family members also function as role models and mentors (Zellweger et al., 2011) and – based on conformity to established practices, power structures and tradition (Gómez-Mejía et al., 2007; Sharma & Manikutty, 2005; Zellweger et al., 2011) – determine younger family members' legitimacy (Sharma et al., 2001). Building on insights from the family firm literature, we thus propose that higher levels of education positively affect family managers' EI both directly and indirectly through processes that differ from those at play in nonfamily firm contexts. Most notably, we propose that higher levels of education foster family managers' EI through an indirect effect that is mediated by family managers' entrepreneurial self-efficacy (ESE), which is also a prominent antecedent of EI (Bandura, 1997; McGee et al., 2009) and a relational construct shaped by a person's social context (Hollenbeck & Hall, 2004; Hsu et al., 2019; Shinnar et al., 2014).

Following recent calls for experimental work in entrepreneurship (Kraus et al., 2016) and family firm research (Evert et al., 2016), we test these relationships through a role-playing experimental design (Hsu et al., 2017; Lude & Prügl, 2019) in the context of family firm entrepreneurship (Anwar et al., 2023) where risky investment decisions made by family managers. Interestingly, we do not find evidence that family managers' education affects their EI directly. However, we do find evidence of a positive indirect effect that is mediated by ESE. In addition, our results also show that ESE reduces family managers' perception of entrepreneurial risks, which thus mediates the ESE-EI relationship.

Our study makes several contributions to family firm research. First, we focus on family firms as a new context in which we apply an existing theory, thus advancing theory-specific knowledge about the domain of family firms (Neubaum & Micelotta, 2021). Second, our work departs from the conventional focus of family firm studies on the organization-level determinants of family firms' entrepreneurial behavior (Kotlar & Sieger, 2019; Soleimanof et al., 2019) through a microfoundational analysis (De Massis & Foss, 2018; Mazzelli et al., 2020; Picone et al., 2021; Zahra & Wright, 2011) of the processes through which family managers' education affects their EI.

Theoretical background and literature review

The academic investigation of EI is central in entrepreneurship research because EI is deemed the most critical predictor of actual entrepreneurial behavior (Ajzen, 1991; Lee et al., 2011) and the premise for pursuing entrepreneurial opportunities (Gartner et al., 1994). In this study, we develop a theoretical framework of family managers' EI that builds on Schlaegel and

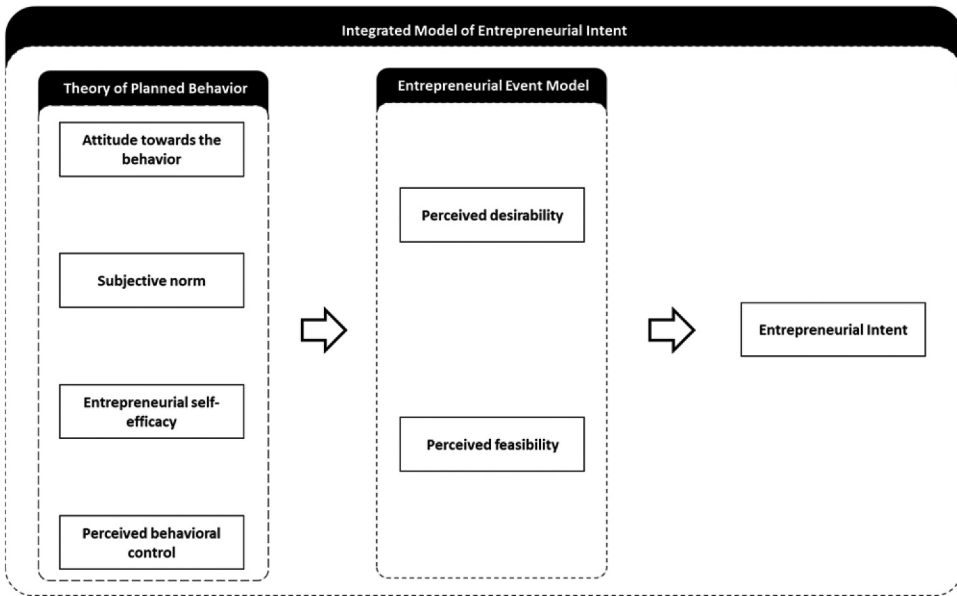


Figure 1. Graphic representation of the integrated model of EI (adapted from Schlaegel & Koenig, 2014).

Koenig's (2014) integrated model of EI (see Figure 1). While past research has used a variety of theories to explain EI (Shook et al., 2003), we opted for this particular theoretical lens for two fundamental reasons. First, it has stronger explanatory power due to a richer understanding of the process through which EI emerges. In fact, the integrated model combines the two most widely used theoretical approaches – that is, the theory of planned behavior (Ajzen, 1991) and the entrepreneurial event model (Shapiro & Sokol, 1982) – through the model of goal-directed behavior (Perugini & Bagozzi, 2001) and the extended model of goal-directed behavior (Perugini & Conner, 2000). In so doing, the integrated model combines, aggregates and synthesizes four complementary theoretical perspectives on the emergence of EI to posit that EI fundamentally stems from an individual's perceptions about the desirability and feasibility of entrepreneurial behavior (Schlaegel & Koenig, 2014). On the one hand, perceived desirability derives from positive expectations about the outcomes of entrepreneurial behavior and provides the motivational foundation that is necessary to explain EI because entrepreneurship is a deliberate and goal-directed behavior (Perugini & Bagozzi, 2001). Perceived feasibility, on the other hand, it relates to beliefs about one's own ability to succeed at performing entrepreneurial activities with the skills and resources that are or that can become available (Bandura, 1982, 1997; McGee et al., 2009).

The second reason that led us to build on Schlaegel and Koenig's integrated model is that it is particularly well suited to examine the determinants of EI in the family firm context due to its consideration of the effects of subjective

norms on the desirability and feasibility of entrepreneurial behavior. Subjective norms refer to perceived expectations of and social pressures by relevant others such as family, close friends and role models (Ajzen, 1991; Krueger, 2000), which are especially salient for the members of a business family. For instance, factors linked to family control and career opportunities may push family managers to pursue entrepreneurial opportunities. As a result, the model allows us to account – more than other theoretical lenses – for social influences on family managers' EI, such as experiential learning and socialization processes taking place within the family, power structures that derive from the family firm's tradition, and the coexistence of economic and family centered noneconomic goals. As we will detail in the following sections, the expectations and social pressures by family members are so strong and unique in business families that the formation of EI in family members is likely to follow processes that differ from those at play for individuals who do not belong to a business family.

Education and entrepreneurial intentions

A substantial body of research identifies education as a key driver of EI (Liñán & Fayolle, 2015; Liñán et al., 2011; Passaro et al., 2018; Souitaris et al., 2007). Several arguments from this literature suggest that such a positive effect derives from amplified perceptions of the desirability and feasibility of entrepreneurial behavior, which, according to the integrated model of Schlaegel and Koenig (2014), are the two most immediate determinants of EI (see Figure 1). First, education is the most crucial investment for the development of human capital (Dimov & Shepherd, 2005), intended as the set of an individual's endowments of knowledge, skills, and abilities (Bae et al., 2014). Such attributes and qualities lie at the core of entrepreneurial ventures' technological capabilities and ability to innovate (Tzabbar & Margolis, 2017) because educated entrepreneurs tend to be more knowledgeable and competent in their technical fields, which makes them better at developing new products and at improving existing ones (Baum et al., 2000; Hyytinen et al., 2015; Pinelli et al., 2020). As a result, individuals with higher levels of education may be better at pursuing entrepreneurial opportunities by virtue of enhanced alertness (Westhead et al., 2005) and because of a greater capacity to exploit such opportunities (Dimov & Shepherd, 2005; Shane, 2000; Zarutskie, 2010). In other words, the perspective outcome of entrepreneurial behavior is more promising for individuals who are more educated, which – according to the model – should increase their EI through higher desirability.

Second, education also strengthens individuals' social capital by broadening their social networks (Adler & Kwon, 2002). As people build contacts through membership in intellectual circles (Beckman et al., 2007), people with higher levels of education are more likely to have developed meaningful relationships

with fellow students throughout their years of study. After graduation, fellow students join various organizations, communities and social groups, and such social ties can be leveraged in entrepreneurial processes (Adler & Kwon, 2002) to obtain facilitated access to important resources (Stuart et al., 1999). Consistently, investors consider entrepreneurs' education to be the most important and salient signal of qualities associated with future business success (Pinelli et al., 2020). In other words, education is also likely to increase individuals' EI because the more advanced technical skills and the broader network of contacts acquired through education amplifies the salience of their own ability to succeed at performing entrepreneurial activities. In so doing, education also leads to a higher perceived feasibility of entrepreneurial behavior, which is the other fundamental driver of EI (Schlaegel & Koenig, 2014).

Entrepreneurial self-efficacy

Entrepreneurial self-efficacy (ESE) – understood as the conviction that one is capable of successfully performing the various roles and tasks of entrepreneurship (McGee et al., 2009) – and risk perceptions (Simon et al., 2000) are deemed major determinants of entrepreneurial outcomes and decision-making. Cognitive evaluations of the self and the environment, in fact, lie at the core of EI and entrepreneurial behavior (Bandura, 1997; Stroe et al., 2018). Consistently, the literature suggests that education fosters EI by increasing ESE (Bae et al., 2014; Wilson et al., 2007; Zhao et al., 2005). Education, in fact, enhances ESE by positively affecting its determinants (Bae et al., 2014), as well as perceived know-how (Davidsson, 1995). Such psychological attributes are important antecedents of individual-level entrepreneurial behavior (Sieger et al., 2013) because the perceptions of an individual about his or her own ability to successfully perform a task – the very definition of self-efficacy – affect his or her behaviors, level of effort, and perseverance (Chen et al., 2001). In addition, education facilitates the development of coping strategies for dealing with failures and complications (Stumpf et al., 1987), thus increasing the perceived feasibility of entrepreneurial behavior.

ESE also increases perceptions of desirability and feasibility of entrepreneurial behavior – and thus EI – through another mechanism, that is, by affecting the subjective evaluation of chance and probability (Krueger & Dickson, 1994) related to the environment. Risk, in fact, is implicit in entrepreneurship (Kuechle, 2013), so taking risks is necessary in entrepreneurial contexts (Elston & Audretsch, 2011). According to psychology research applied specifically in entrepreneurial contexts, an individual's ESE is the most prominent determinant of such risk perceptions (Macko & Tyszka, 2009). In entrepreneurship, in fact, it is not possible to calculate the objective probability of success *ex ante*, so actors must rely on subjective estimates. In the context of entrepreneurship, a more pronounced perception of risks

amplifies the salience of negative outcomes from entrepreneurial action (Zellweger et al., 2011), thus reducing its desirability and negatively affecting EI (Giordano Martínez et al., 2017). In addition, since entrepreneurial activities involve a number of skill-dependent tasks that is, the results of which the agents have some degree of control – such subjective estimates depend to a large extent on beliefs regarding one's own abilities (Krueger & Dickson, 1994; Macko & Tyszka, 2009; Simon et al., 2000). As a result, ESE also positively affects EI by reducing the salience of entrepreneurial risks, thus increasing the desirability of entrepreneurial tasks.

The relevance of the social context

While the positive effect of education on EI and the mediating role of ESE have been studied quite extensively in the entrepreneurship literature (Bae et al., 2014; Liñán & Fayolle, 2015; Liñán et al., 2011; Passaro et al., 2018; Souitaris et al., 2007), our understanding of the relationships that link these constructs is far from being exhausted (Fayolle & Gailly, 2015; Liñán & Fayolle, 2015). According to the integrated model of EI (Schlaegel & Koenig, 2014), the social context in which an individual is embedded shapes the processes through which EI forms and develops. People and entrepreneurs, in fact, are socially embedded (Aldrich & Ruef, 2006; Dahl & Sorenson, 2009), and the social context in which they live influences the development of EI (Meoli et al., 2020). As such, different social contexts affect in different ways the processes through which EI forms by differently influencing the desirability and feasibility of entrepreneurial behavior. The influence of the social context has been shown to affect the different relationships between education, EI and ESE. The underlying processes through which ESE affects EI are highly context-dependent because ESE is a relational construct shaped by a person's surrounding social context and not a stable trait of a person (Hollenbeck & Hall, 2004; Hsu et al., 2019; Shinnar et al., 2014). In summary, previous research indicates that the mechanisms through which education directly and indirectly affects EI are highly dependent on the social context, especially the proximal social context (Meoli et al., 2020). As a result, the unique features of the social context in which the members of a business family are embedded and that emerge from and develop through continuous interactions and ongoing involvement with the family (Pearson et al., 2008) are likely to impact the processes through which education affects the EI of family members.

Entrepreneurial intention in family firms

Mirroring its centrality in the entrepreneurship literature, family firm scholars have extensively examined the emergence and development of EI in the members of business families, for whom entrepreneurship is considered an

expression of stewardship culture (Debellis et al., 2023; Eddleston et al., 2012) and as an instrument to nurture the family firm's long-term prospects and the benefit of future generations (Minola et al., 2021; Nordqvist & Melin, 2010). Family members, in fact, are physiologically inclined to act in the best interest of the family firm due to their life-long commitment and emotional attachment (Corbetta & Salvato, 2004; Debellis et al., 2023; Gomez-Mejia et al., 2011; Humphrey et al., 2021; Miller & Le Breton-Miller, 2005), which are usually rewarded with prestigious employment opportunities and compensation (Chrisman et al., 2014; Gedajlovic & Carney, 2010). According to Kotlar and Sieger (2019), such favorable treatment is the main driver of family managers' willingness to take part in entrepreneurial behavior in family firms. Conversely, strict control by the family (Carney, 2005; Gómez-Mejía et al., 2007), lower managerial discretion (Carney, 2005; Chrisman & Patel, 2012), lower compensation (Neckebrouck et al., 2018) and modest career opportunities (Chrisman et al., 2014; Verbeke & Kano, 2012) limit nonfamily managers' willingness to pursue entrepreneurial activities in family firms (Kotlar & Sieger, 2019). Similarly, Schepers et al. (2021) found that the asymmetric treatment of nonfamily members hinders the translation of EI into entrepreneurial action in family firms.

Previous research on EI in the context of family firms, with a few exceptions, has mostly focused on the willingness of younger family members to behave entrepreneurially, usually defined by the probability of finding new ventures, and produced mixed findings (for example, Carr & Sequeira, 2007; Laspita et al., 2012; Zellweger et al., 2011). As a result, the processes through which family managers' EI – intended as willingness to undertake entrepreneurial actions within the family firm – emerges and develops have remained relatively underinvestigated.

Hypothesis development

Family managers' education and entrepreneurial intention

Schlaegel and Koenig's (2014) model identifies the desirability and feasibility of entrepreneurial behavior as the main drivers of an individual's EI (see Figure 1), that is, positive expectations about the outcomes of entrepreneurial activities make them desirable, whereas trusting that available skills and capabilities allow them to successfully perform entrepreneurial activities makes them more feasible. In turn, higher perceived desirability and feasibility translate into higher EI. Previous results from entrepreneurship show that education fosters individuals' EI (Liñán et al., 2011; Passaro et al., 2018; Souitaris et al., 2007) through increased human (Bae et al., 2014; Dimov & Shepherd, 2005) and social capital endowments (Adler & Kwon, 2002), which provide enhanced alertness (Shane, 2000; Westhead et al., 2005), the ability to

exploit opportunities to a larger extent (Dimov & Shepherd, 2005; Zarutskie, 2010) and facilitated access to important resources through richer social networks (Stuart et al., 1999). In addition, education exposes students to successful practitioners and cases (Honig, 2004), which increases the salience of positive entrepreneurial outcomes and the development of coping strategies to deal with failure (Stumpf et al., 1987). However, as the processes through which education fosters the feasibility and the desirability of entrepreneurial behavior are strongly affected by an individual's social context (Meoli et al., 2020), the unique social context of family firms may act as an underlying condition that affects how education can positively affect the EI of family members.

In contrast to what happens in nonfamily firms, knowledge is passed on from generation to generation in family firms, often informally, through socialization processes and experiential learning (Boyd et al., 2015). As a result, the knowledge base and competence base that are necessary to perform entrepreneurial initiatives successfully are transferred from parents to children in family firms rather than being updated and regenerated through external inflows of information. In an age of rapid sociological, technological and environmental change, such intangible resource endowments are likely to become rapidly obsolete – and thus unable to support entrepreneurial behavior – if not integrated with external sources, such as knowledge and expertise about markets, industries and technology (Dagnino et al., 2021; Yam et al., 2011) that is developed by organizations and institutions outside the family firm's network.

Since the emergence of EI requires that an individual considers entrepreneurial behavior as conducive to positive outcomes to be desirable, family members – who are naturally inclined to act in the best interest of the family firm due to their emotional attachment to the family and the firm (Corbetta & Salvato, 2004; Cruz et al., 2010) – are thus more likely to consider entrepreneurial behavior as less desirable when the knowledge and competences that they acquire from their elders are inadequate to support entrepreneurial tasks. The lack of the necessary knowledge and skills to succeed in entrepreneurship, in fact, is considered the major factor that forces business families to hire external managerial talent (Gedajlovic et al., 2004; Kotlar & Sieger, 2019).

The enriched human and social capital acquired through education may complement the obsolete knowledge and competences acquired by family members through social acquisition and experiential learning. As a result, family managers who obtain up-to-date external knowledge through formal education are likely to consider entrepreneurial behavior as more feasible and desirable relative to less educated family members because their novel competences and skills increase the perception that entrepreneurial activities are feasible and produce positive outcomes. As a result, the EI of more educated family managers may thus be higher than that of less educated ones. In

addition, the networks of contacts that family members developed through their years of study may integrate the set of social relationships inherited from the family. Through this richer social capital, more educated family members can more easily access resources (Stuart et al., 1999), which improves both the capacity to act entrepreneurially and the outcomes of entrepreneurial activities (Pinelli et al., 2021). In turn, this should be reflected in higher EI for more educated family members.

Because of the above, we propose that family managers' EI is positively affected by their level of education due to processes that are shaped by the specific social context of family firms and that are less likely to occur when individuals do not belong to a business family. We thus hypothesize the following:

H1: There is a positive relationship between family managers' level of education and their EI.

The mediating role of entrepreneurial self-efficacy

As indicated before, education may also foster family managers' entrepreneurial propensity through indirect effects, that is, by affecting perceptions of their own ability to effectively perform entrepreneurial tasks and of the riskiness of entrepreneurial action. ESE is deemed a major determinant of EI because cognitive evaluations of the self lie at the core of entrepreneurs' intentions and behavior (Bandura, 1997; Stroe et al., 2018). Consistently, past research has also investigated how education may foster EI by increasing ESE (Bae et al., 2014; Wilson et al., 2007; Zhao et al., 2005). However, ESE is a sociocognitive and relational construct shaped by a person's surrounding social context (Drnovšek et al., 2010; Hollenbeck & Hall, 2004; Hsu et al., 2019). As a result, the underlying processes through which education affects ESE and, in turn, EI are likely to be different in a family firm context due to the unique patterns of socialization that tie the members of a business family together.

In business families, ESE develops through observational learning and social comparison with elder family members, who thus function as role models (Boyd & Vozikis, 1994; Zellweger et al., 2011). Since conformity to and approval from role models are powerful motivators of entrepreneurial behavior (Carter et al., 2003), it is likely that manifestations of skepticism and distrust by the family may reduce family members' perceptions of their own ability and thus their ESE. Such manifestations are quite likely to emerge in a business family because older family members often have protective tendencies that frequently result in a lack of acceptance and in a lack of legitimacy of younger family members (Sharma et al., 2001). This is because younger family members need to be subordinate to established social and decision-making structures that are protected and reinforced by family members of earlier

generations who often have an emotional attachment to established practices, activities, processes and products (Zellweger et al., 2011) due to family tradition, personal ties, and nostalgia (Gómez-Mejía et al., 2007; Sharma & Manikutty, 2005; Zellweger & Astrachan, 2008). As a result, new ideas that challenge such established structures are likely to generate sentiments of distrust and diffidence that negatively affect the ESE, and thus the EI, of family members who promote such changes. In this particular context, education may foster family members' ESE and, in turn, EI, because education enhances ESE determinants (Bae et al., 2014), such as enactive mastery, vicarious experience, verbal persuasion, and emotional arousal (Bandura, 1982, 1997), thus increasing their perception that entrepreneurial behavior is feasible due to better evaluations of their own abilities. Furthermore, education can also increase family managers' perception that they will be successful at entrepreneurial tasks due to resources that they developed through their years of study, such as the networks of relationships they built with fellow students and that may be leveraged in the entrepreneurial process. As a result, more educated family members may be more confident and optimistic about their ability to launch new products or to expand into new markets due to greater knowledge and competences (Hyytinen et al., 2015) as well as wider networks of contacts (Adler & Kwon, 2002). Consequently, we hypothesize that education fosters family managers' EI also indirectly through a positive effect on their ESE that in turn positively affects EI:

H2a: There is a positive relationship between family managers' level of education and their ESE.

H2b: There is a positive relationship between family managers' ESE and their EI.

The mediating role of risk perceptions on the relationship between entrepreneurial self-efficacy and entrepreneurial intention

Our previous hypothesis predicted that education fosters family managers' EI through a positive effect on the perception of their own ability to effectively perform entrepreneurial tasks, which results in increased ESE. However, ESE positively affects EI not only through more positive evaluations of the self but also by affecting subjective evaluations of chance and probability that relate to the environment (Krueger & Dickson, 1994). In entrepreneurship, more pronounced risk perceptions amplify the salience of negative outcomes (Zellweger et al., 2011), reduce the desirability of entrepreneurial actions and ultimately reduce EI (Giordano Martínez et al., 2017). However, as an individual's self-efficacy is a major determinant of risk perceptions (Macko & Tyszka, 2009), individuals with higher

ESE perceive to a lower extent the risks associated with entrepreneurial tasks and thus have higher EI. Such an effect of ESE on risk perceptions may be an especially important mechanism for fostering the perceived desirability of entrepreneurial behavior in the members of a business family.

A large body of research on family firms provides a detailed account of the high risk aversion of business families (Anderson & Reeb, 2003), which can be explained by transgenerational control intentions (Zellweger et al., 2012). To protect the long-term value of their wealth, business families thus tend to avoid risks, which can result in conservative investment strategies (Geppert et al., 2013; Pinelli et al., 2023). As risk is intrinsic in entrepreneurship, it is likely that such an aversion to take risks exposes the members of a business family to subjective norms (Ajzen, 1991), that is, to social pressure and expectations of the family (Ajzen, 1991), that amplify the perceived riskiness of entrepreneurial behavior, thus reducing its desirability and family members' EI. More specifically, elderly family members who have an emotional attachment to established practices, activities, processes and products (Zellweger et al., 2011) are likely to be averse to entrepreneurial activities such as new product development or entry into new markets. In business families, not only do younger family members need to be subordinate to established social and decision-making structures (Swagger, 1991), but they are also likely to acquire such an aversion to take risks because they acquire their elders' beliefs via experiential learning (Boyd et al., 2015). In addition, since elders act as role models in business families (Boyd & Vozikis, 1994; Zellweger et al., 2011), younger family members also need to conform to their expectations and behaviors to gain both their approval and social legitimacy within the family (Sharma et al., 2001). As conformity to and approval from role models strongly influence entrepreneurial behavior (Carter et al., 2003), the social context of the business family likely constitutes an environment where the salience of entrepreneurial risks is quite apparent. As such, we contend that the previously described negative effect of ESE on the salience of entrepreneurial risks (Macko & Tyszka, 2009; Simon et al., 2000) is an especially important mechanism for the emergence and development of family managers' EI because positive evaluations of one's own ability improve subjective estimates about the outcomes of entrepreneurial behavior (Krueger & Dickson, 1994; Macko & Tyszka, 2009; Simon et al., 2000). In sum, since individuals' willingness to perform risky activities depends on subjective evaluations of risk (Kahneman & Lovallo, 1993; Nutt, 1993), we hypothesize that family managers with higher ESE have a lower perception of the risks of entrepreneurial behavior, which increases its desirability and, in turn, their EI:

H3a: There is a negative relationship between family managers' ESE and their risk perception.

H3b: There is a negative relationship between family managers' risk perception and their EI.

Empirical investigation

Design

To provide a realistic and still risky investment decision environment for family managers, we decided to follow a role-playing experimental approach (Hsu et al., 2017) by conducting a vignette experimental design describing the decision-making context. We deem this approach as the most appropriate in that real-world experimental factors are not available for family managers in this context, whereas repeated approaches may cause cognitive overload and tiredness. Furthermore, we see high utility for role-playing experiments in our vignette design since the design has personal relevance for the family managers participating and can be understood as realistic (Greenberg & Eskew, 1993). The role-playing experimental design allows us to examine how family considerations influence business decisions without the recall bias and revisionism (Golden, 1992) that typically affect surveys, which constitute the prominent methodology through which family managers' decision-making has been studied.

Based upon and replicating the design of Ambos et al. (2023), the family managers who participated in our experiment were told to imagine being subsidiary managers of a family firm headquartered in Germany (see our full model in Figure 2). This firm is described as the manufacturer of a novel 3D printer for rapid prototyping (Grégoire & Shepherd, 2012), which is a realistic and generally well-known technology. To introduce market risk, managers were told that the subsidiary was located in a market other than Germany, either in (a) the UK or in (b) Italy, as both countries differ culturally, economically, and geographically from Germany. The participants were then informed about the opportunity to increase the subsidiary's sales by 25% by introducing a new product, which required investing either (a) in a joint venture with a local firm or (b) in the internal growth of the subsidiary (that is, without external partners). In addition, the participants were told that the necessary funds were available and that they had been provided either by (a) the subsidiary itself or (b) the parent firm in Germany. Next, participants were randomly assigned to one of eight possible scenarios. An example vignette for the two (UK vs Italy) \times two (subsidiary vs headquarters' funds) \times two (joint venture vs subsidiary growth) = eight between-factor designs is provided in Figure 3. Finally, the participating family managers were asked about their intention to pursue this opportunity. These factors follow commonly considered investment decision-making contexts (Hoenen & Kostova, 2015; Yiu & Makino, 2002). Importantly, while we manipulated factors that relate to risk dimensions that are relevant in an investment decision-making context, we did not manipulate the opportunity itself (that is, 25% increase in sales) because

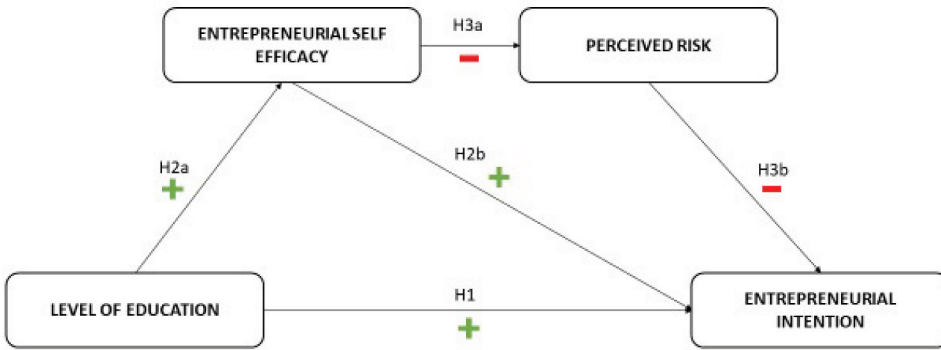


Figure 2. Theoretical framework: direct and indirect effects of education on family managers' EI.

variance in the opportunity would have interacted with the contextual risk factors (for example, Krueger & Dickson, 1994), which is not the focus of our research. We also considered procedural remedies as much as possible in the design, ensuring anonymity, no right-or-wrong answers, varying response formats and an inverse order of measures to weaken a potential common method bias (Podsakoff et al., 2003).

Sample

We test our hypotheses on a sample of family firms predominantly based in Germany (97.6%; rest: Austria and Switzerland) and operating in the service (66.0%) and manufacturing industries (32.3%). The sample was obtained from a large business panel provided by *Respondi*, from which we selected family firms based on the criteria provided by the European Commission (2003). In line with extant family firm studies that used samples of predominantly (for example, Debellis et al., 2023) or exclusively German companies (for example, Alayo et al., 2022), we consider Germany an ideal setting to empirically investigate our research question for two main reasons. First, and more generally, family firms are by far the most prevalent form of business organization in the country (Hauck et al., 2016; Klein, 2000) and are on average managed and owned by more advanced generations relative to other countries (Jaskiewicz et al., 2015; Rau et al., 2019). This makes being a member of a business family especially meaningful for individuals in Germany and provides family members with a heightened identification with their family firm, which brings to the second and most specific reason why Germany is an ideal context for exploring our research question. In fact, since our arguments build on the relevance of socialization patterns that take place within the family, German family members' strong identification with their firm (Alayo et al., 2022) ensures that the expectations of and the pressures by the family have an influence on family members' perceptions and decisions and thus on the formation of EI.

Vignettes 1 and 2 (Markets: UK and Italy, Resources: Headquarters, Expansion: Subsidiary)	
<p>Imagine that you are in a leading position in a subsidiary in the UK of protoD3, wholly-owned by a <u>family-owned</u> German producer of an advanced 3D printer for rapid prototyping.</p> <p>Employees of your subsidiary find out that a new printer possesses a large sales potential in the UK since this new printer is individually programmable, a feature that available printers in the UK do not offer and that was of utmost importance for the majority of test users in that market. According to prognoses, the high demand will lead to a plus of 25 percent in sales in your market.</p> <p>Thus, your headquarters allocates budget to expand the subsidiary in the UK.</p>	<p>Imagine that you are in a leading position in a subsidiary in Italy of protoD3, wholly-owned by a <u>family-owned</u> German producer of an advanced 3D printer for rapid prototyping.</p> <p>Employees of your subsidiary find out that a new printer possesses a large sales potential in Italy since this new printer is individually programmable, a feature that available printers in Italy do not offer and that was of utmost importance for the majority of test users in that market. According to prognoses, the high demand will lead to a plus of 25 percent in sales in your market.</p> <p>Thus, your headquarters allocates budget to expand the subsidiary in Italy.</p>
Vignettes 3 and 4 (Markets: UK and Italy, Resources: Headquarters, Expansion: Joint venture)	
<p>Imagine that you are in a leading position in a subsidiary in the UK of protoD3, wholly-owned by a <u>family-owned</u> German producer of an advanced 3D printer for rapid prototyping.</p> <p>Employees of your subsidiary find out that a new printer possesses a large sales potential in the UK since this new printer is individually programmable, a feature that available printers in the UK do not offer and that was of utmost importance for the majority of test users in that market. According to prognoses, the high demand will lead to a plus of 25 percent in sales in your market.</p> <p>Thus, your headquarters allocates budget to invest in a joint venture with a local producer in the UK.</p>	<p>Imagine that you are in a leading position in a subsidiary in Italy of protoD3, wholly-owned by a <u>family-owned</u> German producer of an advanced 3D printer for rapid prototyping.</p> <p>Employees of your subsidiary find out that a new printer possesses a large sales potential in Italy since this new printer is individually programmable, a feature that available printers in Italy do not offer and that was of utmost importance for the majority of test users in that market. According to prognoses, the high demand will lead to a plus of 25 percent in sales in your market.</p> <p>Thus, your headquarters allocates budget to invest in a joint venture with a local producer in Italy.</p>
Vignettes 5 and 6 (Markets: UK and Italy, Resources: Subsidiary, Expansion: Subsidiary)	
<p>Imagine that you are in a leading position in a subsidiary in the UK of protoD3, wholly-owned by a <u>family-owned</u> German producer of an advanced 3D printer for rapid prototyping.</p> <p>Employees of your subsidiary find out that a new printer possesses a large sales potential in the UK since this new printer is individually programmable, a feature that available printers in the UK do not offer and that was of utmost importance for the majority of test users in that market. According to prognoses, the high demand will lead to a plus of 25 percent in sales in your market.</p> <p>Despite your headquarters decides to not provide a budget, your subsidiary reallocates budget to expand the subsidiary in the UK.</p>	<p>Imagine that you are in a leading position in a subsidiary in Italy of protoD3, wholly-owned by a <u>family-owned</u> German producer of an advanced 3D printer for rapid prototyping.</p> <p>Employees of your subsidiary find out that a new printer possesses a large sales potential in Italy since this new printer is individually programmable, a feature that available printers in Italy do not offer and that was of utmost importance for the majority of test users in that market. According to prognoses, the high demand will lead to a plus of 25 percent in sales in your market.</p> <p>Despite your headquarters decides to not provide a budget, your subsidiary reallocates budget to expand the subsidiary in Italy.</p>
Vignettes 7 and 8 (Markets: UK and Italy, Resources: Subsidiary, Expansion: Joint venture)	
<p>Imagine that you are in a leading position in a subsidiary in the UK of protoD3, wholly-owned by a <u>family-owned</u> German producer of an advanced 3D printer for rapid prototyping.</p> <p>Employees of your subsidiary find out that a new printer possesses a large sales potential in the UK since this new printer is individually programmable, a feature that available printers in the UK do not offer and that was of utmost importance for the majority of test users in that market. According to prognoses, the high demand will lead to a plus of 25 percent in sales in your market.</p> <p>Despite your headquarters decides to not provide a budget, your subsidiary reallocates budget to invest in a joint venture with a local producer in the UK.</p>	<p>Imagine that you are in a leading position in a subsidiary in Italy of protoD3, wholly-owned by a <u>family-owned</u> German producer of an advanced 3D printer for rapid prototyping.</p> <p>Employees of your subsidiary find out that a new printer possesses a large sales potential in Italy since this new printer is individually programmable, a feature that available printers in Italy do not offer and that was of utmost importance for the majority of test users in that market. According to prognoses, the high demand will lead to a plus of 25 percent in sales in your market.</p> <p>Despite your headquarters decides to not provide a budget, your subsidiary reallocates budget to invest in a joint venture with a local producer in Italy.</p>

Figure 3. Vignettes for the three factor levels.

Within these firms, only participants who were identified as family managers in a leading or supervising role were invited to take the study via an online questionnaire. Overall, 412 family managers fulfilled all criteria and completed the experiment. The family managers who participated in our experiment had a mean age of 49.85 years ($SD = 11.75$) and quite heterogeneous educational backgrounds (36.9% held a university degree, 13.8% held a high school degree, 11.7% held a technical college diploma, and 16.7% had vocational education). In addition, 29.9% of them were women and had a mean international experience of 13.62 years ($SD = 13.16$). Finally, these family managers' family firms were on average 24.84 years old ($SD = 20.17$) and employed 746.6 people ($SD = 605.10$). Family managers were equally

Table 1. Firm-level descriptive statistics.

Attribute	Levels	Frequency	Share
Firm type (EU Commission)	Micro (<10)	241	58.5%
	Small (≥ 10 & <50)	54	13.1%
	Medium (≥ 50 & <250)	35	8.5%
	Large (≥ 250)	52	12.6%
Number of employees (grouped)	<1,000	365	88.6%
	1,000 to 1,999	7	1.7%
	2,000 to 2,999	1	.2%
	3,000 to 4,999	4	.9%
	>5,000	5	1.2%
Year of foundation (grouped)	1870 to 1899	2	.5%
	1900 to 1929	6	1.5%
	1930 to 1959	13	3.2%
	1960 to 1989	201	48.8%
	1990 to 2019	186	45.1%
Legal type	Capital company	99	24.0%
	Personal company	292	70.9%
Location (respondent in firm)	Headquarters	366	88.8%
	Subsidiary	46	11.2%
Branch	Primary (raw materials)	5	1.2%
	Secondary (manufacturing)	133	32.3%
	Tertiary (service)	272	66.0%
Country (headquarters)	Austria	5	1.2%
	Germany	402	97.6%
	Switzerland	5	1.2%

Non-responses omitted.

allocated to each market condition ($n = 206$ for UK and ITA), joint venture ($n = 203$), internal growth ($n = 209$), subsidiary ($n = 194$), and parent firm ($n = 218$) condition. Table 1 depicts major firm-related descriptive statistics of the family managers.

Measures

To measure family managers' EI (Wood et al., 2014), we used a 5-point semantic differential of their willingness to invest in the new product-launch project (from "certainly not" to "certainly").

To measure family managers' level of education, we recoded the available levels as a numeric measure (from 0 = no school to 9 = PhD) in line with the German primary to tertiary education systems. Following McGee et al. (2009), ESE was operationalized through a measure that reflects the four subdimensions of searching, planning, marshaling and implementing people, which we derive from 14 items on a 5-point Likert-type scale ("very little" to "very much"). The remaining subdimension (implementing financials) was ignored, as it deals with setting up and reporting financial information, which we did not deem as important for our investigation. Finally, perceived risk was measured by three items on a 5-point semantic differential (Mullins & Forlani, 2005). All our measures are described in Table 2 and were translated to German and back-translated to ensure equality (Brislin, 1970).

Table 2. Measures used in the experiment.

Measure and source	Item wordings	Response categories
Entrepreneurial intention (Wood et al., 2014)	How likely is it that you would invest time and money into the venture?	Please select the appropriate answer: certainly not, unlikely, neither likely nor unlikely, probably, certainly
Level of education	Please select your highest completed education.	0 = no school-leaving qualification, 1 = primary school, 2 = secondary school, 3 = school leaving examination, 4 = apprenticeship, 5 = technical college, 6 = bachelor, 7 = master, 8 = diploma, 9 = PhD or any other doctorate
Entrepreneurial self-efficacy (ESE, McGee et al., 2009, $\alpha = .929$, $\omega = .928$)	<ol style="list-style-type: none"> 1. Brainstorm (come up with) a new idea for a product or service 2. Identify the need for a new product or service 3. Design a product or service that will satisfy customer needs and wants 4. Estimate customer demand for a new product or service 5. Determine a competitive price for a new product or service 6. Estimate the amount of start-up funds and working capital necessary to start my business 7. Design an effective marketing/ advertising campaign for a new product or service 8. Get others to identify with and believe in my vision and plans for a new business 9. Network – that is, make contact with and exchange information with others 10. Clearly and concisely explain verbally/in writing my business idea in everyday terms 11. Supervise employees 12. Recruit and hire employees 13. Delegate tasks and responsibilities to employees in my business 14. Deal effectively with day-to-day problem 15. Inspire, encourage, and motivate my employees (omitted) 16. Train employees (omitted) 	Please select the appropriate answer for each point: very little, little, neither much nor little, much, very much
Perceived risk (Mullins & Forlani, 2005, $\alpha = .732$, $\omega = .744$)	<ol style="list-style-type: none"> 1. high/low 2. minimal/extreme 3. not risky/very risky 	For each scale below, kindly circle the number which you feel best assesses the amount of RISK associated with this venture. Semantic differential, first and last labeled, three unlabeled, all equally spaced

Checks

Since ESE and perceived risk are latent variables, we first applied confirmatory factor analysis (CFA). We modeled each subdimension for self-efficacy and included single indicator factors for EI and level of education. This model with a robust estimator (*MLM* in *lavaan*) resulted in an appropriate fit ($df = 133$, $\chi^2 = 318.286$, $CFI = .934$, $SRMR = .059$) (Niemand & Mai, 2018).

Reliability estimates for perceived risk ($\alpha = .732$) and ESE (searching: $\alpha = .849$, planning: $\alpha = .836$, marshaling: $\alpha = .769$, implementing people: $\alpha = .843$) surpass the thresholds (Items 15 and 16 have been removed due to very low loadings $\lambda = .320$ and $.261$ for implementing people). All factors captured more than 50% of their indicators' variance (Fornell & Larcker, 1981). Since the four subdimensions of ESE are expected to be highly correlated, we combined them into one factor before establishing discriminant validity. Following (Rönkkö & Cho, 2022), discriminant validity was established for a cutoff of $r = .8$ (all $p < .001$). Overall, we can establish that our four measures are appropriate for further investigation (using standardized versions). Table 3 provides the correlations between measures.

A potential common method bias is addressed by modifying the 4-factor CFA used for discriminant validity assessment with a common method factor (Podsakoff et al., 2003), thus constraining its variance to be 1 and all loadings from each other factor to be equal. This model yields an unacceptable fit ($df = 168$, $\chi^2 = 1,128.428$, $CFI = .740$, $SRMR = .095$). Furthermore, we investigated whether standardized loadings are different by comparing an unconstrained common method factor model (Serrano Archimi et al., 2018) of all four measures depicted in Table 2 plus a common method factor with equally free loadings on all indicators with a constrained common factor model where all CMV-related loadings are set to zero. As the largest difference was below $.100$, we deemed CMV again to have little effect. Finally, including an unconstrained common method factor did not yield a better fit than a model with a constrained common factor (χ^2 difference = 1.736 , $df = 18$, $p > .05$). Overall, we assume that a substantial common method bias is unlikely.

Moreover, a potential nonresponse bias is assessed (Armstrong & Overton, 1977). We assessed differences between early (first quartile) and late (fourth quartile) participation with t tests for the four measures plus age, international experience, perceived market risk and technology knowledge. Since we did not find any significant differences (all $p > .152$), we concluded that no nonresponse bias was present.

Table 3. Means, standard deviations, and correlations with confidence intervals.

Measure	<i>M</i>	<i>SD</i>	1	2	3
1. Entrepreneurial intention	3.53	.98			
2. Level of education	5.99	2.09	.02		
			[−.08, .12]		
3. ESE	3.83	.63	.21**	.14**	
			[.11, .30]	[.04, .23]	
4. Perceived risk	2.84	.70	−.41**	−.04	−.15**
			[−.49, −.32]	[−.14, .06]	[−.24, −.05]

M and *SD* are used to represent mean and standard deviation from unstandardized composites, respectively.

Values in square brackets indicate the 95% confidence interval for each correlation. The confidence interval is a plausible range of population correlations that could have caused the sample correlation (Cumming, 2014).

* $p < .05$. ** $p < .01$.

Finally, we conducted two additional tests to exclude alternative interpretations regarding the manipulated factors. First, family managers may perceive markets as being differently “European” compared to Germany given the “Brexit.” We hence developed three questions (“How ‘European’ do you consider the market presented in the scenario in terms of the following characteristics?” on a 5-point Likert-type scale from “not at all European” to “very European”) regarding differences in (a) culture, (b) political environment, and (c) economic status. Both markets were perceived as fairly similarly “European” (culture: $t(410) = -1.679$, $p = .094$; political environment: $t(410) = .222$, $p = .825$; economic status: $t(410) = .759$, $p = .448$). Second, despite these results, family managers may perceive market risks differently. Thus, we made a self-developed question (“In your opinion, how risky is the presented market for business decisions?”) that could be answered through a 5-point Likert-type scale (from “not at all risky” to “extremely risky”). The t test on this measure indicates that concern is unjustified $t(410) = -.404$, $p = .687$. Third, one might argue that the headquarters country, Germany, is not sufficiently different from the other markets. We drafted two questions (“How different do you think Germany and the subsidiary’s market are in terms of the following characteristics?” on a 5-point Likert-type scale from “not at all different” to “very different”) regarding political environments and economic status again. For both criteria, the British and Italian markets yielded significantly higher values than the scale center (political environment: $t(205) = 5.883$, $p < .001$ in Italy, $t(205) = 2.456$, $p < .05$ in the UK; economic status: $t(205) = 9.328$, $p < .001$ in Italy, $t(205) = 2.988$, $p < .01$ in the UK). This indicates that both markets are perceived as being different from Germany.

Results

Our theoretical framework proposes a sequential mediation model with two mediators. ESE (M1) passes on the effect of the level of education to EI and to perceived risk (M2). In turn, perceived risk passes on the effect of both level of education and ESE to EI. Consequently, four indirect effects need to be estimated. To investigate this kind of four-path mediation model simultaneously, we use *lavaan* based on the standardized scores for our four measures and the manipulated factors. Given that the indirect mediation effects are best estimated using bootstrapping, percentile bootstrapping with 5,000 draws was applied (Preacher & Hayes, 2008; Zhao et al., 2010). To further increase the robustness of our results, the present model was estimated both with and without control variables connected to the dependent variable of EI. To control for individual- and corporate-level differences, we used a gender dummy variable, international experience (in years), firm size (number of employees of the family firm), a tertiary dummy from branch (as primary

sectors are rarely present, $n = 5$, a secondary dummy would nearly perfectly correlate negatively and is omitted) and relevant technical knowledge (self-developed, “Please indicate how extensive your knowledge of the depicted technology in the scenario is,” 5-point semantic differential from no knowledge to very much knowledge, Table 4).

Both models comparably explain the variance of EI: 19.4% in the simple model and 18.8% in the robust model. Since both AIC (simple: 3423.560, robust: 3397.512) and BIC (simple: 3471.812, robust: 3465.787) are smaller in the robust model, we continue testing our hypotheses with the robust model.

H1 predicted a direct effect of level of education on EI. It is found that the 95% confidence interval includes zero $[-.099, .055]$. Hence, H1 is rejected. H2a, instead, is supported because ESE is positively affected by the level of education with a coefficient of $.132 [.049, .207]$. In addition, as ESE positively predicts EI ($\beta = .090 [.016, .171]$), we also find empirical support for H2b. This confirms that there is a significant mediating effect of ESE on the relationship between level of education and EI ($\beta = .012 [.002, .030]$). In terms of Zhao et al. (2010), this resembles an indirect-only mediation.

Turning to the second mediated relationship, H3a postulated a negative effect of ESE on perceived risk, which is supported by our results ($\beta = -.151 [-.250, -.061]$). Finally, perceived risk decreases the EI in the project through a statistically significant negative effect, thus also supporting H3b ($\beta = -.353 [-.431, -.276]$). These hypotheses facilitate three additional mediations: first, ESE has not only an indirect-only mediation effect on EI via education but also an indirect-only mediation effect on perceived risk via education ($\beta = -.020$

Table 4. Results for simple and robust model.

IV	Mediator(s)	DV	Simple model			Robust model		
			β	<i>LCI</i>	<i>UCI</i>	β	<i>LCI</i>	<i>UCI</i>
Level of education		ESE	.137	.059	.220	.132	.049	.207
ESE		Perceived risk	-.145	-.240	-.061	-.151	-.250	-.061
Level of education		Perceived risk	-.021	-.102	.066	-.024	-.104	.060
ESE		EI	.152	.072	.230	.090	.016	.171
Perceived risk		EI	-.389	-.467	-.311	-.353	-.431	-.276
Level of education		EI	-.016	-.087	.055	-.021	-.099	.055
Market (Italy)		EI	-.086	-.234	.067	-.132	-.275	.013
Expansion (subsidiary growth)		EI	-.064	-.212	.087	-.073	-.207	.077
Resources (by subsidiary)		EI	-.051	-.206	.101	-.023	-.163	.132
Level of education	ESE	Perceived risk	-.020	-.039	-.005	-.020	-.043	-.006
ESE	Perceived risk	EI	-.022	-.044	-.006	-.014	-.035	-.002
Level of education	ESE	EI	.021	.006	.042	.012	.002	.030
Level of education	ESE, Perceived risk	EI	.008	.002	.016	.007	.002	.016
Gender (female)		EI				-.099	-.271	.048
International experience		EI				-.015	-.095	.049
Employees		EI				.000	.000	.000
Branch (tertiary)		EI				-.008	-.173	.141
Technology knowledge		EI				.160	.090	.236

Path model with bootstrapped confidence intervals (percentile). IV = independent variable, DV = dependent variable, β = unstandardized coefficient, *LCI* = 95% lower confidence interval, *UCI* = 95% upper confidence interval. Estimates and confidence intervals were nearly identical for an increased number of bootstrapping rounds (10,000).

[-.043, -.006]). Second, perceived risk serves as a competitive mediator between ESE and EI ($\beta = -.014$ [-.035, -.002]). Third, the perceptions of ESE and risk subsequently mediate the effect of level of education on EI ($\beta = .007$ [.002, .016]), again as an indirect-only mediation. Overall, these results indicate that family managers' level of education does not directly influence their EI, but it does so indirectly via ESE. In turn, ESE positively affects EI both directly and indirectly, that is, by lowering their sensitivity to risk, which has a negative effect on their EI.

Discussion and conclusion

This study built on the integrated model of EI by Schlaegel and Koenig (2014) and on the family firm literature to explore the relationship between education and EI within the context of family firms. As EI and education are constructs that are largely influenced by an individual's social context, we contend that unique processes may link these variables within a family firm's social context. More specifically, we argue that family managers' education positively affects their EI by increasing the desirability and feasibility of entrepreneurial action due to stronger competences and richer networks of contacts. In a family firm context, where family members acquire knowledge and skills from their elders via socialization and experiential learning (Boyd et al., 2015), we argue that education fosters family managers' EI by updating and integrating intangible resource endowments that they inherit from the family. Interestingly, our empirical results do not allow us to support this hypothesis. One interpretation is that the positive effect of education on EI that we hypothesize may be offset by a "paralysis of analysis" in approaching entrepreneurial opportunities (Lenz & Lyles, 1985). In other words, education may amplify perceptions about the necessity to collect, analyze and use information extensively for the entrepreneurial process to produce positive outcomes, which may reduce perceptions about its desirability and feasibility and, ultimately, family managers' EI.

However, we do find evidence of positive indirect effects of family managers' level of education on their EI. First, we found that higher education increases family managers' ESE, which in turn positively affects EI. This result is consistent with extant studies on EI that link education to ESE (Bae et al., 2014; Wilson et al., 2007; Zhao et al., 2005) and with the integrated model of EI (Schlaegel & Koenig, 2014) that links ESE to the desirability of entrepreneurial behavior. However, our theoretical arguments advance that in a family firm context, such a mediating effect of ESE is due to reasons that are specific to the family firm context. In fact, as ESE is a sociocognitive and relational construct shaped by a person's surrounding social context (Drnovšek et al., 2010; Hollenbeck & Hall, 2004; Hsu et al., 2019; Shinnar et al., 2014), we argue that the underlying

processes through which education affects ESE and, in turn, EI are idiosyncratic in a family firm context due to the unique patterns of socialization that tie the members of a business family together. More specifically, we argue that education fosters family managers' ESE through better evaluations of their own abilities, which are otherwise frustrated by sentiments of distrust and diffidence from overly conservative elderly family members. Such positive evaluations ultimately increase family managers' belief that their competences and skills are adequate to perform entrepreneurial tasks, thus increasing their EI.

Finally, we also found that the positive effect of ESE on EI is mediated by risk perceptions. As per our theoretical arguments, we propose that perceptions about the risks of entrepreneurial behavior are salient to family managers because business families tend to avoid risks to protect the long-term value of the wealth they have invested in the family firm (Anderson & Reeb, 2003; Zellweger et al., 2012). As entrepreneurial behavior is intrinsically risky, family members may consider entrepreneurship as unlikely to produce positive outcomes for the family firm due to social exposure to risk-avoiding preferences and due to conformity to the expectations of family role models who are protective of established family firms' structures. In such a social context, we argue that ESE reduces family managers' sensitivity to entrepreneurial risks because more self-confident individuals are not only optimistic about their abilities, but also about exogenous events. In fact, in the case of skill-dependent tasks, subjective estimates about chance and probability that relate to the environment are ultimately dependent on self-evaluations of one's own ability (Krueger & Dickson, 1994; Macko & Tyszka, 2009; Simon et al., 2000).

Our study makes several contributions to family firm research. First, we advance theory-specific knowledge about the domain of family firms (Neubaum & Micelotta, 2021) because we focus on family firms as a context where we apply an existing theory (that is, the integrated model by Schlaegel and Koenig (2014)) and integrate it with insights from the family firm literature to develop theoretical insights specific to family firms. More specifically, we build on the family firm literature to develop theoretical arguments on how the social context of a business family may shape the subjective norms that influence family managers' perceptions of the desirability and feasibility of entrepreneurial behavior. In fact, while the education-EI relationship, as well as the role of ESE, has already been examined by past research, the links among these constructs are highly dependent on an individual's social context (Bae et al., 2014; Hollenbeck & Hall, 2004; Hsu et al., 2019; Meoli et al., 2020); thus, the effects of education and ESE on EI may be due to different underlying processes depending on the social context in which an individual is embedded. As a result, a deeper understanding of how these effects may unfold in a business family requires an ad hoc theoretical examination of family members' proximal social context.

Second, our work adds to recent studies that examine the individual-level determinants of family firms' entrepreneurial behavior (Kotlar & Sieger, 2019; Soleimanof et al., 2019) through a microfoundational analysis (Zahra & Wright, 2011) of the processes through which family managers' education affects their EI. In fact, departing from the conventional focus on the organization-level determinants of family firms' entrepreneurial behavior, Kotlar and Sieger (2019) aimed to explain variance in family firms' entrepreneurial behavior by examining differences between family and nonfamily managers, showing that nonfamily managers have both a lower willingness and an inferior capacity to act entrepreneurially in family firms. This study contributes to this line of academic inquiry by examining how education affects family managers' EI. In particular, we advance our understanding of family managers' EI by developing theoretical arguments on the processes through which education affects family managers' perceived desirability and feasibility of entrepreneurial behavior. In so doing, our study helps reconcile a dilemma about family firms' entrepreneurial behavior. On the one hand, the finding that nonfamily managers are less willing and less capable of pursuing entrepreneurial opportunities aligned with the family's priorities (Kotlar & Sieger, 2019) suggests that entrepreneurial activities promoted by family managers have greater potential to benefit the family firm. On the other hand, the finding that family firms are forced to hire external managerial talent because family managers often lack the necessary knowledge and skills to act entrepreneurially (Gedajlovic et al., 2004) suggests either that such potential is rarely realized to its full extent or – at the very least – that there is great variance in the extent to which it is realized. Our study helps reconcile these contradictory findings by highlighting that family managers' EI can be fostered through education.

This argument also allows us to make a third contribution to the academic debate on the professionalization of family firms' management. Several scholars, in fact, have argued that the limited skills and competences of family managers do not just constrain family firms' ability to pursue entrepreneurial opportunities, but they put at risk the firms' very survival – so much so that their openness and ability to hire competent nonfamily managers is deemed as decisive for family firms' prospects (Dekker et al., 2015; Gedajlovic et al., 2004; Lien & Li, 2014; Stewart & Hitt, 2012). However, our finding that higher levels of education foster family managers' EI by increasing their ESE and by reducing their sensitivity to entrepreneurial risks also suggests that family firms may acquire the skill and talent necessary to secure their survival and long-term prosperity by investing in the education of younger family members and not just by hiring talented nonfamily managers.

Finally, this study also makes a contribution to family firm research because of the experimental design that we adopted. The examination of decision-making processes in family firm contexts, in fact, has been carried out mostly

through case studies and surveys (Evert et al., 2016), which often result in recall bias and revisionism due to post hoc data collection (Golden, 1992). As a result, our study is one of the few that uses experiments to investigate family managers' decisions.

Practical implications

The findings of this study have important practical implications for family firms. First, we show that and explain why family managers' education can increase their EI. This evidence and our theoretical explanation are important because family managers' entrepreneurial behavior, which is strongly affected by their EI, can make a significant contribution to family firms' long-term prosperity and survival. As we have highlighted, extant research suggests that such a contribution is even greater than that which nonfamily managers can make. Hence, a direct implication of our study is that business families may want to invest in the education of young family members to increase the likelihood that the family firm prospers through more proactive entrepreneurial behaviors. As per our theoretical rationale, we link education to more advanced technical knowledge, which may complement and update the current competence base of the family firm, and to broader social networks, which may enrich the family firm's web of relationships. These resources acquired through education are likely to boost the EI of family managers, who might perceive entrepreneurial behavior as both more desirable and more feasible by virtue of such strengthened assets. Second, we also highlight how education can increase family managers' ESE and reduce their perception of entrepreneurial risks. While we explicitly refer to and speculate on these effects as drivers of EI and as stimuli for more active entrepreneurial behavior, they also have the potential to mitigate some shortcomings commonly associated with family ownership. The higher ESE of more educated family managers, for instance, may help them question and challenge established practice, traditions and power structures, which may help trigger and initiate important and renovative change in the family firm. In addition, reduced perceptions of risk in more educated family managers may mitigate the common risk aversion of business families, which may lead to greater openness to consider unexplored opportunities for growth and investment strategies.

Limitations and future research

Despite its merits, our study is not without limitations. For instance, we found no evidence that the contextual factors that we manipulated to add variance in our experiment had an effect on family managers' EI. This could be explained by a number of reasons. First, the way we crafted the vignettes that the participants were exposed to might not have properly

emphasized the implications of relevant business factors, which may have limited the salience of our manipulations. Second, it could be that the specific elements in our vignettes (country of the subsidiary, origin of resources and pursuit of the opportunity through JVs or independently) are actually not particularly relevant for family managers in that the individual-level variables on which we built our hypotheses (education, ESE and risk intention) may have a much higher explanatory power. Third, it could be that the family managers who participated in our experiment – all from German-speaking countries – may not be particularly sensitive to the contextual factors that we selected. For instance, since Germany has a remarkably stable business environment, it could be that our participants did not perceive the UK as being particularly different from Italy. Future studies may thus account for this possibility by recruiting participants of more heterogeneous nationalities, which would also provide the opportunity to examine contextual factors associated with the country of origin of the participants, such as various cultural dimensions and the degree of development of the institutional environment. Although we did not find significant differences between service and manufacturing firms post hoc, the sector could also be a contextual factor for the future. Moreover, future studies may further extend the use of experiments in family firm research by adopting different designs, such as within-subjects experiments involving discrete choices, active role-playing that asks respondents to independently develop the environmental context in which they would be willing to invest, or passive role-playing that asks respondents to transfer a proposed scenario to their own family firm, thus allowing them to independently preselect the type of firm, home country, and product or service.

Importantly, some of our theoretical arguments build on the assumption that conservative elderly family members restrain younger family managers' EI. While our arguments are derived from a large body of works in family firm research, we do not directly test empirically whether the family's subjective norms have a negative effect on family managers' EI and ESE. Accordingly, we call for studies that may empirically corroborate our theoretical claims.

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