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REVIEW

The effect of spouses on the entrepreneurial gender gap

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Abstract

In a novel contribution to the entrepreneurial, the Gender and Development (GAD) and the relational capital (RC) literatures, this study examines the possible role of spouses on the entrepreneurial gender gap through the family embeddedness model, which sees the family members as embedded in their social relationships and describes family systems through three interrelated characteristics (family transitions, family resources and family norms including attitudes, and values). Using a unique representative matched sample of 321 married couples, the results supports both the preselection and especially the socialization hypotheses by showing that married people have a significant association with their partners regarding their entrepreneurial tendency which also increases as marriage duration extends. Furthermore, while such similarity is associated with an increased probability for women to become an entrepreneur, it is also associated with men's decreased probability to become an entrepreneur. Finally, clear evidence was found that family income had a significant positive association with men's entrepreneurial tendency as well as with their probability to become entrepreneurs. However, it did not have any significant association with a woman's entrepreneurial tendency nor with their probability to become entrepreneurs. The results shed light on important possible drivers for the entrepreneurial gender gap that works inside the family premises.

Keywords Entrepreneurship · Family · Spouses · Gender · Gender and development · Personality · Relational capital · Family embeddedness perspective model

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Introduction

Women experience gender discrimination in traditional labor markets. Therefore, many countries are trying to promote entrepreneurship as an alternative employment for women which will help to tackle the discrimination in the labor markets (Blau & Khan 2017; Langowitz & Minniti 2007; Zelekha 2021).

However, these worldwide efforts are not yet successful as women take smaller share then men in entrepreneurial activities for reasons which are only partially explained (Hechavarria et al. 2017; Yukongdi & Lopa 2017). Moreover, the literature documents that the gender gap in entrepreneurship does not decrease even in developed economies which succeeded to achieve relatively high gender equality in their traditional labor markets. In fact, the entrepreneurial gender gap tends to be robust across cultures and national boundaries (Markussen & Roed 2017).

The literature has focused on two alternative explanations to explain the entrepreneurial gender gap. First, the limited entrepreneurial activity among women may reflect low tendency to become an entrepreneur and therefore affects their ability to identify opportunities or make the necessary examination and theoretical development of opportunities. However, this explanation was rejected by many scholars (Gupta et al. 2009), De Tienne and Chandler, 2007; (Gupta et al., 2014; Zelekha 2021).

Second, the limited entrepreneurial activity among women may reflect discriminatory practices and social exclusion that take place at the entrepreneurial execution stage. This explanation was supported by numerous studies (Blau & Khan 2017; Hechavarria et al. 2017; Langowitz & Minniti 2007; Yukongdi & Lopa 2017; Zelekha 2021). However, most of the studies have focused on discriminatory practices and social exclusion outside the family premises and only limited literature examined the role of family on the entrepreneurial gender gap (Zelekha 2021).

Family is a significant agent for advocating cultural norms and therefore can be a prime suspect regarding discriminatory practices and social exclusion. Under this framework, the entrepreneurship research has focused mostly on parental effects and found that having a parent who is an entrepreneur increases the probability that the descendant will be an entrepreneur by 30 to 200 percent (Colombier & Masclet 2008; Dunn & Holtz-Eakin 2000; Lindquist et al. 2015). The explanations to the parental effects were divided between the transmission of familial resources including human capital and the transmission of preferences, attitudes, business knowledge or parental role modeling (Fairlie & Robb 2007; Parker 2009), Wyrwich, 2015; (Zelekha 2021).

Although, family has identified as an important factor affecting the entrepreneurial gender gap, the literature has rarely examined the possible effect of spouses. This research aims to address the gap and examine whether unequal allocation the of familial resources (including income and human capital), and the influence of spouses' personality, and role modeling, contribute to the entrepreneurial gender gap.

Among the limited entrepreneurship literature on the possible role of spouses, studies have focused on specific stages of entrepreneurial development including

entrepreneurs' motivation (Kirkwood 2009; Muske & Fitzgerald 2006)or their performance (Sharma 2004). However, Spouses may influence all various stages of their partners' entrepreneurial development, either directly or indirectly. Furthermore, a husband can have a different effect on his wife than the wife on her husband (Kirkwood 2009), with such interaction can take a dynamic complex nature. Therefore, to better understand the effect of spouses on entrepreneurial development, it is essential to take an integrative approach.

The family business literature offers several theoretical models that may allow an integrative examination, among which is especially promising the family embeddedness perspective model (Aldrich & Cliff 2003; Azmat & Fujimoto 2016; Blenkinsopp and Owens 2010; Hahn et al. 2020; Sieger & Minola 2017). This model can help to address the complex nature of a spouse's entrepreneurial role, and the interconnected roles of entrepreneurs and their spouses (Kirkwood 2009; Mathias & Wang 2023).

The family embeddedness perspective model sees the family members as embedded in their social relationships in which family as a group and family members as individuals are all take a significant role. Under this framework, major social historical transformations in family composition and in family members' roles or relationships can influence (or have already influenced) other family members' norms, roles, resources, behaviors, and decisions, while tremendously effecting their entrepreneurial development process (Aldrich & Cliff 2003).

Moreover, it appears that men and women entrepreneurs are characterized by different social networks, which lead them to different economic outcomes (Renzulli et al. 2000), Brush et al., 2018). In this regard, women use their networks especially for relationship-building, whereas men use more often their networks to gain strategic and instrumental advantages. Therefore, men may achieve better social network than women which they will be able to use during the entrepreneurial process (Ozkazanc-Pan & Clark Muntean, 2018, (Avnimelech 2023). Furthermore, women face more barriers to enter the same social settings than men, such as discrimination and exclusion from male-dominated networks (Linehan & Scullion 2008; Marlow & McAdam 2012; Poggesi et al. 2016; Poggesi et al. 2020). These environmental disadvantageous increases the importance of family for women's social networking and through that may affect women's entrepreneurial process. Thus, family perspective can be a perfect haven to examine entrepreneurial gender gap.

The family embeddedness perspective model describes families through three interrelated characteristics that affect their members and affected by them. All three interrelated characteristics may be heavily influenced by the spouse and the relationship with his/her companion.First, there are family transitions, including marriage, children, conflicts, and divorce. Indeed, the entrepreneurship literature stresses that family-related variables, such as the effect of having small children on the decision to become self-employed, can create gender differences in entrepreneurship (Adachi & Hisada 2017; Noseleit 2014; Zelekha 2021).

Second, there are family resources. Again, the entrepreneurship literature documents the importance of financial and social capital including networking (Avnimelech 2023; Sexton & Upton 1985; Sieger & Minola 2017; Storey 2019; Unger et al. 2011), experience (Gielnik et al. 2018), role models (Krueger et al. 2000; Scherer

et al. 1989),Van Auken and Werbel, 2006; (Bosma et al. 2012; Vadnjal & Vadnjal 2013) and family transfer of entrepreneurial knowledge (Capolupo et al. 2023).

Third, there are family norms, attitudes, values, and role models, whose importance has also been highlighted in the entrepreneurship literature (Bloemen-Bekx et al. 2019; Kirkwood 2009; Laguía et al. 2022; Neumark 2018; Rietveld & Hoogendoorn 2022; Rondi 2019; Ummiroh et al. 2022; Vadnjal & Vadnjal 2013; Wyrwich 2015; Zelekha 2021).

The family embeddedness model describes a dynamic interrelated process. The characteristics of family systems (i.e., transitions, resources, and norms, attitudes, and values) may influence the entrepreneurial process of its members (i.e., the recognition of opportunities, their examination and execution including resource mobilization and business structure) which in turn can trigger family transitions, affect family resources, and change family norms' attitudes and values through its challenges, performance, and work-family conflicts. Finally, affecting the entire family system in a vicious or virtues cycle (Aldrich & Cliff 2003).

This research makes three important contributions to the research on gender inequality. First, it offers a novel integrative empirical approach, which will allow a better understanding of the role of spouses on entrepreneurial gender differences. Second, it adds to the empirical literature on entrepreneurial gender gap by examining both actual entrepreneurship as well as entrepreneurial tendency for the same data set. Third, it adds to the gender inequality literature by suggesting that part of the unresolved gender gap in entrepreneurship is an outcome of family favor

itism toward men's entrepreneurship and of family discrimination against women's entrepreneurship.

The practical implications that stem from the results are clear for both policymakers and scholars. As the entrepreneurial gender gap literature focused mostly on unfavorable environments for women's entrepreneurship outside the family, this study shed light on important drivers that can work for female entrepreneurs inside their own family.

The rest of this paper is structured as follows. Section 2, present related literature and develop the hypotheses. Section 3 describes the unique data set and method. Section 4 presents the empirical results and Sect. 5 discusses the conclusions, policy implications and future research venues.

Related literature and general hypothses

The possible effect of family on the entrepreneurial process

There are three stages of entrepreneurial development according to the entrepreneurship literature:

(1) The identification of opportunities (Alvarez & Busenitz 2001; Ardichvili et al. 2003),

(2) The examination and theoretical development of opportunities (Ries 2011; Sarasvathy 2001),

(3) The execution of business opportunities into actual entrepreneurship (Alvarez & Busenitz 2001).

Family in general and a spouse in particular can affect all three stages of entrepreneurial development especially through offering role models (affecting the motivation to identify opportunities and the ability to examine and develop them), controlling family resources and advocating for entrepreneurial and gender roles (both effecting the motivation and ability to develop and execute business opportunities).

Regarding role models, several studies have established their importance on entrepreneurship for both parental role model (Scherer et al., 1989; (Zelekha 2021)) and mentor role models (Krueger et al. 2000), Van Auken & Werbel, 2006). Furthermore, it has been found that the effect of role model on entrepreneurship is dependent on the strength of the relationship between the entrepreneur and his/her role model (Bosma et al. 2012).

Regarding family resources, the literature has stated that family and business in general, and business creation in particular, are intertwined (Aldrich & Cliff 2003). Having an entrepreneur, compared to a traditional salaried worker, in the family can influence entrepreneurial family resources more intensely while creating a conflict between work commitments and family responsibilities. While the latter is true also for men entrepreneurs, due to social gender roles expectations, it is particularly pronounced among women entrepreneurs (De Clercq et al. 2023; Dewitt et al. 2023; Gudeta & van Engen 2018; Kaciak & Welsh 2020). An entrepreneur may also face more challenges and stress events, and therefore trigger family transitions. Indeed, it has been found that individuals with a preoccupied attachment pattern are more likely to experience negative spillover from family to work, creating family–work conflict (Sumer & Knight 2001), while supportive family can decrease the probability for work to family conflicts by affecting women emotional exhaustion (De Clercq et al. 2023).

Regarding norms, entrepreneurship may affect a family's norms, attitudes, and values (Aldrich & Cliff 2003; Zelekha 2021).

Does the matrimony with potential spouse is partially dependent on the entrepreneurial personality (the preselection versus socialization process hypothesis)?

While persons cannot choose their parents, they can choose their spouses. Therefore, can influence their potential entrepreneurial career through this choice (the preselection hypothesis). In fact, a vast body of literature indicates that spouses tend to select similar partners across numerous social, cultural, and psychological characteristics, including age, attractiveness, intelligence, education, socioeconomic status, religion, and personality (Epstein & Guttman, 1985; (Galovan et al. 2022; Rammstedt & Schupp 2008; Tyler 1988)).

Furthermore, it has also been found that spouses have relatively high congruence in agreeableness, conscientiousness, and openness to experience, with associations reaching $r = 0.3$ (Rammstedt & Schupp 2008). From an empirical point of view, congruency achieved in three (agreeableness, conscientiousness, and openness

to experience) of the five main personality traits (Costa & McCrae 1988)which has been proven in previous studies to significantly affect entrepreneurship. In contrast, for neuroticism or emotional stability and for extraversion, the correlations are none or close to zero (Rammstedt & Schupp 2008; Youyou et al. 2017).

All these accounts, suggest that a person which is characterized with a personality associated with higher entrepreneurship potential may tend to marry a similar potential entrepreneur and therefore resulting in a different type of marriage than would marrying a traditional salary worker. Thus, the study hypothesizes the following:

H1a:*A high and significant association will be found between the tendency of both spouses to become entrepreneurs (a measure of the entrepreneurial personality).*

Although specific personality traits are important characteristics of entrepreneurs, the entrepreneurship personality is more than an additive list of traits. Therefore, this study claims that the personality structure of entrepreneurial tendency will have additional explanatory power beyond that of personality traits (the preselection hypothesis). Thus, the study hypothesizes the following:

H1:*The association between both spouses' tendency to become entrepreneurs (a measure of the entrepreneurial personality) will remain significant in a controlled specification, which includes the personality traits of both partners.*

Moreover, the congruence of agreeableness, conscientiousness, and openness to experience seems to increase with marriage duration (Rammstedt & Schupp 2008). Since, these personality traits are all significantly contribute to entrepreneurship, and since entrepreneurship in turn may affect family's norms, attitudes, and values (Aldrich & Cliff 2003), then, as marriage duration increases a convergence in entrepreneurial tendency can also be expected (the socialization hypothesis).

Thus, the study hypothesizes the following:

H1c:*The similarity between both spouses' tendency to become entrepreneurs (measured by the difference in entrepreneurship tendency, which is a measure of the entrepreneurial personality) will increase with marriage duration.*

Does the spouse contribute to the entrepreneurial gender gap?

Numerous studied have found that women can significantly contribute to various aspects of business activities, including increasing earning margins and decreasing return on assets volatility, credit leverage and corporate risk-taking, improving firms strategies, and increasing firms' survival (Cole 2013; Faccio et al. 2016; Francis 2014; Palvia et al. 2015; Shropshire et al. 2021; Vo et al. 2021), minimizing financial risks and improving investment portfolios (Charness & Gneezy 2012; Watson & McNaughton 2007), supporting better financial and accounting reporting, lowering litigation risks, and increasing dividend distribution (Barua et al. 2010; Francis 2014; Ho et al. 2015), and improving ethical values (Barfort et al. 2019; Hanna & Wang 2017; Kennedy & Kray 2014).

The positive relationship between women involvement in business and entrepreneurial and business management gender gaps supports the ongoing debate in the literature on gender inequality supporting the view that closing gender socioeconomic gaps are not enough to eliminate business gender gaps. Within this literature there is a debate between two approaches.

The Women in Development (WID) approach claim that countries which will achieve a certain threshold of development, will also enjoy a decreased gender gap. Clearly the entrepreneurial gender gap, which remains independent of economic development (Markussen and Roed 2017), contradict the WID approach.

The Gender and Development (GAD) approach criticizes the WID approach by emphasizes the subordination of women to men through social relations, norms and institutions. The GAD claims that advancement in gender equality requires not only improvements of income or education but also a significant empowerment of all social and institutional arrangements in which men exercise power (Berik et al. 2009; Forsythe et al. 2000). The consistent entrepreneurial gender gap although decades of minimizing education and income gender gaps may support the GAD approach.

Following the GAD approach, this paper focus on the internal family dynamics. Indeed, similarity contributes to relationship satisfaction (Decuyper et al. 2012). However, whether it supports the probability of women to become an entrepreneur is a different question.

On the one hand, a supportive environment is essential for entrepreneurship. The similarity between partners have been found to significantly contributes to relationship satisfaction, and especially to that of the female partner (Decuyper et al. 2012; Gonzaga et al. 2010; Jardine 2022; Letzring & Noftle 2010). Since, family transitions, including marriage satisfaction versus conflicts and even divorce, are important elements of the family embeddedness model, then similarity should also support the environment which is essential for exercising entrepreneurial potential.

In addition, supportive norms and attitudes are another important element of the family embeddedness model. Indeed, norms and attitudes play an especially significant role in establishing entrepreneurship patterns. The entrepreneurship literature consistently stress the importance of culture (Freytag & Thurik 2007; Hofstede 2001; Weber 1904), religion (Light 2010; Zelekha et al. 2014), and ageism (Kautonen et al. 2011; Neumark 2018), Zelekha & Kavé, 2022). Furthermore, a significant portion of business owners are spouses, which may indicate the importance of spousal support in starting a business (Simon 2005). Finally, transgenerational transfer of business knowledge can foster entrepreneurship of family members (Capolupo et al. 2023).

On the other hand, it seems that women are more likely than men to look for their husbands' support and advice before starting a business (Kirkwood 2009). In many countries, women, as well as their close contacts, perceive themselves as less suitable for entrepreneurship than males (Langowitz & Minniti 2007; Zelekha 2021). Moreover, spousal support is important in reducing family conflict among women entrepreneurs but not vice versa (Marcinjus et al. 2007). Women and not men serve as chief emotional officer providing emotional support for family firms (Calabro et al., 2021 which may help to explain why joining family

business are more welcoming for women then starting their own ventures (Wood et al., 2023. A supportive family can serve as a relationship resource especially for women who can count on the help of family members regarding business challenges (Eddleston & Powell, 2012, Welsh et al., 2014; (Cardella et al. 2020; De Clercq et al. 2023)), therefore positively affecting their firms' performance (Neneh 2017; Shanine et al. 2019)and innovative behavior (Song et al. 2023).

Thus, the study hypothesizes the following:

H2:*Because the similarity between both spouses' tendency to become entrepreneurs (measured by the difference in entrepreneurship tendency) increases, the probability that they will become entrepreneurs also increases, especially among women.*

The family embeddedness model also describes resources as an important characteristic that influences family members. This framework is closely linked to the intellectual capital literature and its impact on entrepreneurship (Crupi & Di Minin, 2021) and especially to the relational capital (RC) literature that consider RC with all stake holders and partners as one out of three components of intellectual capital (human capital and structural capital consist of the rest). According to these accounts RC is essential for innovation, efficiency, cooperation, and performance (Ali et al. 2021; Cabrilo et al. 2020; Paoloni et al. 2022; Vecchio et al. 2021). Therefore, can contribute to the entrepreneurial gender gap (Modaffari et al. 2023; Wu 2020).

Family income is an essential resource element that is influenced and even controlled in many households by the men spouse. By no means, the spouse is an important stake holder that takes a major part of the women entrepreneur relational capital. Since, the personal network can support the financial needs of women entrepreneurs (Modaffari et al. 2023; Paoloni and Modaffari 2022; Welsh et al. 2018), the spouse can be an important contributor to enabling an entrepreneur to proceed from the first and second stages of entrepreneurship development to the third stage. The family support for finance is crucial considering the relatively unfavorable terms characterizing bank loans especially for women entrepreneurs (Cesaroni 2016), Zelekha & Weber, 2021; (Laghi et al. 2022).

However, following the GAD, the entrepreneurial gender gap may be an outcome of inequality regarding the allocation of family financial and other resources. In line with this claim, the entrepreneurship literature has documented gender differences in spousal labor support and family responsibilities, which are alternatives to financial support (De Clercq et al. 2023; Miettinen 1986).

Thus, the study hypothesizes the following:

H3a:*Family income will have a significantly positive association with spouses' tendency to become entrepreneurs (a measure of the entrepreneurial personality), but only among men.*

H3b:*Family income will have a significantly positive association with actual entrepreneurship, but only among men.*

The family embeddedness model also describes social resources as an additional important characteristic that influences family members. In fact, as described earlier role models are very important in determining patterns of entrepreneurship.

The entrepreneurship literature has documented some indications regarding the effect of role models that may be interpreted as sources of possible gender inequality. Sons of self-employed fathers enter self-employment more often than those of self-employed mothers (Dunn and Holtz-Eakin 2000). In addition, it seems that the influence of paternal and maternal role models' differs in their dependence on openness to experience (Chlosta et al. 2012). Finally, spousal advice has been shown to be important for women entrepreneurs (Van Auken and Werbel 2006), and women tend to look for their husbands' support before starting their own businesses, as mentioned earlier (Kirkwood 2009).

Nevertheless, the indications for possible gender inequality found in the literature are not only limited to but also focused on parental role modeling and not spousal role modeling. In fact, there is no clear and direct evidence for any spousal role modeling.

Furthermore, a vast body of psychological literature, dating back as far as Freud, has attributed the different roles of fathers and mothers to gender match/mismatch (father–son and mother–daughter vs. father–daughter and mother–son). Indeed, according to the social role theory, social beliefs regarding gender roles are adopted from parental imitation (Eagly 1987; Eagly et al. 2000). In contrast, spousal role modeling has nothing to do with the above-mentioned parental gender match/mismatch and should be driven more by behavioral effects as individuals tend to learn by observing the actions of others (Bandura 1986; Chlosta et al. 2012).

Based on the consisting support for the importance of entrepreneurial role modeling, the study hypothesizes the following:

> ***H4a:****Having a role-model entrepreneur as a spouse has a significantly positive association with actual entrepreneurship, with no significant gender differences.*

However, the dataset is cross-sectional, and therefore, a casual direction cannot be established from *H4a*'s possible positive association. In fact, a positive association can be a result of the role model effect of male entrepreneurs on their entrepreneurial spouses, or vice versa, or following the similarity hypothesis (*H1*) from the preselection or socialization of two married entrepreneurs. To establish or rule out a casual claim under a cross-sectional study design, an instrumental variable approach is needed.

Indeed, if age is significantly associated with an entrepreneurial tendency, then we can consider it as a stable personality structure that is mostly determined earlier in life. Therefore, it can be used as an instrumental variable for the role model variable. If the egalitarian observational effect prevails, we can expect that the entrepreneurial tendency of a spouse of either gender will have a positive association with their partner's actual entrepreneurship. If a gender difference prevails, we can expect that the entrepreneurial tendency of a man will have a positive association with his wife's actual entrepreneurship, but not vice versa. Finally, if pre-selection has indeed taken place, creating selection bias between entrepreneurial partners, then we can

expect that the entrepreneurial tendency of either gender will not have a significant association with their partner's actual entrepreneurship. That is, there are no role model effects but rather spousal pre-selection about both entrepreneurial tendency and the development needed to become an entrepreneur.

Thus, the study hypothesizes the following:

H4b:*A partner of either gender's tendency to become an entrepreneur (a measure of the entrepreneurial personality) will have no significant association with their spouse's prevalence of becoming an entrepreneur.*

Data and methods

Research design

Several meta-analyses of studies which examined the relationship between personality traits and entrepreneurs revealed that most research designs used multivariant regression analysis of cross sectional (un longitudinal) data sets, which consist of self-reporting surveys of personality traits including entrepreneurial tendencies, and with an average sample size of 150–200 participants. Most of them used only the self-reporting surveys of entrepreneurial tendencies in order to divide the samples between potential entrepreneurs and non-entrepreneurs (Brandstätter 2011; Rauch & Frese 2007; Zhao & Seibert 2006).

This study will use a large and unique matched sample of married couples which will also incorporate both self-reporting surveys of entrepreneurial tendency and information regarding actual entrepreneurship history to divide the sample and the subsamples between actual entrepreneurs and non-entrepreneurs. In addition, a large set of control variables will be included to examine the robustness of the regression results and its strength over other factors that may influence entrepreneurial tendency and/or actual entrepreneurship.

Participants

A total of 321 Hebrew-speaking families including both parents (men: mean age = 57, SD = 8.31, age range = 38–81 years; women: mean age = 54, SD = 7.68, age range = 38–81 years) and one of their children took part in this study. The participants were parents of 321 students studying for either a B.A. in Business Administration or an M.B.A. Of the participants, 169 were part-time or full-time entrepreneurs (57 women entrepreneurs), and 473 were not entrepreneurs. The survey was conducted between November 2016 and the May 2018. Due to the large sample size (including the children incorporated 963 participants) and the relatively long time needed to complete the questionnaires (estimated for close to 1 h), the students were encouraged by receiving a five-point bonus in one of their courses if they and their parents will complete the survey. After the students completed their own questionnaires and reported their parents' approval, a research assistant contacted the parents

directly to send them the survey and collected it after completion. The response rate of the parents was very high (over 95%), ruling out potential bias due to different response rates between the children and their parents.

The sample size was determined using the nQuery software (https://www.statsols.com/nquery) to calculate the strength after dividing the total sample into sub-samples of men and women. The minimum size of a sub-sample was calculated based on the mean and standard deviation of the entrepreneurial tendency score. For a 9-point interval (a third of a standard deviation), the sub-sample should include at least 78 participants; and for a 4.5-point interval (a sixth of a standard deviation), the sub-sample should include at least 316 participants (two-sided interval test, 95% confidence level).

The sample's representativeness to the general Israeli adult's population was also examined in compared to income, age and education and found only insignificant differences among these three important socioeconomic characteristics.

Table 1 shows the demographic characteristics of the matched sample.

Materials

The study used existing questionnaires to examine entrepreneurship tendency, personality traits (Big Five), and socioeconomic factors.

Entrepreneurship tendency scale. The 65-item self-reported entrepreneurship tendency scale was used (Ahmetoglu et al. 2011). This scale is highly quoted including several large reviews (Gorgievsky & Stephan 2016; Omorede et al. 2015) and used by recent authors as well (Zelekha & Kavé, 2022).

The scale consists of 65 items that assess four aspects of entrepreneurial personality, namely entrepreneurial awareness/proactivity (e.g., "I am quick to spot ways of making money"), entrepreneurial creativity ("Even if I know how to do something, I always try to do it in a different way"), opportunism/motivation ("When I see a

Table 1 Summary Statistics

Variable	Average/Share	SD	Median
Women's Age	54	7.68	53
Men's Age	57	8.31	56
Religious	302/642	-	-
Jewish Religion	603/642	-	-
Born in Israel	461/642	-	-
Number of children	5.5	2.42	5
Years of education	13.32	3.37	13
Net household income	12,900	7,000	11,500
Women entrepreneur	57/321	-	-
Men entrepreneur	112/321	-	-
Employee	506/642	-	-
Unemployed	26/642	-	-
Home maker	45/642	-	-

business opportunity, I jump on it without giving it much thought"), and vision ("I am destined to make a difference in the world").

In this regard, the data regarding actual entrepreneurship history measures the third stage of entrepreneurial development as discussed in the Introduction section (i.e., The execution of business opportunities into actual entrepreneurship). The data of the entrepreneurship tendency scale represents the first stage of entrepreneurship development (i.e., The identification of opportunities) and the second stage of entrepreneurship development (i.e., The examination and theoretical development of opportunities).

The respondents were instructed to rate each statement on a five-point Likert scale that ranged from completely disagree (1) to completely agree (5) (as included in the original entrepreneurship tendency scale, (Ahmetoglu et al. 2011)). The total entrepreneurial potential score was calculated by adding the scores of all the individual items (Zelekha & Kavé, 2022). The Cronbach's α for the total scores was 0.89 indicating that the results will be robust to alternative calculation weights of the total score. The high reliability of the scale was also supported by a factor analysis which revealed four factors in our sample, but only one of them was large (associates with most of the items) and the rest were rather small. These results, as well as the very high Cronbach's α of the entire questionnaire may indicate that a single higher order factor exists.

Furthermore, the high reliability of the total entrepreneurial tendency score was also supported by the significant difference found between entrepreneurs and non-entrepreneurs. Moreover, the relationship between actual entrepreneurship and age resembled an inverted U-shape with a maximum probability around age 45, as found in previous studies (Gielnik et al. 2018; Kautonen et al. 2014; Levesque and Minniti 2011).

Big five personality scale. The study used the 44-item Big Five Inventory questionnaire which is the full version and the most accepted personality trait scale used by the psychological and the entrepreneurial literatures (John et al. 1991; John et al. 2008; Zhao & Seibert 2006; Zhao et al. 2010).

Eight items assessed Extraversion (E; e.g., "I see myself as someone who is talkative"); nine items assessed Agreeableness (A; e.g., "I see myself as someone who tends to find fault with others"); nine items assessed Conscientiousness (C; e.g., "I see myself as someone who does a thorough job"); eight items assessed Neuroticism (N; e.g., "I see myself as someone who is depressed, blue"); and ten items assessed Openness to Experience (O; e.g., "I see myself as someone who is original, comes up with new ideas"). Respondents were instructed to rate each statement on a 5-point Likert scale that ranged from completely disagree (1) to completely agree (5). Cronbach's α's were 0.74 for Extraversion, 0.72 for Agreeableness, 0.76 for Conscientiousness, 0.73 for Neuroticism, and 0.77 for Openness to Experience.

Socioeconomic questionnaire. Participants were asked to provide background information on variables that are known to influence entrepreneurial tendency and/or actual entrepreneurship. Income and being an Arab minority or being an immigrant were included since necessity in general and facing some kind of discriminatory hiring practices in particular, may affect the tendency to become an entrepreneur (Weber & Schaper 2004; Zelekha 2013). Religion and degree of religiosity

were included since different religious institutions have a different impact on the tendency to become an entrepreneur (Zelekha et al. 2014). Parental entrepreneurial history was recorded because parental practices affect ones' tendencies to become an entrepreneur, such that having a parent who is an entrepreneur increases the probability that a child ends up as an entrepreneur by 30 to 200 percent (Colombier & Masclet 2008; Dunn & Holtz-Eakin 2000; Lindquist et al. 2015). Education was included as indication of human capital that may assist in the accumulation of knowledge, leading to the development of skills useful to entrepreneurs (Delmar & Davidsson 2000).

Analysis and findings

In this study, two comparable models were used, which share a full set of social, economic, cultural and personality factors in fully controlled specifications. The models differed by their dependent variable – actual entrepreneurs versus non entrepreneurs using logistic OLS regression and entrepreneurial tendency score using OLS regression. The models were applied for both the full matched couples' sample and the men and women sub samples. All models had a relatively high explanatory power and were stable and robust to the numerous controls.

To capture transition associations, the estimations included immigration status, age, spouse's age, religion, level of religiosity, number of children, marriage duration (measured by the age of one of each couple's children on a random base), and child's gender (selected randomly). For resources, the estimations included employment data, education, spouse's education, income, and actual spousal and parental entrepreneurship (as a possible role model). Finally, for norms/attitude associations, the estimations included entrepreneurial culture (using the level of entrepreneurship of each spouse and their father and mother's country of birth) and the spouse's tendency to become an entrepreneur.

Hypothesis 1a – 1c: Does the matrimony with potential spouse is partially dependent on the entrepreneurial personality (the preselection versus socialization process hypothesis)?

In support of H1a, the association between the spouse's entrepreneurial tendency was positively significant, with an r-value reaching 0.262 ($p<0.001$), which was close to the 0.30 threshold documented in the literature for agreeableness, conscientiousness, and openness to experience. Furthermore, the associations between the spouse's four aspects of entrepreneurial personality were also positively significant, especially for vision ($r=0.316$, $p<0.001$) and opportunism/motivation ($r=0.235$, $p<0.001$) (see Table 2).

As expected, based on the literature, significant associations were also achieved in agreeableness ($r=0.44$, $p<0.001$), conscientiousness ($r=0.41$, $p<0.001$) and openness to experience ($r=0.35$, $p<0.001$).

In support of H1b, the association remained robust for both spouses after controlling for their big five personality traits (see Models A-1 and A-2, Table 3). The

Table 2 Average and Standard Deviation of Entrepreneurship and of Entrepreneurship Tendency Scores and its four Aspects, by Gender

Gender	Number of Participants	Number of Entrepreneur	Average Entrepreneurship Tendency Score	SD Entrepreneurship Tendency Score
Males	321	112	205.97	28.72
Females	321	57	197.83	26.87
Total	642	169	201.90	28.09
Margin	-	-	-8.14+++	-
Pearson				
Correlation	321	169	0.262+++	-
Males	321	112	27.26	6.49
Females	321	57	25.11	5.91
Total	642	169	26.18	6.29
Margin	-	-	2.15+++	-
Pearson				
Correlation	321	169	0.182	-
Males	321	112	55.67	10.19
Females	321	57	53.47	10.18
Total	642	169	54.57	10.23
Margin	-	-	2.20+++	
Pearson				
Correlation	321		0.179+++	-
Males	321	112	59.76	9.63
Females	321	57	56.57	9.22
Total	642	169	58.16	9.55
Margin	-	-	3.19+++	-
Pearson				
Correlation	-	-	0.235+++	-
Males	321	112	63.28	7.61
Females	321	57	62.69	7.72
Total	642	169	62.98	7.66
Margin	-	-	0.59	-
Pearson				
Correlation	-	-	0.316+++	-

association achieved in the entrepreneurial tendency–controlled specification of men (see Model A-1, Table 3) was somewhat larger than the association achieved in the entrepreneurial tendency–controlled specification of women (see Model A-2, Table 3), but the difference was insignificant.

In both specifications, the association between a partner's extraversion and openness to experience and their entrepreneurial tendency was significantly positive, while that between a partner's neuroticism and their entrepreneurial tendency was significantly negative. The association between a partner's conscientiousness and

Table 3 Factors associated with Entrepreneurial Tendency

Model A-6 B (t)	Model A-5 B (t)	Model A-4 B (t)	Model A-3 B (t)	Model A-2 B (t)	Model A-1 B (t)	Variable
321 Couples	321 Couples	321 Women	321 Men	321 Women	321 Men	**Number of observations/Gender**
OLS	OLS	OLS	OLS	OLS	OLS	**Method**
Couples' ETS* Similarity Margin	Couples' ETS* Similarity Margin	Women's ETS*	Men's ETS*	Women's ETS*	Men's ETS*	**Dependent Variable**
-12.86 (-0.71)	-26.35+++ (-3.22)	126.49+++ (9.15)	116.73+++ (7.48)	127.14+++ (8.06)	123.04+++ (7.17)	**Constant**
-	-	0.23+++ (4.80)	-	0.24+++ (4.56)	-	**Men's ETS***
-	-	-	0.26+++ (4.53)	-	0.27+++ (4.56)	**Women's ETS***
1.20+++ (3.70)	-	1.18+++ (4.82)	-	1.16+++ (4.66)	-0.29 (-1.04)	**Women's Extraversion**
-0.39 (-1.12)	-	-0.80+++ (3.00)	-0.68+++ (-2.89)	-0.83+++ (-3.07)	-0.38 (-1.33)	**Women's Agreeableness**
-0.19 (-0.66)	-	-0.62+++ (-2.81)	-0.44+ (-1.93)	-0.63+++ (-2.85)	-0.42+ (-1.77)	**Women's Neuroticism**
2.00+++ (7.95)	-	2.03+++ (10.65)	-0.70+++ (3.11)	2.03+++ (10.51)	-0.57++ (-2.39)	**Women's Openness to Experience**
-0.19 (-0.59)	-	-0.36 (-1.48)	-	-0.39 (-1.56)	-0.17 (-0.62)	**Women's Conscientiousness**
-1.22+++ (-3.92)	-	-	1.31+++ (5.54)	-0.08 (-0.34)	1.42+++ (5.56	**Men's Extraversion**
0.47 (1.33)	-	-	-	0.29 (1.08)	-0.28 (-0.97)	**Men's Agreeableness**

Table 3 (continued)

Model A-6 B (t)	Model A-5 B (t)	Model A-4 B (t)	Model A-3 B (t)	Model A-2 B (t)	Model A-1 B (t)	Variable
0.38 (1.39)	-	-	-0.42 + + (-1.99)	-0.07 (-0.31)	-0.50 + + (-2.15)	**Men's Neuroticism**
-1.75 + + + (-7.12)	-	-0.34 + (-1.66)	1.94 + + + (9.95)	-0.32 (-1.51)	1.88 + + + (9.36)	**Men's Openness to Experience**
-0.44 (-1.26)	-	-0.41 + (-1.81)	-	-0.55 + + (-2.02)	0.02 (0.73)	**Men's Conscientiousness**
0.49 + + (2.10)	0.70 + + (2.29)	-	-	-	-	**Child's Age as a Proxy for Marriage Duration**
0.44	0.01	0.48	0.47	0.47	0.49	**Adjusted R Square**

+Significant at the 10 percent level

+ +Significant at the 5 percent level

+ + +Significant at the 1 percent level

*Entrepreneurship Tendency Scale

their entrepreneurial tendency was insignificant in both specifications. However, the results for agreeableness differed; while the association was significantly negative for women's entrepreneurial tendency specification, the association was insignificantly negative for that of men. When removing the insignificant variables from the specifications, another difference was observed. While women's agreeableness, openness to experience, and neuroticism had significantly negative associations (the latter only close to the 95% level) on the entrepreneurial tendency of men (see Model A-3, Table 3), no significant male personality traits (at the 95% level) were associated with women's entrepreneurial tendency (see model A-4, Table 3).

In support of H1c, the similarity between spouses' entrepreneurial tendency (measured by the difference in the entrepreneurial tendency score and as robustness measured by the ratio between women and men's entrepreneurial tendency score) significantly increased with marriage duration (because of absence in marriage duration in the data set the age of one of their children, selected randomly age, will be used as a proxy) (see Model A-5, Table 3). This association remained positively significant after controlling for both spouse's big five personality traits (see Model A-6, Table 3) and for the large set of controls. Furthermore, the effect of marriage duration on the similarity between spouses' entrepreneurial tendency seemed to be substantial. As can be seen in Table 2, the average margin between couples' entrepreneurial tendency scales was 8.14 points, and this margin converged at a rate of 0.49 points per year of marriage (see Model A-6, Table 3). However, the total contribution of marriage duration alone to spousal similarity was very limited. That is, the similarity was high even after controlling for marriage duration, with relatively small differences between couples, although these small differences became significantly smaller as marriage duration increased.

Hypothesis 2 – 4: Does the spouse contribute to the entrepreneurial gender gap?

In partial support of H2, the association between women's similarity in entrepreneurial tendency and the probability to become an entrepreneur was positively significant (see Model A-7, Table 4) in both measures of similarity and after the large set of controls. However, surprisingly, the association between men's similarity in entrepreneurial tendency and the probability to become an entrepreneur was negatively significant, although with small magnitude (see Model A-8, Table 4). An interaction analysis indicated that the negative association of the similarity of the men's specification was not focused on a certain personality trait or income level but was rather general.

In support of H3a, the association of family income with entrepreneurial tendency was positively significant for men (see Model A-9, Table 4) and insignificant for women (see Model A-10, Table 4). In support of H3b, the association of family income with the probability of becoming an entrepreneur was positively significant only for men (see Model A-8, Table 4) and insignificant for women.

To examine the robustness of these findings and to address possible reverse causality, several analyses were conducted. First, the possibility that entrepreneurial men simply earn more than entrepreneurial women was examined, and it was found that there was no significant difference between families with an entrepreneurial

Table 4 Factors associated with Entrepreneurial Tendency

Model A-12 OR (95%CI)	Model A-11 OR (95%CI)	Model A-10 B (t)	Model A-9 B (t)	Model A-8 OR (95%CI)	Model A-7 OR (95%CI)	Variable
321 women	321 Men	321 Women	321 Men	321 Men	321 Women	**Number of observations/Gender**
Logistic OLS	Logistic OLS	OLS	OLS	Logistic OLS	Logistic OLS	**Method**
Women's Actual Entrepreneur	Men's Actual Entrepreneur	Women's ETS*	Men's ETS*	Men's Actual Entrepreneur	Women's Actual Entrepreneur	**Dependent Variable**
0.47	0.19	150.48+++ (8.95)	154.3+++ (8.22)	1.89	0.64+	**Constant**
-	-	-	-	0.99++ (0.98–1.00)	1.01++ (1.00–1.02)	**Couples' ETS* Similarity Margin**
-	-	0.20+++ (3.98)	-	-	-	**Men's ETS***
-	-	-	0.20+++ (3.60)	-	-	**Women's ETS***
1.06 (0.97–1.16)	-	1.13+++ (4.58)	-	-	-	**Women's Extraversion**
0.97 (0.89–1.06)	-	-0.85+++ (-3.22)	-0.76+++ (-3.287)	-	-	**Women's Agreeableness**
0.97 (0.89–1.05)	–	-0.60+++ (-2.77)	-0.45++ (-2.03)	-	-	**Women's Neuroticism**
1.03 (0.97–1.10)	-	2.05+++ (10.66)	-0.54++ (-2.44)	-	-	**Women's Openness to Experience**
0.99 (0.91–1.07)	-	-0.32 (-1.31)	-	-	-	**Women's Conscientiousness**
-	1.12+++ (1.04–1.21)	-	1.22+++ (5.23)	1.11+++ (1.03–1.19)	-	**Men's Extraversion**
-	0.98 (0.91–1.06)	-	-	-	-	**Men's Agreeableness**

Table 4 (continued)

Model A-12 OR (95%CI)	Model A-11 OR (95%CI)	Model A-10 B (t)	Model A-9 B (t)	Model A-8 OR (95%CI)	Model A-7 OR (95%CI)	Variable
-	1.02 (0.96–1.10)	-	-0.42 + + (-2.01)	-	-	**Men's Neuroticism**
	0.95 + (0.90–1.00)	-0.23 (1.12)	1.93 + + + (9.83)	0.94 + + (0.89–0.99)	-	**Men's Openness to Experience**
-	1.04 (0.96–1.12)	-0.37 + (-1.66)		-	–	**Men's Conscientiousness**
0.99 (0.86–1.14)	1.20 + + (1.04–1.39)	-0.01 (-0.03)	1.03 + + (2.10)	1.25 + + + (1.09–1.43)	-	**Net Family Wages**
0.98 (0.93–1.03)	0.98 (0.93–1.02)	-0.28 + (-1.94)	-0.40 + + + (-2.81)	0.97 (0.93–1.01)	-	**Age**
1.02 (0.92–1.13)	1.04 (0.95–1.13)	-0.28 (-0.85)	-0.56 + (-1.77)	-	-	**Education**
0.08 + + + (0.04–0.19)	0.04 + + + (0.02–0.08)	-4.17 + (-1.81)	-5.46 + + (-2.33)	0.04 + + + (0.02–0.09)	0.08 + + + (0.04–0.18)	**Employee**
0.12 + (0.01–1.13)	0.14 + + (0.03–0.67)	-	-	0.20 + + (0.04–0.93)	0.11 + + (0.01–0.90)	**Unemployed**
0.39 (0.09–1.63)	0.13 + + + (0.04–0.40)	-	-	0.18 + + + (0.06–0.52)	0.23 + + (0.06–0.79)	**Retirement**
14.61 + + + (3.35–63.83)	4.89 + + + (1.50–15.89)	-	-	4.34 + + (1.39–13.50)	13.48 + + + (3.46–52.51)	**Having a Course in Entrepreneurship**
1.33 (0.58–3.05)	2.08 + (0.98–4.42)	6.05 + + (2.25)	5.91 + + (2.31)	2.32 + + (1.17–4.60)	-	**Father Entrepreneur**
5.95 + + + (1.61–21.94)	1.27 (0.35–4.62)	-	-	-	5.17 + + + (1.69–15.87)	**Mother Entrepreneur**
-	4.16 + + + (1.78–9.71)	-	-	-	-	**Women's Actual Entrepreneur**

Table 4 (continued)

Model A-12 OR (95%CI)	Model A-11 OR (95%CI)	Model A-10 B (t)	Model A-9 B (t)	Model A-8 OR (95%CI)	Model A-7 OR (95%CI)	Variable
2.98+++ (1.43–6.24)	-	-	-	-	-	**Men's Actual Entrepreneur**
-	-	0.49	0.50	-	-	**Adjusted R Square**
0.27	0.41	-	-	0.39	0.24	**Cox & Snell R Square**
0.45	0.56	-	-	0.54	0.39	**Nagelkerke R Square**

+Significant at the 10 percent level

++Significant at the 5 percent level

+++Significant at the 1 percent level

*Entrepreneurship Tendency Scale

man and those with an entrepreneurial woman. Second, the sample was divided into several subsamples, including a subsample of couples in which women scored higher than median on the entrepreneurial tendency score, and therefore had a better chance to become an entrepreneur, and a subsample of couples in which the education of women was higher than median, and therefore, their personal income probably contributed an increased share of the family income. Since education mostly takes place early in life, it can serve as an instrumental variable for income. In all the subsamples, the association of family income with the probability of becoming an entrepreneur was positively significant for men and insignificant for women.

In support of H4a, having an entrepreneur as a spouse was significantly associated with men's probability of becoming an entrepreneur (see Model A-11, Table 4) as well as that of women (see Model A-12, Table 4). In fact, the odds ratio for having an entrepreneur wife (OR = 4.16, CI/95% = 1.78–9.71) was larger than that for having an entrepreneur husband (OR = 2.98, CI/95% = 1.43–6.24), although the difference in both estimations was insignificant.

In support of H4b, the entrepreneurial tendency of a spouse was not significantly associated with their probability of becoming an entrepreneur, while age was insignificant (see Models A-13 and A-14 for women vs. Models A-15 and A-16 for men, Table 5), thereby supporting the preselection hypothesis against the role model hypothesis. As an alternative measure, the total entrepreneurial tendency score was divided between participants who scored above average and those who scored below average. The former group was categorized as having low entrepreneurial tendency, while the latter as having high entrepreneurial tendency. This alternative measure was not significant for women's actual entrepreneurship specification but was weakly significant (at the 90% level) for that of men (see Model A-16, Table 5).

As another sensitivity analysis for possible role modeling effects (in addition to the similarity hypothesis), the association of having an entrepreneur as a partner with their entrepreneurial tendency was examined and found to be insignificant for both genders.

Table 6 summarizes which of the hypotheses were fully supported.

Discussion and concluding remarks

Using a large representative matched sample of couples, this study examines the effect of spouses on the entrepreneurial gender gap. The unique dataset included both entrepreneurial tendency and actual entrepreneurship history, therefore allowed the examination of different stages of entrepreneurial development process.

The results present clear support for the earlier findings documented in the literature that people tend to select their spouses based on social, cultural, and psychological characteristics (Epstein & Gutman, 1985; (Galovan et al. 2022; Tyler 1988)) including their personality traits, and especially agreeableness, conscientiousness, and openness to experience personality (Rammstedt & Schupp 2008).

In contribution to the literature, the study suggests that married people have a significant association with their partners in terms of their cognitive structure of entrepreneurial tendency (preselection process). The results were robust to all three

Table 5 Factors associated with Entrepreneurial Tendency

Model A-17 OR (95%CI)	Model A-16 OR (95%CI)	Model A-15 OR (95%CI)	Model A-14 OR (95%CI)	Model A-13 OR (95%CI)	Variable
321 Men	321 Men	321 Men	321 Women	321 Women	**Number of observations/Gender**
Logistic OLS	Logistic OLS	Logistic OLS	Logistic OLS	Logistic OLS	**Method**
Men's Actual Entrepreneur	Men's Actual Entrepreneur	Men's Actual Entrepreneur	Women's Actual Entrepreneur	Women's Actual Entrepreneur	**Dependent Variable**
0.44	0.22	0.00	0.03	0.69	**Constant**
-	-	1.04+++ (1.02–1.06)	-	1.00 (0.99–1.02)	**Men's ETS***
1.72+** (0.90–3.26)	1.00 (0.99–1.02)	-	1.02++ (1.01–1.04)	-	**Women's ETS***
-	-	-	1.03 (0.94–1.13)	1.06 (0.97–1.16)	**Women's Extraversion**
-	-	-	1.00 (0.91–1.10)	0.97 (0.89–1.07)	**Women's Agreeableness**
-	-	-	0.98 (0.91–1.06)	0.97 (0.90–1.05)	**Women's Neuroticism**
-	-	-	0.97 (0.90–1.05)	1.02 (0.96–1.09)	**Women's Openness to Experience**
-	-	-	1.00 (0.92–1.09)	0.99 (0.91–1.07)	**Women's Conscientiousness**
1.12+++ (1.04–1.21)	1.12+++ (1.04–1.21)	1.08+ (0.99–1.16)	-	-	**Men's Extraversion**
0.98 (0.91–1.05)	0.98 (0.91–1.06)	0.99 (0.92–1.07)	-	-	**Men's Agreeableness**
1.01 (0.94–1.08)	1.01 (0.95–1.08)	1.03 (0.97–1.11)	-	-	**Men's Neuroticism**
0.95++ (0.89–1.00)	0.94++ (0.89–1.00)	0.88+++ (0.82–0.94	-	-	**Men's Openness to Experience**
1.03 (0.95–1.11)	1.03 (0.95–1.11)	1.03 (0.96–1.12)	-	-	**Men's Conscientiousness**

Table 5 (continued)

Model A-17 OR (95%CI)	Model A-16 OR (95%CI)	Model A-15 OR (95%CI)	Model A-14 OR (95%CI)	Model A-13 OR (95%CI)	Variable
1.24+++ (1.08–1.43)	1.23+++ (1.07–1.42)	1.22+++ (1.06–1.41)	1.00 (0.87–1.16)	1.01 (0.88–1.16)	**Net Family Wages**
0.97 (0.93–1.02)	0.97 (0.93–1.02)	0.98 (0.94–1.03)	0.98 (0.93–1.02)	0.97 (0.93–1.02)	**Age**
1.03 (0.94–1.12)	1.03 (0.94–1.12)	1.05 (0.96–1.15)	1.01 (0.91–1.13)	1.01 (0.91–1.12)	**Education**
0.04+++ (0.02–0.09)	0.04+++ (0.02–0.08)	0.04+++ (0.02–0.09)	0.08+++ (0.04–0.19)	0.07+++ (0.03–0.17)	**Employee**
0.22++ (0.05–0.98)	0.20++ (0.04–0.91)	0.20++ (0.04–0.99)	0.12+ (0.01–1.12)	0.11++ (0.01–1.03)	**Unemployed**
016+++ (0.05–0.46)	0.15+++ (0.05–0.45)	0.21+++ (0.07–0.66)	0.42 (0.10–1.74)	0.42 (0.10–1.71)	**Retirement**
3.83++ (1.21–12.10)	4.24++ (1.36–13.20)	3.59++ (1.06–12.10)	13.02+++ (3.15–53.82)	14.77+++ (3.64–59.91)	**Having a Course in Entrepreneurship**
2.10++ (1.01–4.38)	2.10++ (1.01+4.35)	1.79 (0.83–3.86)	1.29 (0.57–2.94)	1.43 (0.64–3.19)	**Father Entrepreneur**
1.32 (0.39–4.45)	1.35 (0.39–4.65)	1.13 (0.29–4.40)	5.40+++ (1.47–19.87)	4.87+++ (1.45–16.42)	**Mother Entrepreneur**
0.39	0.39	0.42	0.27	0.25	**Cox & Snell R Square**
0.54	0.53	0.58	0.44	0.41	**Nagelkerke R Square**

+Significant at the 10 percent level

++Significant at the 5 percent level

+++Significant at the 1 percent level

*Entrepreneurship Tendency Scale

**Entrepreneurship Tendency Scale in a categorical form. The total entrepreneurial tendency score total was divided between participants who scored above than average and participants who scored below than average. The former were categorized as having low entrepreneurial tendency while the latter were categorized as having high entrepreneurial tendency

stages of the entrepreneurial development process including entrepreneurial execution. Furthermore, similarities were observed to different degrees in all the four aspects of entrepreneurial personality, especially for opportunism/motivation (a determinant of the first stage of entrepreneurial development) and vision (a determinant of the second stage of entrepreneurial development).

These results add to the literature, novel similarities that are not only general by nature (which may be influenced by general cultural norms) but rather more functional. Therefore, presumably suggest that the drivers for these similarity preferences diverge from other similarities that relate to general personality traits. Future research can benefit from exploring general relative versus functional similarities.

Although the results clearly support the preselection hypothesis, they also suggest that spouses influence each other (the socialization hypothesis). Indeed, similarity increases along marriage duration. It seems that people become more similar to each other regarding their entrepreneurial tendency. Furthermore, as similarity in some personality traits has been found to affect marriage satisfaction (Decuyper et al. 2012; Gonzaga et al. 2010; Letzring & Noftle 2010), it was observed that entrepreneurial similarity was also associated with the increased probability of women to become an entrepreneur. That is, the similarity developed from the first and second stages of entrepreneurial process into the third stage of entrepreneurial execution.

Since both the preselection and the socialization hypotheses were supported, it is important to consider the relative roles of the two. The results indicated that the contribution of the socialization process explains only a small share of the similarity variance.

In a novel contribution to the literature, this study present evidence for gender inequality exercised inside the family premises. In fact, the discrimination of women characterized with high probability to become an entrepreneur revealed its ugly face twice. First, although similarity was associated with increased probability of women to become an entrepreneur, it was surprisingly associated with decreased probability of men to become an entrepreneur. Since the probability of men with low entrepreneurial tendency to become an entrepreneur is limited, this finding is more related to men and women with high entrepreneurial tendency. In fact, the results suggest that women with high entrepreneurial tendency are for some reason associated with decreased tendency of men to move from the first and second stages of entrepreneurial development into the third stage.

Another indication supported this finding. While women's agreeableness, openness to experience, and neuroticism had significantly negative associations (the latter only close to the 95% level) with the entrepreneurial tendency of men, no significant male personality traits were associated with women's entrepreneurial tendency. It seems that important personality drivers for entrepreneurship, and especially women's agreeableness and openness to experience, are associated with a decrease in men's entrepreneurial tendency. The possible role of women was also supported by the fact that men's agreeableness was not associated with either their own or their wives' entrepreneurial tendency, but women's agreeableness was negatively associated with both their own and their husbands' entrepreneurial tendency.

The question of why women with high potential to become an entrepreneur negatively affects men's probability to become an entrepreneur remains for future

Table 6 Summary of Hypotheses confirmation

Refutation	Confirmation	Hypothesis	
	Supported	A high and significant association will be found between the tendency of both spouses to become entrepreneurs (a measure of the entrepreneurial personality)	H1a
	Supported	The association between both spouses' tendency to become entrepreneurs (a measure of the entrepreneurial personality) will remain significant in a controlled specification, which includes the personality traits of both partners	H1b
	Supported	The similarity between both spouses' tendency to become entrepreneurs (measured by the difference in entrepreneurship tendency, which is a measure of the entrepreneurial personality) will increase with marriage duration	H1c
Not supported for men (significantly negative association)	Supported for women	Because the similarity between both spouses' tendency to become entrepreneurs (measured by the difference in entrepreneurship tendency) increases, the probability that they will become entrepreneurs also increases, especially among women	H2
	Supported	Family income will have a significantly positive association with spouses' tendency to become entrepreneurs (a measure of the entrepreneurial personality), but only among men	H3a
	Supported	Family income will have a significantly positive association with actual entrepreneurship, but only among men	H3b
	Supported	Having a role-model entrepreneur as a spouse has a significantly positive association with actual entrepreneurship, with no significant gender differences	H4a
	Supported	A partner of either gender's tendency to become an entrepreneur (a measure of the entrepreneurial personality) will have no significant association with their spouse's prevalence of becoming an entrepreneur	H4b

research. Do men feel threatened by their wives' entrepreneurial potential? Unfortunately, the nature of the dataset did not allow for a further exploration of this association, and future laboratory research is needed.

Second, in direct support to the GID approach (Markussen & Roed 2017), it has been found that while family income had a significant positive association with men's entrepreneurial tendency, as well as with their probability to become an entrepreneur, it did not have any significant association with either women's entrepreneurial tendency or with their probability to become an entrepreneur. This finding was robust even to highly educated women, which probably associated with increased personal income. And, robust to women who scored higher than median in the entrepreneurship tendency score, and therefore have better chance of becoming entrepreneurs.

The insignificance of income, higher education and high entrepreneurial tendency for women entrepreneurs emphasizes the subordination of women to men through social relations and therefore not only supporting the GID approach but specifically support the GID against the WAD approach. That is, supporting the view that closing gender gaps requires not only improvements of income or education but also a significant empowerment of all social and institutional arrangements in which men exercise power (Berik et al. 2009; Forsythe et al. 2000). In contribution to this literature, the paper point to the social arrangements inside the family premises.

These findings were also marked by the insignificance of many transition and resource variables, including number of children and education. However, regarding having children, all the couples in the dataset had children. Therefore, it may be that an increase in the number of children is not significantly associated with women's tendency or probability to become an entrepreneur but rather having the first child is the transition that is significantly associated (Cortez & Pan 2023).

In this regard, some researchers have claimed that men's coverture reduces women's incentive to exercise economic opportunities, and therefore reduces family income and wealth. However, as the costs and damage of this discouragement increases, men are more inclined to release women from coverture strategies, such as by granting women property rights (Geddes & Lueck 2002; Moehling & Thomasson 2020). Unfortunately, this research does not support this approach. It seems that family income does not support women's entrepreneurship, even if their chances to advance into entrepreneurship, or if their own contribution to family income, increase.

The significant difference, which was found in the actual entrepreneurship specification, could have been interpreted as favoritism toward allocating family income for the service of men's entrepreneurship. However, the results of the entrepreneurial tendency specification suggested that the difference in the association with family income is not a phenomenon that only characterizes favoritism toward the men's entrepreneurial execution stage alone but also has rather deeper and earlier roots in the first and second stages of the entrepreneurial development of women's, where favoritism toward men is irrelevant.

According to some accounts, differences in outcomes can also be a result of differences in the behavior of female relative to males with no direct discrimination. For example, it has been found that disadvantage groups such as women

(Hernandez-Arenaz & Nagore, 2019) and members of racial minority groups (Seidel et al. 2000)would negotiate significantly lower salaries than did men or members of racial majority. Moreover, several papers have found gender gap in confidence that is also contagious and transferred to men and to other women when they need to evaluate women's qualifications (Exley & Nielsen 2024; Mobius et al. 2022; Murciano-Goroff 2021). Other papers have found that the gender gap in confidence causing women to be less likely to enter competitive fields (Buser 2014), to apply for challenging work or even to speak up for themselves (Coffman 2014; Exley & Nielsen 2024). Clearly all these aspects are essential when considering entrepreneurial activities who demand optimistic self-evaluation regarding your own qualifications and by no means involve in competitive arenas. Furthermore, as entrepreneurship need capital then women need to speak for themselves toward their husbands to demand the equal allocation of the family capital.

The results of the current study are closely in line with these accounts, by suggesting that females may also voluntarily adopt a self-perception of entrepreneurial disadvantage in which family income should not serve their entrepreneurial potential. It is also possible the results indicate a direct discrimination of men, who make it clear to their wives that the family income is not supposed to serve women's entrepreneurial potential but only that of men. Whether it is done verbally or subtly requires future research.

The results have important practical implications for both policymakers and scholars, which mostly focused on unfavorable environments for women's entrepreneurs outside of the family. The results of this study shed light on two important drivers that can work for female entrepreneurs inside the family premises (spousal personality and possible usage of family income). In addition, the study examined only heterosexual married couples. It is not clear if the effects will be different and even reversed in homosexual couples and whether they will be significant in unmarried couples. Future research can assess this conjecture using for example alternative samples of non-heterosexuals couples (and in regard for income even to samples of single women versus single men). Examining alternative samples may allow a better understanding of the methods to tackle the discriminating norms. Moreover, if the effects will be duplicated (at least partially and especially for Lesbian couples), then it may indicate that the discriminating norms were internalize at earlier stages of life and are affecting even women who are not yet partner with men.

Some caveats should be noted when interpreting the empirical results. First, the study used a self-reported survey, which caused limitations. However, the reliability of the data was high, and added to this, the specifications resulted with the expected signs as documented in the entrepreneurship literature. Second, although the average marriage age in Israel is 27, the sample incorporated more matured couples (age ranged 38 -81). However, the entrepreneurial literature in general and the Israeli data in particular (Zelekha & Kavé, 2022) documents that actual entrepreneurship peaks towards the age of 50 and only then starts to decline while the decline in entrepreneurial tendency is quite limited. Furthermore, as the marriage duration has been found significant, we should expect the influence of spouses to increase as marriage duration extend. Therefore, the absence of younger couples in the sample should not be significant. In any case

the specifications included spouses ages and marriage duration controls. Third, this research was conducted in Israel. Although Israel is only a small Western country of no more than 10 million people, it is considered a startup nation with a very high level of entrepreneurship. Therefore, samples from other countries might have more variance. Hence, the results from the current sample may represent the lower limits of estimates compared to other countries. Future research in other western and nonwestern countries may shed more light on the role of spouses and its possible interconnection with alternative cultures and different stages of socio-economic development.

Author contribution YZ wrote the main manuscript, prepared the figures and reviewed the manuscript.

Data availability No datasets were generated during the current study.

Declarations

Competing interests The author declare no competing interests.

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