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## The relationship between entrepreneurial intent, gender and personality

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### Abstract

**Purpose:** We examine gender differences in personality traits of people with and without entrepreneurial intent to assess whether women who intend to become entrepreneurs exhibit particular tendencies that can be fostered.

**Design/Methodology/Approach:** Participants completed an online battery of well-established questionnaires to cover a range of personality traits relevant to entrepreneurship and gender. Participants also answered items concerning intent to become an entrepreneur. A factor analysis of personality traits produced four factors (Esteem and Power, Ambition, Risk Propensity, and Communal Tendency, the latter reflecting Openness and Cooperation, without Hubris). We constructed four parallel regression models to examine how gender, entrepreneurial intent, and the interaction of gender with intent related to these four personality factor scores.

**Findings:** Participants who endorsed a desire to become an entrepreneur reported higher Ambition. Women with entrepreneurial intentions endorsed higher levels of Communal Tendency than men with entrepreneurial intent. Those without entrepreneurial intent did not show gender differences in Communal Tendency.

**Implications:** Current findings suggest that men and women who intend to become entrepreneurs share many traits, but women with entrepreneurial intent show unique elevations in communal tendencies. Thus, a worthwhile locus for intervention into the gender disparity in self-employment may be providing space for and acknowledgement of prosocial motivation and goals as one successful route to entrepreneurship.

**Originality/value:** Given the underutilized economic potential of women entrepreneurs, there is a fundamental need for a rich array of research on factors that limit and promote women's entry into entrepreneurship. Current findings indicate that personality may be one piece of this puzzle.

## Keywords

Entrepreneurship; Gender; Personality

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## Introduction

Entrepreneurship is a driving force for economic growth in many countries (Carree, Van Stel, Thurik & Wennekers, 2002) and has profound effects on growth at the national level, especially in countries with high income per capita (Van Stel, Carree, & Thurik, 2005). Women entrepreneurs establish a significant portion of self-owned businesses, diversify the economic landscape, and are the fastest growing group of small business owners (GEM Women's Report, 2017; Verheul, Van Stel, & Thurik, 2006). Nevertheless, women are underrepresented in entrepreneurship and face unique obstacles to self-employment (Center for Women's Business, 2009; Guzman & Kacperczyk, 2019; Pew Research Center, 2015; Verheul & Thurik, 2001). Given the underutilized economic potential of women entrepreneurs, research and theory has attempted to understand and rectify the gender gap (see Verheul, Van Stel, & Thurik, 2006). Because much research on entrepreneurship relies on samples of men, generic entrepreneur descriptions are often masculine, a preconception that some researchers and theorists have rejected (Ahl, 2006; De Bruin, Brush, & Wetter, 2006; Gupta, Turban, Wasti, & Sikdar, 2009; Henry, Foss & Ahl, 2016). As these and other authors have suggested, building a more nuanced understanding of women's experiences in self-employment could bolster representation of the diverse set of approaches to entrepreneurship.

The entrepreneurial personality has captured the attention of researchers and the public alike (see Rauch & Frese, 2007 for a review). Personality is comprised of a person's trait-like tendencies toward consistent patterns of thought, emotion, and behavior (Mayer, 2007). A large number of studies indicate that entrepreneurs tend to differ from non-entrepreneurs in many different facets of personality, including heightened need for power and achievement, self-esteem, risk propensity, impulsivity, extraversion, and openness to experience (Alam, 2001; Coleman & Grothus-Magee, 1991; Langan-Fox & Roth, 1995; Matzler, Bauer, & Mooradian, 2015; Zhao, Seibert, & Lumpkin, 2010). Personality trait theory posits that complex personalities result from variations in a core set of underlying traits (McCrae & Costa, 1999). In keeping with this work, we take a personality trait theory approach to understanding the entrepreneurial personality. More directly relevant to our focus here, personality traits, such as risk propensity, extraversion, and openness to experience, also appear to shape the desire to become an entrepreneur (Zhao et al., 2010; see Kerr, Kerr, & Xu, 2018 for a review). Critically, though, many of the studies in this field have not considered the role of gender (see Henry, Foss, & Ahl, 2015 for a critique of the literature), limiting the ability to describe the traits that lead women to be motivated for entrepreneurship, and that would foster their success in establishing ventures. This is key, given that a large body of work outside of entrepreneurship research has suggested that there are key personality differences between men and women, despite substantial overlap as well (see Helgeson, 2015). Hence, there is a need to understand whether the growing literature on

personality traits in entrepreneurs can be generalized to women in entrepreneurship (Kirkwood, 2004; Yukongdi & Lopa, 2007).

Much of the personality literature focuses on the motivations and experiences of established entrepreneurs at a late career phase. However, this may be too late in the entrepreneurial life-course to truly understand how personality shapes the path of women interested in entrepreneurship. A “leaky pipeline,” or a pathway that discourages female entrepreneurship at different points along the way, could contribute to the gender disparity in business ownership (Martin, Wright, Beaven & Matlay, 2015). In addition, entrepreneurial intention is a robust predictor of entrepreneurial action and research supports intention models of entrepreneurial behavior (Krueger, Reilly, & Carsrud, 2000). In this context, people with intention to become entrepreneurs who are at an early career phase are a group of particular interest.

In this study, we aim to examine gender differences in personality in people with and without entrepreneurship intent. This study contributes to the literature by considering how a broad range of personality traits tied to entrepreneurship and gender cohere into factors, and how those personality factors differ by entrepreneurial intent and gender.

We assessed a sample of undergraduate students at a university with a high rate of entrepreneurship among alumni. We gathered data from the business department, where many individuals are likely to have an interest in entrepreneurship, and from psychology classes, which capture a broad range of undergraduates. We systematically gathered data on an array of personality traits that are well-established as predicting interest in becoming an entrepreneur, as well as those that have been found to differ by gender. Both gender and interest in becoming an entrepreneur have been tied to a relatively large list of trait-like tendencies; our goal was to cover the set of those traits, using the most commonly used personality scale, the NEO Five Factor Inventory (Costa & McCrae, 1989), as well as other personality scales frequently used in these domains.

Hypothesis 1: Personality traits such as risk propensity and trait-like motivations to obtain power over others will be endorsed more by men than women, whereas personality traits such as neuroticism, conscientiousness, extraversion, and tendency toward cooperation will be endorsed more by women than men.

Hypothesis 2: Traits previously found to relate to entrepreneurship, such as extraversion, openness, risk-taking, self-efficacy, proclivity for improvisation, and ambition will be related to intent to become an entrepreneur across genders.

Hypothesis 3: Previously established links of personality traits with intent to become an entrepreneur will be more robust for men than for women.

Given the well-established intercorrelations among personality traits, we used factor analysis to reduce to core underlying dimensions among these traits. We refined our hypotheses based on the results of the factor analysis. Rather than placing the masculine ideal as the baseline, we ask if the psychological traits of women who intend to become entrepreneurs could indicate alternative entrepreneurial styles.

## Literature

Conceptual and empirical work has focused on identifying individual differences in the personality profiles of entrepreneurs. Recent work has suggested that a diverse set of personality traits are tied to entrepreneurship entry (Obschonka & Stuetzer, 2017). Across a large literature, the Big Five traits of extraversion and openness (Costa & McCrae, 1989; Obschonka, Schmitt-Rodermund, Silbereisen, Gosling, Potter, 2013; Schmitt-Rodermund, 2004; see Kerr, Kerr, & Xu for a review), as well as more specific traits such as risk-taking, self-efficacy, proclivity for improvisation, and ambition have been found to be elevated in entrepreneurs (Baum & Locke, 2004; Brandstätter, 2011; Fillis & Rentschler, 2010; Nwankwo, Kanu, Marire, Balogun, & Uhiara, 2012; Rauch and Frese, 2007; see Obschonka & Stuetzer, 2017 for a review). Furthermore, high extraversion, openness, risk-taking, self-efficacy, and proclivity for improvisation have been tied to entrepreneurial intent (Brandstätter, 2011; Hmieleski & Corbett, 2006; Pihie & Bagheri, 2013; Schmitt-Rodermund, 2004; Segal, Borgia, & Schoenfeld, 2005; Zhao et al., 2010). Indeed, personality traits have been shown to have a larger influence on entrepreneurial intention than situational factors (Yokongdi & Lopa, 2017). Many of these same traits have also been found to differ between men and women-- Gender differences in risk propensity, trait-like motivations to obtain power over others, neuroticism, conscientiousness, and extraversion are well-documented (Dovidio, Brown, Heltman, Ellyson, & Keating, 1988; Schmitt, Realo, Voracek, & Allik, 2008; Zhou et al., 2014). Therefore, we incorporate a personality approach to understanding gender differences in entrepreneurial intent.

Understanding such predictors is of critical importance, in that despite some global decline in magnitude, the gender gap in entrepreneurship persists in the clear majority of countries studied (GEM Women's Report, 2017). In the United States, women-owned businesses account for only 28% of all businesses and only 4% of all revenues (Center for Women's Business, 2009). Even after accounting for the general wage gap between men and women, there is a large difference in economic success between male and female entrepreneurs (Wieland, 2013).

Beyond the underrepresentation of women, researchers have described the experiences and motivations of women entrepreneurs. Although past research has often assumed that women entered self-employment due to economic necessity, studies have shown that women report a complex array of motivations for becoming entrepreneurs. Women are motivated both by push factors (external reasons that compel someone to begin a business) and by pull factors (positive reasons that entice one to begin a business; Kirkwood, 2009; Orhan & Scott, 2001). Women report increased motivation related to flexibility and family obligations than men (Allen & Curington, 2014; Kirkwood, 2009). Unfavorable perceptions of the entrepreneurial field and their own capabilities partially explain gender differences in rates of entrepreneurial activity (Langowitz & Minniti, 2007). The decreased propensity of women compared to men to start businesses has been tied to lower levels of optimism and self-confidence, and higher fear of failure (Koellinger, Minniti, & Schade, 2008). Even when women are engaged in entrepreneurial activity, they are less likely to perceive and describe themselves as entrepreneurs (Verheul, Uhlaner, & Thurik, 2002). Furthermore, men and

women who perceive themselves to be more masculine are more likely to intend to become an entrepreneur (Gupta, Turban, Wasti, & Sikdar, 2009)

Not only do women see their interactions with entrepreneurship differently than men, media and research construct and portray their businesses differently as well, if they do at all. Media and research often render women's entrepreneurship invisible (Baker, Aldrich, & Liou, 1997). Theorists and researchers have critiqued this disparity and proposed new ways of examining women's entrepreneurship. Because primarily male samples dominated the early literature and much of traditional entrepreneurship is gendered as masculine, women's entrepreneurship is frequently viewed as secondary (Ahl, 2006; Bruni, Gherardi, & Poggio, 2004; De Bruin, Brush, & Welter, 2006; Gupta, Turban, Wasti, & Sikdar, 2009). In this context, it is critical to recognize and capture the profile and motivation of women who are motivated to pursue entrepreneurship.

Some of the processes that impede women's entry into entrepreneurship may start at an early career phase. For example, women appear less likely to seek and complete business education than do men, placing them at a distinct disadvantage (Gasse, Menzies, & Diochon, 2004). In a Canadian sample, male enrollment in graduate business schools outnumbers female enrollment and male students are more likely to concentrate in entrepreneurship (Menzies & Tatroff, 2006). Women do tend to endorse many of the same motivations for forming ventures as men do, such as independence, monetary gain, and desire for achievement, but they endorse additional motivations related to family issues and flexibility compared to men (Kirkwood, 2009), such that they endorse a broader set of motivations than men do (Demartino & Barbato, 2002).

Despite gender studies of motivation for entrepreneurship, less work has examined gender differences in personality traits related to entrepreneurial intent. In one study, women and men showed comparable levels of risk-taking, which is a trait closely related to entrepreneurial intent. Conversely, women students were more likely to say that entrepreneurship does not align with their personality (Menzies & Tatroff, 2006; Brandstätter, 2011). This suggests that many women may have internalized beliefs about a masculine entrepreneurial personality style.

### Study Aims

In this study, we assessed a broad set of personality traits previously established as important in entrepreneurial intent. We also assessed personality traits that have been found to differ by gender. We began by testing the overlap among these traits by using factor analyses to assess whether traits cohered into factors. We tailored specific hypotheses regarding gender and intent after constructing these factor scores. We then examined whether the personality factor scores differed by gender and intent to become an entrepreneur. Our goal was to assess whether personality traits related to entrepreneurial intent among women can be identified.

## Method

Study procedures were approved by the university institutional review board before data collection began. All research participants completed informed consent. Data was gathered as part of a larger study that included measures not discussed here (Authors, 2015).

## Participants

The sample consisted of undergraduate psychology students and business school students and staff at a large public university. By recruiting from a large university in the San Francisco Bay area, we were able to draw our sample in an environment with rich support for entrepreneurship. Potential participants viewed an online listing that described the study as focused on entrepreneurship and personality. The undergraduate students earned partial credit in psychology courses, and business school affiliates received \$15 for participation. We excluded data from 8 students from the undergraduate psychology cohort and 6 participants from the business school group for failing attention catch items (e.g. “please select two as your answer”). The combined sample ( $n = 194$ ) was 64% female with an average age of 20.8 years, and an ethnic distribution of 55.7% Asian, 28.9 % Caucasian, and 15.4% Other Ethnicity.

Participants from the sample (including business and undergraduate students) who endorsed, “Do you have the intention to become self-employed, a business founder, or a business co-founder?” were categorized as intending to become entrepreneurs ( $n = 102$ ), and those who did not endorse this question served as the controls ( $n = 92$ ). Those who had already become an entrepreneur were excluded.

## Personality Measures

Participants completed all measures online using Qualtrics survey software. We administered self-report measures to assess 19 personality traits that have been well-validated as relevant to entrepreneurial intent or entry, as well as some personality traits that have been shown to be higher among women as compared to men in previous research. Personality traits are listed in Table 1.

### **Big Five Traits: NEO Five-Factor Inventory (NEO-FFI, Costa & McCrae, 1989).**

—The NEO-FFI is a 60-item shortened version of the Revised NEO Personality Inventory, which was developed to measure the Big Five personality traits: Openness, Conscientiousness, Extraversion, Agreeableness, and Neuroticism (Costa & McCrae, 1989). Participants completed the Openness, Conscientiousness, Extraversion, and Neuroticism subscales. Participants responded to each item on a five-point Likert scale ranging from 1 (Strongly Disagree) to 5 (Strongly Agree). The NEO-FFI scales have shown high validity (Costa & McCrae, 1992), and are among the most widely used personality measures, with good internal and test-retest reliability (Murray, Rawlings, Allen, & Trinder, 2003). The NEO-FFI subscales of Openness, Extraversion, Conscientiousness, and Neuroticism have predicted entrepreneurial intent across a large number of studies (see Zhao et al., 2010 for a review), although specific effects have varied (Kerr et al., 2017).

**Self-Efficacy: New General Self-Efficacy Scale (NGSE, Chen, Gully & Eden, 2001).**—The NGSE was designed to capture belief in one’s personal ability to meet demands. Items (e.g. I will be able to achieve most of the goals that I have set for myself) are rated on a five-point Likert response format ranging from 1 (Strongly Disagree) to 5 (Strongly Agree). Research has shown that this 8-item scale demonstrates higher construct validity in relation to indices of general self-efficacy and self-esteem than previous measures of self-efficacy. The scale has shown high internal consistency,  $\alpha = 0.89$  and  $0.90$  and good test-retest reliability,  $r = 0.67$  (Chen, Gully & Eden, 2001). Self-efficacy has been shown to predict entrepreneurial intention (Pihie & Bagheri, 2013; Zhao, Seibert, & Hills, 2005).

**Ambition and Goal-Setting: Willingly Approach a Set of Statistically Unlikely Pursuits (WASSUP, Johnson & Carver, 2006).**—The WASSUP is a self-report scale consisting of thirty items designed to assess tendencies to set highly ambitious life-goals. This study included the two subscales, Popular Fame (7 items) and Financial Success (4 items), that have shown the strongest validity (Johnson & Carver, 2006). In previous research, the Popular Fame subscale demonstrated high internal reliability,  $\alpha > 0.80$ , and the Financial Success subscale showed moderate internal reliability,  $\alpha = 0.66$ – $0.69$  (Johnson & Carver, 2012). The WASSUP has been shown to predict accomplishment in highly difficult endeavors, such as becoming employed as an artist and achieving high levels of lifetime creative accomplishment (Johnson et al., 2015). Ambition and high goal-setting have been shown to predict entrepreneurial entry (Baum & Locke, 2004).

**Optimism and Overconfidence: Positive Overgeneralization Scale (POG, Eisner, Johnson & Carver, 2008).**—The POG was designed to assess the tendency to draw overly positive conclusions about the self from small positive events, mirroring the tendency to make negative conclusions captured in the negative generalization scale (Carver & Ganellen, 1983). The scale consists of 13 items (e.g. “When one thing goes right, it makes me feel my possibilities are limitless”), which are divided into three subscales: Lateral generalization, Upward generalization, and Social generalization. The three subscales demonstrated moderate internal reliability,  $r = 0.26$ – $0.38$  (Eisner, Johnson & Carver, 2008). Here, we focus on the Upward generalization subscale as a measure of overly optimistic tendencies, as optimism and overconfidence have been tied to deciding to become an entrepreneur (Trevelyan, 2008).

**Risk-Taking: Domain-Specific Risk-Taking (DOSPRT, Weber, Blais & Betz, 2002).**—The DOSPERT is a 35-item self-report scale that covers how much risk a person perceives for various behaviors within five domains of life (ethical, financial, recreational, health, and social). Financial risk taking is divided into gambling and investment risk taking. Participants rate each item (e.g. Betting a day’s income at a high-stake poker game) using a 5-point Likert scale, ranging from 1 (Not at all risky) to 5 (Extremely Risky). Research has shown the five subscales to have high internal reliability and moderate test-retest reliability and to correlate with other measures of risk perception and behavior (Weber, Blais & Betz, 2002). Ethical, financial, investment, and social risk-taking were included in analyses because of their relevance to entrepreneurial personality (Zhao et al. 2010).



**Creativity: Improvisational Proclivity (Hmieleski & Corbett, 2006).**—The Improvisational Proclivity scale is a 27-item measure designed to capture inclination and capacity for ingenuity. It consists of three subscales that focus on creativity in the face of limited resources ( $\alpha = 0.89$ ), excellence under pressure ( $\alpha = 0.83$ ), and persistence and tendency toward instinctive action ( $\alpha = 0.70$ ). These three scales combine with high internal consistency,  $\alpha = 0.87$ , and test-retest reliability,  $r = 0.85$  (Hmieleski & Corbett, 2006). The scales were developed from well-studied constructs related to improvisation and creativity (Moorman & Miner, 1998; Tierney, Farmer, & Graen, 1999; Unger & Kernan, 1983; Vera, 2002). An aggregate total of the three scales was entered into analyses. The relationship of creativity with entrepreneurship has been well-documented (Hmieleski, Corbett, & Baron, 2013; see Fillis & Rentschler, 2010 for a review).

**Dominance: Dominance Behavioral System Scale (DBS, Tang-Smith, Johnson & Chen, 2015).**—The DBS is a six-factor battery of dominance behaviors, desire to achieve dominance, pride, and self-perceived power. The scale was developed from existing well-validated measures: the Rank Style with Peers Questionnaire (RSPQ, Zuroff, Fournier, Patall, & Leybman, 2010), the Measure of Authentic and Hubristic Pride (MAHP, Tracy & Robbins, 2007), the Generalized Sense of Power Scale (GSP, Anderson, John, & Keltner, 2012), and the Personality Research Form Dominance Scale (PRF-DO, Jackson, 1974). A factor analysis revealed a set of six dominance related factors (Hubristic Pride, Authentic Pride, Discomfort with Leadership, Cooperation, Influence/Power, and Ruthless Ambition) consisting of a total of 28 items. All six factors exhibited moderate to high internal reliability,  $\alpha = 0.68$ – $0.90$  (Tang-Smith, Johnson, & Chen, 2015). Increased hubris, propensity for leadership, and ruthlessness have been tied to entrepreneurship (Hayward, Shepherd, & Griffin, 2006; Miller, 2015; Reid, Angin, Baur, Short, & Buckley, 2018). Furthermore, the ability to garner power is important for recruiting and retaining funding and social capital.

## Results

Participants from psychology and business school sources were combined for analyses (tests were conducted to assess whether findings were parallel). An independent samples t-test showed that women ( $M = 1.56$ ,  $SD = 0.50$ ,  $n = 126$ ) were less likely than men ( $M = 1.31$ ,  $SD = 0.47$ ,  $n = 70$ ) to endorse intent to become an entrepreneur,  $t(194) = -3.43$ ,  $p < 0.01$ , where responses were 1 for entrepreneurial intent and 2 for no entrepreneurial intent. Sample sizes varied slightly due to missing data on specific measures.

Factor analysis of the component personality scales was conducted on 189 participants, using a varimax rotation to permit correlations among the factors. The analysis yielded four factors with eigenvalues greater than 1 that each exceeded threshold for Horn's Parallel analysis, and together explained 54.92% of the variance. Factor loadings are shown in Table 1.

As shown, Factor 1, which we have labeled Esteem and Power, encompassed Authentic Pride (DBS), beliefs in one's Conscientiousness (NEO), Comfort with Leadership (DBS), high Self-esteem (NGSE), desire to influence others (DBS), and Extraversion (NEO), as

well as lowered Neuroticism (NEO). Taken together, this factor seems to reflect a tendency toward high self-esteem and belief in one's ability to influence others and be comfortable in interpersonal contexts. Factor 2, which we term Ambition, included tendencies toward extremely high ambitions for Popular Fame and Financial Success (WASSUP), Upward Generalization (POG), Ruthlessness (DBS), and Improvisational Proclivity. These scales tend to focus on ambition, overly positive interpretations of one's successes, tendencies to ignore social considerations in the pursuit of success, and a belief in one's creativity. Factor 3, or Risk Propensity, consisted only of the four Risk Propensity subscales. Factor 4, which we have labeled Communal Tendency, included Openness to experience (NEO), tendency toward coalition (DBS), and lowered Hubristic pride (DBS), which would seem to reflect tendencies to be open to new experiences and other's input, as well as less emphasis on one's personal hubris.

## Hypotheses

We generated hypotheses based on the factor scores.

H1: Women will endorse higher scores on Communal Tendency than men.

H2: Esteem and Power, Ambition, and Risk Propensity, will be positively related to entrepreneurial intent across genders, based on previous research.

H3: The relationship between personality and entrepreneurial intent will vary by gender, as reflected in a significant interaction of gender by entrepreneurial intent.

To consider how gender, entrepreneurial intent, and the interaction of gender and entrepreneurial intent related to these four personality factors, we conducted four parallel, hierarchical multiple linear regression analyses with gender, intent, and Gender X Intent as the independent variables and the four personality factor scores as the criterion variables.<sup>1</sup>

Findings of the four regression models are shown in Table 2.

The model for Esteem and Power accounted for only 0.4% of the variance,  $F(3, 189) = 0.283, p < 0.84$ . As shown, no significant effects emerged for gender, entrepreneurial intent, nor their interaction.

The model for Ambition accounted for 7.9% of the variance,  $F(3, 189) = 5.386, p < 0.01$ . As shown, entrepreneurial intent was significantly related to Ambition scores such that those with entrepreneurial intent endorsed higher levels of Ambition. The effect of gender was not significant, nor was the effect of the interaction of gender by entrepreneurial intent.

The model for Risk Propensity accounted for 8.1% of the variance,  $F(3, 189) = 5.542, p < 0.01$ . Entrepreneurial intent had a marginal effect on Risk Propensity such that those with entrepreneurial intent scored nonsignificantly higher on Risk Propensity. Although the

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<sup>1</sup>To examine whether findings generalized across sample source (psychology vs. business school recruitment), we tested the effect of adding sample source, and the interaction of Sample Source  $\times$  Gender, Sample Source  $\times$  Entrepreneurial Intent to the four regression models. No significant main effect or interaction terms emerged for sample source, indicating that effects generalized across sample source. Accordingly, we collapse across sample source in analyses.

multivariate p-value was marginal (Table 2), Entrepreneurial intent was significantly related to Risk Propensity,  $r(191) = -0.20$ ,  $p = 0.003$ , in bivariate tests where responses were 1 for entrepreneurial intent and 2 for no entrepreneurial intent. The effect of gender was not significant, nor was the effect of the interaction of gender by entrepreneurial intent.

The model for Communal Tendency accounted for 4.5% of the variance,  $F(3, 189) = 3.000$ ,  $p = 0.032$ . Women endorsed significantly higher Communal Tendency scores than men did, and the interaction of gender by entrepreneurial intent was significant. Figure 1 shows the interaction effect of Gender  $\times$  Entrepreneurial Intent on Communal Tendency. As shown in Figure 1, women with intent to become entrepreneurs endorsed higher levels of Communal Tendency than men who endorsed entrepreneurial intent. In contrast, those without entrepreneurial intent did not show a gender difference in Communal Tendency.

## Discussion

The goal of this study was to consider the gender differences in personality traits that might guide the pursuit of entrepreneurship. We hypothesized that personality differences between men and women, particularly on personality characteristics relevant to entrepreneurship, might help explain differences in entrepreneurial intent. We first discuss personality traits that were tied to entrepreneurial intent across genders, and then turn to the gender differences.

### Entrepreneurial Intent

Rates of intent to become an entrepreneur were high for both graduate students in the business school and undergraduate students in psychology, which is consistent with the centrality of entrepreneurship to the economy of the San Francisco Bay area and the number of resources to support entry into entrepreneurship offered by the university. Furthermore, the study was described in recruitment materials as focusing on entrepreneurship, which could increase the rates of entrepreneurial intent in the sample. Findings generalized across our business school and psychology course samples.

Consistent with previous research (Hmieleski et al., 2013) and with H2, the factor Ambition, which includes traits related to ambition, improvisation, and ruthless pursuit of goals, was positively correlated with entrepreneurial intent. Not surprisingly these traits are frequently validated as relevant to entry into and success in entrepreneurship (Brandstätter, 2011; Stewart & Roth, 2001). Aspiration and motivation appear to be as key to venture formation as to venture success (Brandstätter, 2011). Improvisation has also been shown to be key in entrepreneurial pursuit (Hmieleski et al., 2013) The improvisational proclivity items measured here cover three aspects: a tendency to seek out and integrate new information, skill and excellence in rapidly changing environments, and proclivity for goal-directed, action-oriented behavior. These tendencies seem particularly suited to the often-chaotic environment of entrepreneurship.

Also consistent with other research findings and with H2 (Stewart & Roth, 2001; Zhao et al., 2010), propensity for risk-taking was significantly positively correlated with entrepreneurial intent in bivariate tests. However, this effect did not survive corrections for gender and the

interaction of gender and entrepreneurial intent in the multivariable model. Entrepreneurship is an inherently risky undertaking that often involves failure and lower reward (Hamilton, 2000), and so tolerance for and enjoyment of risk may be prerequisites to seeking out and taking on entrepreneurial roles. The positive effects of risk-taking on entrepreneurial success, however, have been challenged in the literature. Intent to become an entrepreneur is robustly tied to risk-taking propensity (Zhao et al., 2010), but extreme levels of risk-taking behavior have been shown to promote failure in entrepreneurial business outcomes (Kreiser, Marino, Kuratko, & Weaver, 2013).

Contrary to much of the literature (Alam, 2001; Coleman & Grothus-Magee, 1991; Kerr et al., 2018; Langan-Fox & Roth, 1995; Matzler, Bauer, & Mooradian, 2015) and to H2, Esteem and Power was not significantly related to entrepreneurial intent. As Esteem and Power seems to reflect high self-esteem and comfort in interpersonal and leadership contexts, it may be too broad a factor to specifically predict entrepreneurial intent. Alternatively, in a culture in which entrepreneurship is increasingly normative, even those who are less confident and feel less personal sense of power may begin to contemplate entry into entrepreneurship, particularly as various environmental supports are put into effect to encourage all students to contemplate this path, and as they experience more peers working in this direction.

In sum, personality factors related to risk and high-goal-focused behavior may be more relevant to entrepreneurial intent than broad positive beliefs about one's self and one's interpersonal skill. However, it remains possible that findings were skewed by our focus on a business school that places a high emphasis on prosocial and nonprofit business goals.

## Gender

Consistent with some research (Koellinger, Minniti, & Schade, 2004) and the gender gap in entrepreneurship, entrepreneurial intent varied by gender, such that men were more likely to endorse a desire to become an entrepreneur than women. This effect may be produced by gendered peer effects, in which men are more influenced by other men and women are more influenced by other women. Indeed, peer effects have been shown to account for approximately half of the gender differences in entrepreneurial entry (Markussen & Red, 2017).

Our finding that women endorsed higher scores on the Communal Tendency scale is consistent with H1. This may be a result of traditional gender roles that emphasize interpersonal relationships for women and individual motivations for men, both in general and in those pursuing entrepreneurship (Lykes, 1985; Wieland, 2012). Although men and women both engage in prosocial behavior, research has shown that women tend to engage in more relational rather than agentic prosocial behavior (see Eagly, 2009 for a review). Considering that the factor Communal Tendency contains relational concepts like Cooperation, it would make sense that women in our sample endorsed it at higher rates. It is important to note that this difference may not be strictly inherent but amplified by social norms.

H3 was partially supported. We found evidence that the relationship between personality and entrepreneurial intent varied by gender. Nonetheless, this pattern only emerged for one of the four personality factor scores: Communal Tendency, which was defined by increased cooperation, increased openness to experience, and decreased hubristic pride. It is important to note, though, that significant gender differences in Communal Tendency were only observed in the group with entrepreneurial intent. Stated differently, women who intend to become entrepreneurs endorsed higher levels of Communal Tendency than men with entrepreneurial intent. Women who did not intend to become entrepreneurs reported similar levels of Communal Tendency than men without entrepreneurial intent.

These findings could indicate that social norms encourage different entrepreneurial personalities and motivations for men and women. Gendered peer effects could mean that men who intend to become entrepreneurs are attracted to self-employment by traditionally masculine motivations and model themselves after individualistic predecessors. Women, on the other hand, may find “alternative” motivations to become an entrepreneur. These motivations could include more community-oriented business goals or approaches to entrepreneurship. Women may also be more rewarded for focusing their business goals or styles on more collectivistic pursuits (Amanatullah & Morris, 2010; Bowles & Babcock, 2012; Lee & Huang, 2018).

Those intending to become entrepreneurs need to accumulate financial capital, but they also need social capital. Research has also shown that women are less likely to have access to the same levels of financial capital as men and that financing decisions disadvantage women (Eddleston, Ladge, Mitteness, & Balachandra, 2014; Guzman & Kacperczyk, 2019; Marlow & Patton, 2005). Women may need to augment their reliance on social capital to compensate for structural differences in access to financial capital. Communal tendencies, then, could be a particular strength for women who intend to become entrepreneurs. At the community level, social capital has been shown to be related to higher levels of self-employment (Kwon, Heflin, & Ruef, 2013). Communally-oriented proclivities of women who intend to become entrepreneurs could represent an untapped resource in the entrepreneurship landscape.

Because we find no gender or gender  $\times$  intent interaction effect for Esteem and Power, Ambition, or Risk Propensity, our findings indicate that entrepreneurial personality differs by gender only in regard to Communal Tendency. Consistent with research on fully-fledged entrepreneurs (Masters & Meier, 1988), we found no difference in Risk Propensity or Ambition in men and women who intend to become entrepreneurs. It is interesting to note that the personality factors most relevant to entrepreneurial intent did not vary by gender among those who intended to become entrepreneurs, suggesting that the core personality tenets of entrepreneurship are equally present in men and women who are interested in becoming self-employed. In other words, men and women who intend to become entrepreneurs exhibit similar levels of esteem, ambition, and risk, but communal tendencies may have particular meaning for understanding the entrepreneurship gender gap.

Considering the constellation of personality traits together, women who intend to become entrepreneurs endorsed some “masculine” traits, such as high risk-taking and ambition, at the same level as men and endorsed Communal Tendency more so than the men with interest

in entrepreneurship did. Women who intend to become entrepreneurs may display higher Communal Tendency levels because of inherent proclivity, previous success with communal strategies, or because it addresses barriers they face in showing raw individualized ambition or success motivation. More specifically, women may face some barriers related to gender-personality incongruence as a result of their ambition and success (Díaz-García & Jiménez-Moreno, 2010; Marlow & Patton, 2005). Research has shown that women who are described as entrepreneurs are perceived as less feminine than those described as managers (Baron, Markman & Hirska, 2001). Demonstrating increased communal tendencies might help address this career-specific gender-personality incongruence.

Furthermore, Ambition was related to entrepreneurial intent in the multivariate model and Risk Propensity was related to entrepreneurial intent in bivariate tests. These personality traits have been associated with “masculinity.” This is consistent with the stereotyped idea that entrepreneurship is a masculine pursuit (Gupta, Turban, Wasti, & Sikdar, 2009). However, the fact that these results are apparent in a sample of men and women implies that both men and women who are high in these traits are equally likely to endorse entrepreneurial intent.

## Conclusion

### Theoretical and Practical Implications

Because our sample focuses on those at an early career phase, our results may provide information to help encourage women’s involvement in entrepreneurship. Current findings suggest that there may be a need to acknowledge the mismatch between a career path that is often associated with autonomous, individualistic goal striving and a desire to build a cooperative, collaborative career. Greater promotion of the strengths of collaborative tendencies for achieving entrepreneurial success could be discussed for women contemplating this career path and struggling with a hyper-masculinized perception of entrepreneurship.

The interaction between gender and entrepreneurial intent as it relates to Communal Tendency, in which women with intent to become entrepreneurs endorsed more communal tendencies than men, has an important implication. Whereas entrepreneurship has classically been conceptualized as an individualistic, masculine endeavor, much research has shown that women entrepreneurs often endorse motivations that are inconsistent with that model of entrepreneurship (Allen & Curington, 2014; Kirkwood, 2009). Our finding highlights that women may already bring a different entrepreneurial personality to the table. Illuminating diversity in entrepreneurial personality could encourage more women to start their own businesses and expand the field in general.

Studies have shown that gendered stereotypes about entrepreneurship have a profound effect on intention to become an entrepreneur. Women are more likely to see feminine traits as consistent with entrepreneurship than men (Gupta, Turban, Wasti, & Sikdar, 2009). In addition, stereotypes may play a role in gender differences in entrepreneurship through stereotype threat (see Spencer, Logel, & Davies, 2016 for a review of the literature). That is, women who associate femininity with poor performance in a particular domain may do less

well on relevant tasks when subtly reminded of gender. This process may deter women's entry into entrepreneurship to the extent that entrepreneurship and the related tasks are perceived as "male" (Farrington, 2012). Beliefs about one's own personality could influence performance in entrepreneurship contexts, which could in turn confirm those beliefs. Accordingly, we see research into self-perceptions of personality traits, as well as interventions targeting self-perceptions, as a promising avenue for future studies.

Present results challenge masculine stereotypes of entrepreneurship, which has important implications. If those who support entrepreneurship, such as venture capitalists and investors, understand the advantages of different profiles of entrepreneurship, it could potentially increase female entry into entrepreneurship. For example, our finding that Communal Tendency is elevated among women who want to become entrepreneurs highlights a prosocial trait that may have specific benefits in building social capital. As others have suggested (Díaz-García & Jiménez-Moreno, 2010), if research and policy can increase the visibility and desirability of women's strengths in entrepreneurship, the field may be able to increase women's perception that entry into entrepreneurship is consistent with core elements of their gender identity. Studying the self-perceptions of women entrepreneurs also provides an opportunity to identify alternative forms of entrepreneurship that may have gone unnoticed in favor of more traditional entrepreneurial styles. By diversifying conceptions of entrepreneurship, we also may be able to foster a more diverse and robust economy.

Past research has shown that business education can increase entrepreneurial motivation, which can in turn increase entry into entrepreneurship (Krueger, Reilly, & Carsrud, 2000, Petridou, Sarri, Kyrgidou, 2009; Raven & Le, 2015). However, women are less likely to enter entrepreneurship-focused educational programs when recruiting materials only include male-typed language and images (Hentschel, Horvath, Peus, & Sczesny, 2018). A worthwhile locus for intervention into the gender disparity in entrepreneurship would be providing space and acknowledgement of prosocial motivation and goals as one highly successful route to entrepreneurship. Primary, secondary, and business schools and workplaces could utilize the information presented in this study to develop programs to better foster women's entrepreneurship from an early age.

### Limitations

The current study is limited by the nature of the sample, which consists almost entirely of university students. It is possible that students with and without entrepreneurial intent differ in important ways from the larger community. Many entrepreneurs do not find their start in universities and findings may not generalize outside of the university context. We encourage future research efforts to broaden the types of people with entrepreneurial intent included in analysis. It is important to remember that developmental processes and interpersonal reinforcement for different interests begins far before college, and that university students have already experienced selective pressures that may favor men's entry into entrepreneurship. Although our intent was to study those in an early career stage, the leaky pipeline (Martin, Wright, Beaven & Matlay, 2015) may begin even earlier than undergraduate and graduate programs.

The correlational design of this study is another limiting factor, as we cannot make causal claims about personality as the influence on entrepreneurship intent. On this front, it is worth noting that personality traits tend to be stable across decades of life (Damian, Spengler, Sutu, & Roberts, 2018). It is also important to note that there is a need to examine personality across stages of entrepreneurship such as establishing a venture, growth, and sustained engagement, rather than the narrow focus of this study on intent.

### Next Steps

Given the untapped potential of women entrepreneurs, there is a fundamental need for a rich array of research on factors that limit and promote women's entry into entrepreneurship. Current findings indicate that personality may be one piece of this puzzle. Further research is needed to determine how the relationship between entrepreneurial intent, gender, and personality changes over the life-course. If the results presented here are replicated, future research could integrate personality into a broader model to support policies to improve the numbers and relative success of female entrepreneurs. On the whole, we hope that better understanding of gender similarities and differences in personality could help to reduce barriers to entrepreneurial entry and success. Research designed to provide a stronger sense of the challenges women face and the strengths they bring in entering entrepreneurship could provide a starting point for much needed social and policy change surrounding this vital and potentially lucrative aspect of business.

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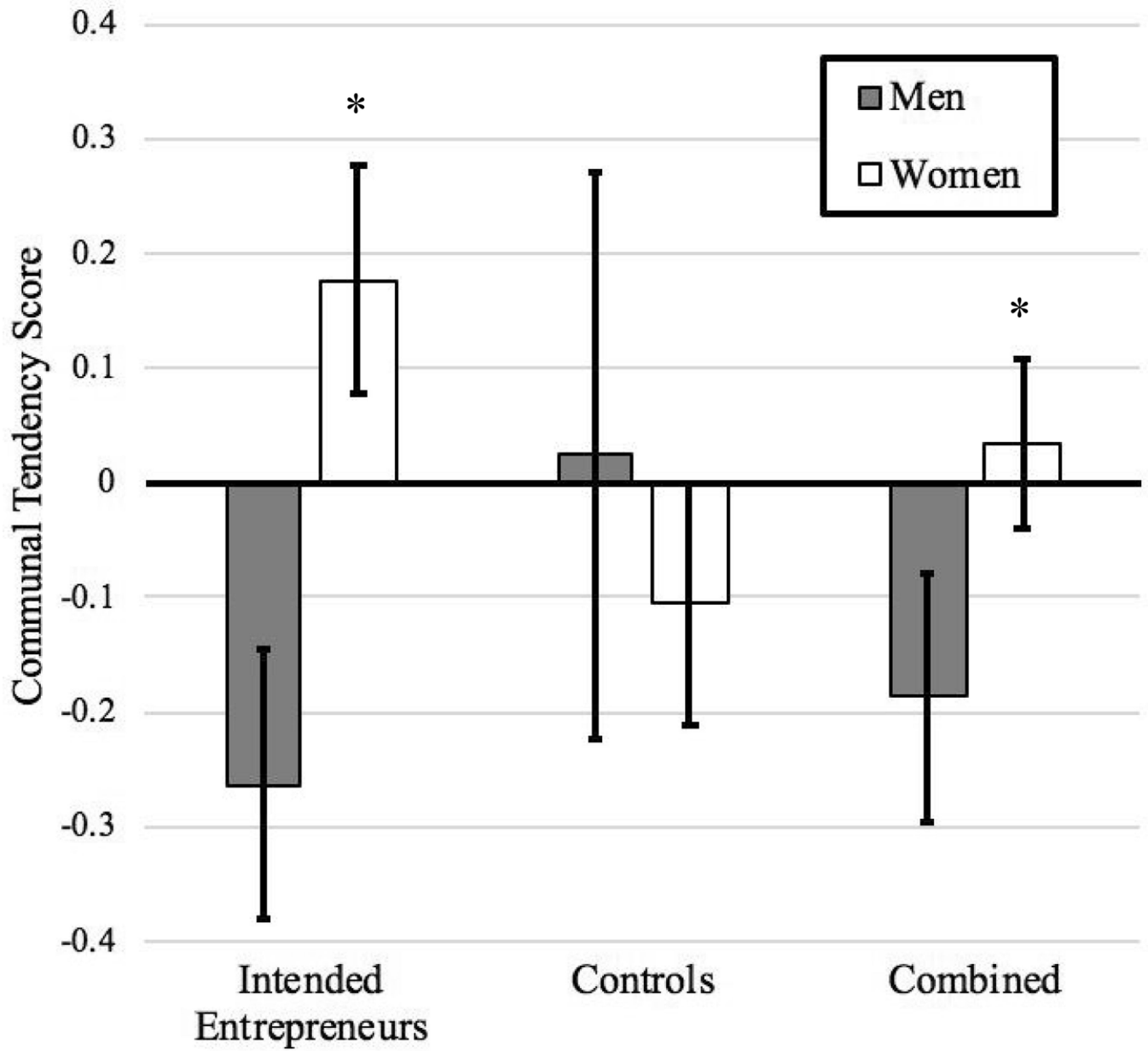


Figure 1. Interaction of Gender X Entrepreneurial Intent on Communal Tendency  
Note: \* $p < 0.05$  significant gender difference

**Table 1**

## Factor Loadings for Personality Traits

	<b>Esteem and Power</b>	<b>Ambition</b>	<b>Risk Propensity</b>	<b>Communal Tendency</b>
Authentic Pride (DBS)	<b>0.801</b>	0.156	-0.203	0.015
Neuroticism (NEO)	<b>-0.733</b>	0.17	-0.216	0.07
Conscientiousness (NEO)	<b>0.692</b>	-0.03	-0.193	-0.019
Comfort with Leadership (DBS)	<b>0.663</b>	-0.099	0.211	0.178
Self-esteem (NGSE)	<b>0.644</b>	0.14	0.022	0.265
Dominance Motivation (DBS)	<b>0.617</b>	0.31	0.166	0.254
Extraversion (NEO)	<b>0.544</b>	0.184	0.056	0.342
Upward Generalization (POG)	-0.094	<b>0.785</b>	0.092	-0.073
Financial Success (WASSUP)	0.045	<b>0.722</b>	0.085	-0.009
Popular Fame (WASSUP)	0.051	<b>0.708</b>	0.217	0.048
Ruthlessness (DBS)	0.106	<b>0.706</b>	0.03	-0.298
Improvisational Proclivity	0.275	<b>0.449</b>	0.088	0.278
Ethical Risk Taking (DOSPERT)	-0.047	0.2	<b>0.766</b>	-0.205
Financial Risk Taking (DOSPERT)	-0.083	0.106	<b>0.687</b>	-0.137
Investment Risk Taking (DOSPERT)	0.049	0.128	<b>0.657</b>	0.178
Openness (NEO)	0.143	-0.029	0.131	<b>0.707</b>
Cooperation (DBS)	0.279	0.055	-0.224	<b>0.626</b>
Hubristic Pride (DBS)	-0.004	<b>0.358</b>	0.076	<b>-0.568</b>

**Table 2**

Four Regression Models of Gender, Entrepreneurial Intent, and Their Interaction as Predictors of the Personality Factor Scores

Criterion	Predictor								
	Gender			Entrepreneurial Intent			Gender X Entrepreneurial Intent		
	$\beta$	<i>t</i>	<i>p</i>	$\beta$	<i>t</i>	<i>p</i>	$\beta$	<i>t</i>	<i>p</i>
Esteem and Power	0.05	0.36	0.729	0.05	0.65	0.518	0.00	-0.01	0.991
Ambition	-0.09	-0.37	0.525	0.16	1.95	0.047*	0.10	0.65	0.518
Risk Propensity	-0.25	-1.77	0.078	0.16	2.00	0.053	-0.06	-0.37	0.713
Communal Tendency	0.43	2.94	0.001**	-0.03	-0.33	0.745	0.36	2.28	0.024*

\* *Note: p* < .05,

\*\* *p* < .01