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A Systematic Literature Review and Meta-Analysis of Entrepreneurial Personality

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Abstract: Entrepreneurial Personality (EP) is a collection of personality traits that broadly and strongly relate to entrepreneurial outcomes across most contexts. The goal of the current article is to address present uncertainties surrounding EP by identifying its dimensions and assessing their relations with entrepreneurial outcomes. Our systematic literature review demonstrates that seven dimensions are commonly used to represent EP: innovativeness, risk-taking, achievement orientation, locus of control, proactiveness, self-efficacy, and autonomy orientation. Via meta-analytic structural equation modeling, we find support for a one-factor model composed of these seven dimensions, suggesting that they indeed represent a unitary construct. Our meta-analysis also supports that EP and its dimensions consistently produce significant relations with entrepreneurial attitudes, intent, status, and performance. EP is thereby supported as an important component of successful entrepreneurial endeavors, and our meta-analytic results provide clear criteria for determining the inclusion of dimensions within the construct of EP – which our seven identified dimensions satisfy.

Keywords: entrepreneurial personality, entrepreneurial attitude orientation, individual entrepreneurial orientation, meta-analysis, systematic literature review

1 Introduction

The personality characteristics of entrepreneurs is among the oldest research topics in the field of entrepreneurship, likely because early studies provided recurrent support that these characteristics predict entrepreneurial outcomes, such as entrepreneurial attitudes, intent, status, and performance (Chell, Haworth, and Brearley 1991; De Vries 1977; Littunen 2000). These early studies examined the relation of specific personality characteristics with entrepreneurial outcomes, but

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recent authors have developed several conceptualizations for the multidimensional construct of Entrepreneurial Personality (EP) (Awang et al. 2016; Bolton 2012; Kollmann, Christofor, and Kuckertz 2007; Shariff and Saud 2009). While definitions of EP differ (as discussed below), we synthesize these definitions and consider the construct to be *a collection of personality traits that broadly and strongly relate to entrepreneurial outcomes across most contexts*. Individual Entrepreneurial Orientation (IEO), Entrepreneurial Attitude Orientation (EAO), and a multitude of other multidimensional constructs (e.g., Entrepreneurial Traits and Characteristics) can all be considered conceptualizations of EP (Bolton and Lane 2012; Guerrero, Rialp, and Urbano 2008; Koe 2016; Lindsay 2005; Tan, Long, and Robinson 1996). While the representative dimensions differ within these conceptualizations, they often include the personality traits of innovativeness, proactiveness, risk-taking, locus of control, self-efficacy, and several others (Begley and Boyd 1987; Lee and Tsang 2001; Verheul et al. 2012). Authors have also frequently shown that operationalizations of EP significantly predict entrepreneurial outcomes (Fellnhofer, Puumalainen, and Sjögrén 2016; Riedo, Kraiczy, and Hack 2019; Wincent and Örtqvist 2009), emphasizing the potential importance of EP.

Despite the widespread study of EP, much remains unknown about this multidimensional construct. Notably, conceptualizations of EP often differ regarding the number and nature of representative personality dimensions, causing the content of EP to differ from study to study. These differences hamper a unified course of research and produce difficulties regarding the generalizability of EP results. Similarly, the strength of relation with entrepreneurial outcomes is often an inclusion criterion for EP dimensions, but no author has clearly identified the strength of relation required for a dimension to be considered representative of EP. This has caused uncertainly regarding whether results are supportive or not of specific dimensions being included within the scope of EP, which may partially explain the wide array of constructs that have been considered representative. Lastly, the outcomes of EP are uncertain. While EP has been a popular research topic for decades, researchers have intermittently shown weak relations between personality and entrepreneurial outcomes (Elfving et al. 2009; Fayolle and Liñán 2014). This has caused some authors to cast doubt upon the importance of EP.

The goal of the current article is to address these uncertainties by conducting a systematic literature review and meta-analysis. To begin, we review popular conceptualizations of EP, and we propose research questions and hypotheses to formalize present uncertainties surrounding EP. Our systematic literature review assesses which constructs have been used to represent EP and quantifies their frequency of appearance in empirical research, clarifying the representative dimensions of EP. Our meta-analysis quantitatively synthesizes prior research to

identify the relation of EP with certain entrepreneurial outcomes (attitude, intent, status, and performance). We identify the average strength of relation between EP dimensions and these outcomes, which can be used as inclusion benchmarks for any additional dimensions under consideration in future research. These results also provide evidence for the importance of EP.

From these efforts, the current article provides many implications for research and practice. First, identifying common dimensions of EP can produce more consistent and widespread conceptualizations, resulting in a more cohesive field of study with more broadly generalizable findings. Second, using meta-analytic structural equation modeling (SEM), we determine whether these common dimensions are adequately represented by a single latent factor, which can support the continued conceptualization of EP as a unitary concept. Third, identifying the relations of EP dimensions with outcomes can provide guidelines for the inclusion of future dimensions, such as specifying correlation criteria. Similarly, providing separate meta-analytic results for each dimension of EP can help determine whether the identified dimensions indeed sufficiently relate to entrepreneurial outcomes – or whether they should be reassessed as representative parts of EP. Fourth, studying outcomes can determine the importance of EP to modern entrepreneurship, and we draw from the Theory of Planned Behavior (TPB) to hypothesize these relations. Fifth, our discussion identifies theories that have yet to be integrated with the study of EP, which may be apt at addressing the uncertainties identified in the current article. Thus, the current article provides a foundation for studying EP, and it opens many avenues for future research regarding the measurement and outcomes of EP.

Lastly, we distinguish our current meta-analysis from prior meta-analyses on similar topics. Several meta-analyses have analyzed the relation of individual personality dimensions with entrepreneurial outcomes (Collins, Hanges, and Locke 2004; Rauch and Frese 2007; Stewart and Roth 2007). While these efforts provide deep insights into these dimensions, they provide fewer implications for the broader scope of EP. Also, some meta-analyses have analyzed the relation of broad personality conceptualizations, such as the Big Five, with entrepreneurial outcomes (Zhao and Seibert 2006; Zhao, Seibert, and Lumpkin 2010). These conceptualizations are not developed for the study of entrepreneurship. Instead of detailing the most relevant linkages between personality and entrepreneurship, these meta-analyses instead study dimensions with varying relevance. Therefore, these prior meta-analyses provide many benefits, but there are notable omissions in the current literature on EP. No meta-analysis has systematically identified dimensions specifically relevant to entrepreneurship to obtain a broad conceptualization of EP and then assessed their relation to entrepreneurial outcomes.

Addressing these omissions, as done in the current meta-analysis, can further our understanding of personality, entrepreneurship, and their intersection.

2 Background

A multitude of definitions have been created to describe multidimensional constructs that can be considered conceptualizations of EP (Leutner et al. 2014; Obschonka and Stuetzer 2017; Spagnoli, Santos, and Caetano 2017; Staniewski, Janowski, and Awruk 2016). For instance, Garaika, Margahana, and Negara (2019) describe entrepreneurial personality as, "an individual's ability to manage social networks and diversity, identify opportunities, mobilize resources, and implement business ideas" (p. 4); Martínez-Loredo et al. (2018) define enterprising personality traits as those that, "facilitate the personal development towards the resolution and maintenance of new projects" (p. 358); Gürol and Atsan (2006) consider entrepreneurial personality characteristics as, "rest[ing] on the assumption that entrepreneurs have certain unique characteristics" (p. 28); and Krishnan (2017) stated, regarding entrepreneurial personality traits, that, "much of the past research on entrepreneurship has been founded upon the premise that entrepreneurs embody distinctive personality traits which can be identified and used to indicate potential for entrepreneurship" (p. 5). Some authors choose to not define their conceptualizations of EP, but rather conceptualize them solely by their representative dimensions (Batool et al. 2015; Riedo, Kraiczy, and Hack 2019; Santos, Caetano, and Curral 2013). From these differing conceptualizations, the following question remains apparent: What exactly *is* EP?

We synthesize prior research on EP to create the following definition: a collection of personality traits that broadly and strongly relate to entrepreneurial outcomes across most contexts. Four notes should be made regarding this definition. First, entrepreneurial outcomes typically refer to entrepreneurial attitudes, intent, status, and performance (Bolton and Lane 2012; Howard 2020); however, other entrepreneurial outcomes exist, and dimensions could be added by investigating broader entrepreneurial outcomes. Second, no present guidelines exist for how strongly a construct must relate to entrepreneurial outcomes and/or how many contexts its relations must be replicated to be considered a part of EP. Via the current meta-analysis, we assess how strongly common dimensions of EP relate to entrepreneurial outcomes, thereby providing a guideline for future research to assess inclusive dimensions of EP. Third, we identify the dimensions that most strongly relate to outcomes across various contexts, but these dimensions are not assumed to demonstrate identical relations across all contexts or phases of the entrepreneurial process. Variation may be seen in the effects of EP and its

dimensions. Fourth, EP is a second-order construct with several traits serving as first-order dimensions. Therefore, EP can be studied using methodological and analytical approaches proven to be useful for the assessment of other second-order constructs in business research (e.g., Psychological Capital, core self-evaluations; Judge et al. 2003; Luthans et al. 2007; Luthans, Youssef, and Avolio 2015).

Authors have included a wide range of constructs in the scope of EP. Some of these constructs appear with great regularity, such as risk-taking, innovativeness, proactiveness, and self-efficacy (Bolton 2012; Koe 2016; Tan, Long, and Robinson 1996). Others are seen much less frequently, including optimism, stress tolerance, and vision (Cuesta et al. 2018; Kerr, Kerr, and Xu 2018; Roy, Akhtar, and Das 2017; Salamzadeh et al. 2014). The differing conceptualizations and operationalizations of EP pose great uncertainty to the current literature. Studies on EP may not generalize to other studies on EP due to the inclusion of different constructs from study to study, and it is therefore difficult to draw firm conclusions. For instance, two studies may produce different results regarding the relation of EP and entrepreneurial intentions, but it is presently difficult to discern whether these differences are due to substantive effects of EP or differences in the studies' operationalization of EP. To address this concern, our systematic literature review quantifies the frequency of appearance for all constructs used to represent EP in empirical studies. By doing so, we better determine the conceptual boundaries of EP, provide support for our definition of EP, and identify which constructs should be considered representative of EP. We do not propose hypotheses regarding common dimensions, but we instead propose the following research question:

> Research Question 1: Which traits are commonly included within Entrepreneurial Personality?

We test the interrelations of these representative constructs in two manners. We calculate their intercorrelations, and we apply meta-analytic SEM to determine whether these dimensions can be represented by a single latent factor. These analyses can support whether these common dimensions can be appropriately used to represent a single latent construct.

> Research Question 2: How large are the intercorrelations of Entrepreneurial Personality dimensions?

> Research Question 3: Does a one-factor model produce appropriate fit to representative dimensions of Entrepreneurial Personality?

Further, some authors have suggested that a hallmark of adequate multidimensional constructs is their relations with outcomes relative to their individual dimensions (Luthans et al. 2007; Luthans, Youssef, and Avolio 2015; Newman et al.

2014). Specifically, multidimensional constructs should produce stronger relations with outcomes than their representative dimensions. While prior investigations into EP have used differing dimensions in their operationalizations, we expect that these operationalizations will, on average, produce stronger relations with outcomes than the individual representative dimensions. These operationalizations at least partially represent the construct of EP, and, while variations may be seen in their relations, they should nevertheless consistently demonstrate this desirable property of multidimensional constructs.

> Research Question 4: Do aggregate scores of EP produce stronger relations than dimensional scores with entrepreneurial outcomes?

From our systematic literature review and meta-analytic SEM, we anticipate that a set of personality dimensions will be identified and produce a single latent factor. After identifying these dimensions, we assess their relations with entrepreneurial outcomes. Below, we hypothesize these relations based on associations with the general construct of EP. Although we have yet to identify the dimensions of EP in the current article, we propose these relations due to their general associations with EP rather than the effect of any single dimension in isolation.

2.1 Entrepreneurial Personality Outcomes

We investigate four EP outcomes: entrepreneurial attitude, intention, status, and performance. These four are likely the most studied outcomes of EP, in part due to their powerful effects in the entrepreneurial process and centrality in many theoretical perspectives used to study entrepreneurship (Ferreira, Fernandes, and Kraus 2019; Lex et al. In press; Wadhwani et al. 2020). Notably, the Theory of Planned Behavior (TPB) is regularly used to identify the antecedents and interrelations of these four entrepreneurial outcomes (Carr and Sequeira 2007; Hashim et al. 2017; Hormiga, Hancock, and Valls-Pasola 2013; Kautonen, van Gelderen, and Fink 2015; Yan 2010). According to the TPB, three antecedent categories (attitudes, subjective norms, and perceived behavioral control) influence intentions, and intentions influence behaviors (e.g., status and performance; Ajzen 1985, 1991; Beck and Ajzen 1991). While the TPB is widespread throughout the entrepreneurship literature, this theory does not specify that personality influences attitudes, intentions, or behaviors. Thus, many authors have incorporated amendments to this theory to account for individual differences.

When studying EP, authors often amend this theory to include a direct effect from personality to attitudes (Awang et al. 2016; Koe 2016; Suartha and Suprapti 2016). That is, EP is expected to positively influence entrepreneurial attitudes, and individuals with certain predispositions are believed to have more positive

perceptions regarding entrepreneurial endeavors. These authors speculate that those with greater EP recognize the benefits of their dispositions for entrepreneurial purposes, causing them to perceive entrepreneurship as a fruitful career path (Ang and Hong 2000; Volery et al. 2013). Some authors have even proposed that the effect of EP may be more subtle (Howard 2020; Manzano-García and Ayala-Calvo 2020). Those with greater EP may be subconsciously guided to a career path that is more ideal for them, entrepreneurship, because their personality is naturally attuned to entrepreneurial endeavors. These individuals may naturally excel at entrepreneurial tasks, and the classical conditioning that they receive when attempting entrepreneurial tasks causes them to gradually develop positive attitudes towards entrepreneurship. Whether developed consciously or subconsciously, we propose that EP and its dimensions have a positive relation with entrepreneurial attitudes.

> Hypothesis 1: Entrepreneurial Personality and its dimensions positively relate to entrepreneurial attitudes, such that greater levels of Entrepreneurial Personality and its dimensions result in more positive entrepreneurial attitudes.

Entrepreneurial intent has been studied alongside EP more often than entrepreneurial attitudes, perhaps due to its more immediate influence on behaviors (Carr and Sequeira 2007; Hashim et al. 2017; Hormiga, Hancock, and Valls-Pasola 2013; Kautonen, van Gelderen, and Fink 2015; Munir, Jianfeng, and Ramzan 2019; Yan 2010). Many authors have proposed that EP has a direct effect on entrepreneurial intentions independent of any effect on attitudes, and the TPB is often amended to reflect such an association (Hashim et al. 2017; Hormiga, Hancock, and Valls-Pasola 2013; Yan 2010). It should also be highlighted that EP may indirectly influence intentions via attitudes, which would adhere to the TPB (Ajzen 1985, 1991; Beck and Ajzen 1991; Munir, Jianfeng, and Ramzan 2019). That is, EP would cause individuals to have a favorable perception of entrepreneurship, whether consciously or subconsciously, which leads to their intentions to be an entrepreneur. Studying such a mediated effect is beyond the scope of the current article and our intent of providing a focused investigation of EP rather than assessing the veracity of an entire theoretical model of entrepreneurship. Therefore, we directly test whether EP and its dimensions positively relate to entrepreneurial intentions.

> Hypothesis 2: Entrepreneurial Personality and its dimensions hpositively relate to entrepreneurial intentions.

Entrepreneurial status is often considered the "behavior" of entrepreneurship when studying EP with the TPB. Like intentions, many authors have investigated the direct effect of EP on entrepreneurial status (Bergner 2020; Jena 2020), although the TPB suggests that EP may produce several indirect effects on

entrepreneurial status. These researchers largely propose the same theoretical rationale for EP's influence on entrepreneurial status as its influence on entrepreneurial intentions; those with greater EP may be consciously or subconsciously driven to be entrepreneurs (Do and Dadvari 2017; Florin, Karri, and Rossiter 2007; Gibson et al. 2011). Such assertions also agree with models of person-career fit (Cha, Kim, and Kim 2009; Parasuraman, Greenhaus, and Linnehan 2000), which propose that individuals enter career paths that naturally match their personalities, interests, and motivations. That is, those with greater EP may naturally intend to be entrepreneurs more frequently because they perceive a better fit (and better anticipated outcomes) with the career and associated lifestyle. We predict that EP has a positive relation with entrepreneurial status.

Hypothesis 3: Entrepreneurial Personality and its dimensions positively relate to entrepreneurial status.

While entrepreneurial intentions is the most commonly studied outcome of EP, performance has been argued to be the most important outcome (Bolton and Lane 2012; Guerrero, Rialp, and Urbano 2008; Koe 2016; Lindsay 2005). Researchers and practitioners have continuously sought individuals that become the highest-performing entrepreneurs, perhaps due to the salient stories of billion-dollar startups and their success that is regularly attributed to the personality of founders. For instance, the abrasive and hard-working nature of Steve Jobs, when paired with his charisma and innovativeness, has been repeatedly emphasized as pivotal in Apple's success, as Jobs was able to effectively motivate others around his vision (Isaacson 2012). Such assertions also tie into the psychological theories of entrepreneurship (Hagen 1963; McClelland 1961; Swedberg 2013), which reinforce the importance of founders, owners, and CEOs to organizational success. These theories generally propose that entrepreneurship is largely a psychological process, and a person's reactions to obstacles, which is shaped by their EP, is the primary predictor of entrepreneurial success. While these theories are regularly debated (Autio et al. 2014; Felício, Gonçalves, and da Conceição Gonçalves 2013), EP is nevertheless believed to predict performance.

Hypothesis 4: Entrepreneurial Personality and its dimensions positively relate to performance.

3 Methods

We perform a systematic literature review and meta-analysis to address our research questions and hypotheses. We first detail our search and coding

methodology as well as our analytic approach. Then, we report the results of our systematic literature review, followed by the reporting of our meta-analysis. In performing the systematic literature review and meta-analysis, we followed the Preferred Reporting Items for Systematic Review and Meta-Analysis Protocols (PRISMA-P; Moher et al. 2015; Shamseer et al. 2015), Meta-Analytic Reporting Standards (MARS; Kepes et al. 2013), as well as recommendations of prominent guides and studies (Borenstein et al. 2011; Card 2015; Cooper et al. 2019; Hartung, Knapp, and Sinha 2011; Hedges and Olkin 2014; Martin, McNally, and Kay 2013; Rauch and Frese 2007; Sarooghi, Libaers, and Burkemper 2015; Stam, Arzlanian, and Elfring 2014).

3.1 Identifying Sources

To create our database, we began by conducting searches using EBSCO and Google Scholar in February of 2021. We used three search terms in these two databases. In EBSCO, we searched for "Entrepreneur* Personality", "Entrepreneur* Attitude Orientation", "Individual Entrepreneur* Orientation". Using "Entrepreneur*" in EBSCO search terms produced results that included "Entrepreneur" as well as all other words that begin with "Entrepreneur", such as "Entrepreneurial" and "Entrepreneurship". In Google Scholar, we searched for "Entrepreneurial Personality", "Entrepreneurial Attitude Orientation", and "Individual Entrepreneurial Orientation". Google Scholar automatically includes similar terms in search parameters, for example specifying "Entrepreneurial" in EBSCO is similar to specifying "Entrepreneur*" in EBSCO. Therefore, while only three search terms were used for each database, the searches also provided results for many other search terms – broadening the scope of our search results.

EBSCO searches aggregate results from multiple databases, including Academic Source Complete, ERIC, and PsycINFO. This enabled the current article to include a wide range of primary sources, and all EBSCO results were included in our database. Google Scholar, however, is more comprehensive than other databases, as it includes more dissertations, theses, conference materials, white papers, and other similar documents. While a benefit, it also causes Google Scholar to return more irrelevant results. For instance, a search for "Entrepreneur* Personality" returns 365 results in EBSCO, but a search for "Entrepreneurial Personality" returns 11,800 results in Google Scholar. For this reason, we only included the first 1000 results of our Google Scholar results in our database. When reviewing these sources, those appearing after the first several hundred results typically only included relevant terms in their reference sections rather than their primary text, supporting the decision to only include the first 1000 results.

After removing duplicates and erroneous entries, our searches produced 3617 initial sources to be coded for inclusion. We also reviewed the reference sections of relevant meta-analyses and systematic literature reviews, and we contacted authors of our sources retained after the following coding phase for any unpublished results. The number of initial articles above reflects the inclusion of sources found via these additional approaches. This number of starting sources is typical for meta-analyses, especially those studying entrepreneurship and personality (Brandstätter 2011; Collins, Hanges, and Locke 2004; Rauch and Frese 2007; Stewart and Roth 2001, 2007).

3.2 Inclusion Criteria

Our coding process was based on prior guides, systematic literature reviews, and meta-analyses (Kepes et al. 2013; Moher et al. 2015; Shamseer et al. 2015). Two trained coders were used in each phase of the coding process to reduce researcher subjectivity. The two coders jointly created coding criteria, developed a coding book, trained each other on coding criteria, and identified sources to use as key coding examples. For each phase, the two coders initially coded the same sources until the inter-rater agreement cutoff was met (Cohen's $\kappa \geq 0.80$) for a set of 40 articles. They then coded separate sources, conferring on any unclear coding decisions.

All sources were first coded for whether they were written in the English language and measured EP. For our coding purposes, we considered an article to study EP if it measured multiple personality dimensions together and collectively referred to them with a label that indicated their relevance to entrepreneurship (e.g., EAO, IEO, EP). We did not include studies that only measured a single personality dimension (e.g., risk-taking, self-efficacy), as such studies did not investigate EP. This first phase reduced the list of 3617 sources to 612 sources, and each of these 612 sources were included in our systematic literature review database. The two coders then coded (a) the dimensions used to represent EP and (b) quantitative relations that could be included within a meta-analysis (e.g., correlation, *t*-test). This second phase identified 580 sources reporting their dimensions used to represent EP and 342 sources reporting a relation that could be included within a meta-analysis. The two coders lastly coded the effects of interest from these sources, which included all effects representing a relation specified in the hypotheses and research questions presented above. This third phase identified 212 sources that reported a relation of interest, which represented our final meta-analytic database.

It should also be noted that, as with most meta-analyses, different variables were grouped together for analyses if they represented meaningfully similar constructs. For instance, we identified innovation as a common dimension of EP, but we included studies that measured both innovation and creativity in these analyses because most researchers of EP treated innovation and creativity as near – if not exact – synonyms. Likewise, we also identified autonomy orientation as a common dimension of EP, for which we included studies that measured need for autonomy, tolerance for ambiguity, and desire for independence in these analyses because researchers use these constructs to refer to a general ability or desire to work with decision-making freedom. Our groupings of constructs can be found in Supplementary Material A.

3.3 Analyses

Our analyses included six primary steps. The first was the systematic literature review, which included count reporting of the number of times each dimension was used to represent EP in a source. Each of the other five steps were associated with the meta-analysis.

The second step was a visual scan of our dataset. We removed any effects that appeared to be obvious typos, such as reporting an impossible correlation coefficient (e.g., 1.21). We also removed clearly unreasonable effects, which we considered to be any relation above 0.90 when converted to a correlation coefficient (uncorrected for reliability). Such correlations were larger than 1.00 when corrected for unreliability, again indicating concerns with their inclusion.

The third step involved testing for outliers and influential cases. We calculated eight indices of outliers and influential cases, but we primarily used standardized residuals to identify such cases (Viechtbauer and Cheung 2010). Standardized residuals provide a numerical indication of the extent for which each included effect is an outlier or influential case. No firm cutoff is used to identify such cases, but effects with a notably larger value should be removed. In the current analyses, we removed cases with a standardized residual greater than four.

The fourth step was the calculation of publication bias indices, which included fail-safe *k*, Egger's test, trim-and-fill method, and weight-function model analysis. The fail-safe *k* reports the number of undiscovered null studies that would need to be included for the observed effect to no longer be significant (Rosenberg 2005). Larger fail-safe *k* results indicate that the results are robust. Egger's test provides an estimate of the relation between sources' effect size and their standard error (Shi et al. 2017). Larger Egger's test results indicate that smaller studies produced larger effects and publication biases may be present. The trim-and-fill method estimates

the number of studies missing from either the left or right side of the meta-analytic effect (Duval 2005). Larger trim-and-fill method results indicate that publication biases may be present. Lastly, the weight-function model analysis determines whether certain *p*-value intervals appear with significantly greater frequency in the meta-analytic dataset (Sutton et al. 2000). Significant weight-function model results indicate that publication biases may be present.

The fifth step was the calculation of primary analyses, which were conducted using Comprehensive Meta-Analysis V3 and R 3.4.1. A random effects model was applied. All effects are reported as correlation coefficients, as this was the most commonly reported statistic in the primary studies; however, our meta-analytic database included effect sizes reported as other statistics (e.g., means and standard deviations, *t*-tests), and our analyses were not limited to primary studies that reported correlation coefficients alone. We did not, however, include any effect sizes in our analyses that represented the relation of more than two variables (e.g., multiple regression), as recommended by prior authors (Boxer, Groves, and Docherty 2015; Rothstein and Bushman 2015). Effects were corrected for unreliability via an artifact distribution method (Hunter and Schmidt 2004), and reliability estimates used for these corrections were the average reported Cronbach's alphas for each variable across the coded articles (Supplementary Material B). Multiple effects for the same relation in a single study were averaged together before conducting analyses to prevent the study from being weighted multiple times, such as the relations of EP with two different measures of entrepreneurial intent in a single study. Our sensitivity analyses, discussed further below, also calculated estimates via a three-level meta-analytic approach, which addresses concerns with averaging effects. Lastly, we applied meta-analytic SEM following the recommendations of Cheung (2015) and Jak (2015).

The sixth step was the sensitivity analyses, which refer to the replication of meta-analytic results using different analytic approaches. Meta-analytic results can greatly differ based on analysis decisions, which causes sensitivity analyses to be essential. We calculated sensitivity analyses in two manners. First, we recalculated all effects including outliers and influential cases (Supplementary Material C). Second, we recalculated all effects using a three-level meta-analytic approach (Supplementary Material D), which accounts for the nonindependence of effects. Variance is attributed to between- or within-studies to prevent a single study with multiple effects from being weighted multiple times, and effects from the same study are not averaged together before calculating these estimates. In both sensitivity analyses, results somewhat differed from our primary analyses, but they did not change any inferences made within the current article. This finding further supported the robustness of the current meta-analysis.

4 Results

4.1 Systematic Literature Review

The goal of the systematic literature review was to identify common dimensions of EP, answering Research Question 1. We recorded the number of times that each dimension was included in an operationalization of EP, and the results are presented in Table 1. Seven dimensions appeared significantly more often than the others: innovativeness (466), risk-taking (376), achievement orientation (288), proactiveness (263), locus of control (247), self-efficacy (188), and autonomy orientation (144). These seven dimensions can be considered the "core" of EP. Four other dimensions were included frequently but much less often: competitiveness (50), opportunistic (30), leadership (29), and persistence (22). These additional dimensions may be considered the "periphery" of EP. Twenty-five articles considered EP to be a combination of the Big Five traits. All other dimensions appeared in fewer than 20 sources.

4.2 Meta-Analysis

Influential case and outlier analyses are included in Supplementary Material D, whereas publication bias analyses are presented in Supplementary Material E. An

Table 1: Frequency of dimensions included within entrepreneurial personality.

Construct	Frequency
1.) Innovativeness	466
2.) Risk-taking	376
3.) Achievement orientation	288
4.) Proactiveness	263
5.) Locus of control	247
6.) Self-efficacy	188
7.) Autonomy orientation	144
8.) Competitiveness	50
9.) Opportunistic	30
10.) Leadership	29
11.) All Big Five	25
12.) Persistence	22
13.) Sociality	19
14.) Optimistic	16
15.) Conscientiousness	15

Only includes constructs included within Entrepreneurial Personality in more than 15 sources.

influential case had to be removed from 6 of 53 relations, and each of these removed cases were from the same source. The publication bias analyses indicated that some biases exist within our meta-analytic dataset; however, no relation had a significant Egger's test, more than three implied missing studies, and a significant weight-function model analysis. It can be inferred that no relation is skewed by extreme biases, but readers should interpret the current results with some caution.

To interpret all effect sizes, we applied guidelines calculated for the study of personality (Bosco et al. 2015; Gignac and Szodorai 2016). We considered correlations between 0.00 and 0.05 to be very small, 0.05 and 0.15 to be small, 0.15 and 0.25 to be moderate, 0.25 and 0.35 to be strong, and above 0.35 to be very strong. Because these guidelines were created for uncorrected correlation coefficients, we primarily interpret uncorrected meta-analytic correlations below; however, Tables 2 and 3 also include meta-analytic correlations corrected for unreliability.

We calculated the average dimension intercorrelations to address Research Question 2. We only included the seven primary dimensions, as the intercorrelations of other dimensions were not reported enough to conduct meaningful analyses. The meta-analytic intercorrelations are provided in Table 2, which ranged from 0.25 to 0.48 ($\bar{r}$). The average intercorrelations for each dimension were: innovativeness ($\bar{r}$ = 0.41), risk-taking ($\bar{r}$ = 0.35), achievement orientation ($\bar{r}$ = 0.41), locus of control ($\bar{r}$ = 0.34), proactiveness ($\bar{r}$ = 0.38), self-efficacy ($\bar{r}$ = 0.39), and autonomy orientation ($\bar{r}$ = 0.38). This shows that the interrelations of the EP dimensions were strong.

We also tested whether these seven dimensions adequately fit a unidimensional model via meta-analytic SEM to address Research Question 3. Our syntax and further reporting of these results are provided in Supplementary Material F. Each dimension loaded strongly onto the single latent factor (0.54–0.67), and the model fit met most traditional cutoffs for acceptable fit (df = 14, χ^2 = 35.28, $RMSEA$ = 0.005, $SRMR$ = 0.05, TLI = 0.99, CFI = 0.99) (Cheung 2015; Jak 2015). Thus, our results supported the unidimensional model.

Next, we assessed the relations of EP with the proposed outcomes (Table 3). In each of these analyses, we report the relation of each primary dimension as well as aggregated total scores with outcomes, resulting in eight relations to be tested for each research question and hypothesis. First, we tested the relations of entrepreneurial attitude. Two were moderate (both $\bar{r}$ = 0.23); three were strong ($\bar{r}$ = 0.29–0.32); and three were very strong in magnitude ($\bar{r}$ = 0.36–0.39). All were statistically significant ($p < 0.05$). Hypothesis 1 was supported. Second, we tested the relations of entrepreneurial intent. EP had two moderate ($\bar{r}$ = 0.19–0.21), four strong ($\bar{r}$ = 0.26–0.34), and two very strong relations ($\bar{r}$ = 0.36–0.41) with entrepreneurial intent, and each of these were statistically significant ($p < 0.001$). Hypothesis 2 was supported. Third, we tested the relations of entrepreneurial status. EP had two

Table 2: Intercorrelations of entrepreneurial personality dimensions.

	1	2	3	4	5	6	7
1.) Innovativeness							
2.) Risk-taking	0.40, 0.54						
	(67; 54,601)						
3.) Achievement	0.48, 0.63	0.31, 0.42					
orientation	(43; 15,202)	(35; 13,758)					
4.) Locus of control	0.42, 0.57	0.27, 0.38	0.46, 0.62				
	(37; 22,522)	(23; 15,846)	(44; 13,593)				
5.) Proactiveness	0.45, 0.60	0.36, 0.49	0.47, 0.62	0.25, 0.34			
	(49; 42,619)	(50; 44,374)	(10; 5358)	(6; 10,997)			
6.) Self-efficacy	0.34, 0.45	0.39, 0.53	0.37, 0.49	0.32, 0.44	0.41, 0.55		
	(28; 17,228)	(13; 13,864)	(27; 7884)	(26; 15,740)	(5; 10,893)		
7.) Autonomy	0.38, 0.52	0.37, 0.52	0.37, 0.50	0.29, 0.41	0.36, 0.49	0.48, 0.66	
orientation	(22; 16,673)	(27; 19,738)	(21; 9322)	(13; 12,301)	(12; 13,911)	(8; 11,709)	

First line of each cell includes uncorrected meta-analytic correlation followed by the meta-analytic correlation corrected for unreliability. The second line of each cell includes the number of included studies followed by the total sample size of these studies.

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Table 3: Primary analytic results for outcome effects.

Outcome	Trait	# of sources	*k*	*n*	$\bar{r}$	$\bar{\rho}$	95% C.I.	*z*-value	Sig
1.) Entrepreneurial Attitudes	a.) Innovativeness	12	13	3309	0.36	0.46	0.27, 0.45	7.12	<0.001
	b.) Risk-taking	15	16	3839	0.31	0.41	0.23, 0.39	6.88	<0.001
	c.) Achievement	10	10	2625	0.38	0.49	0.23, 0.51	4.80	<0.001
	d.) Locus of control	10	10	1992	0.32	0.42	0.20, 0.43	5.01	<0.001
	e.) Proactiveness	7	8	1778	0.23	0.29	0.03, 0.41	2.27	0.02
	f.) Self-efficacy	5	5	1471	0.39	0.41	0.28, 0.50	6.24	<0.001
	g.) Autonomy	4	4	1446	0.29	0.39	0.10, 0.47	2.88	<0.01
	h.) Aggregate	2	3	410	0.23	0.29	0.14, 0.32	4.71	<0.001
2.) Entrepreneurial Intent	a.) Innovativeness	45	48	19,848	0.34	0.42	0.28, 0.38	12.05	<0.001
	b.) Risk-taking	48	49	22,922	0.31	0.41	0.29, 0.36	15.22	<0.001
	c.) Achievement	33	33	13,580	0.26	0.32	0.19, 0.32	7.72	<0.001
	d.) Locus of control	31	31	10,029	0.19	0.24	0.12, 0.25	5.59	<0.001
	e.) Proactiveness	24	25	10,472	0.36	0.37	0.28, 0.43	8.34	<0.001
	f.) Self-efficacy	21	21	10,379	0.29	0.45	0.20, 0.37	5.94	<0.001
	g.) Autonomy	19	19	8148	0.21	0.27	0.12, 0.29	4.75	<0.001
	h.) Aggregate	28	29	12,832	0.41	0.49	0.35, 0.46	12.14	<0.001
3.) Entrepreneurial Status	a.) Innovativeness	17	17	5633	0.18	0.21	0.12, 0.25	5.52	<0.001
	b.) Risk-taking	15	16	5101	0.24	0.28	0.17, 0.31	6.74	<0.001
	c.) Achievement	15	15	4649	0.14	0.16	0.09, 0.20	5.00	<0.001
	d.) Locus of control	14	14	3663	0.15	0.18	0.09, 0.21	4.73	<0.001
	e.) Proactiveness	7	8	3160	0.23	0.27	0.16, 0.30	6.37	<0.001
	f.) Self-efficacy	10	10	2965	0.11	0.13	0.02, 0.20	2.431	0.02
	g.) Autonomy	12	13	5059	0.18	0.21	0.10, 0.27	4.07	<0.001
	h.) Aggregate	8	8	3079	0.20	0.22	0.07, 0.32	3.04	0.002

Table 3: (continued)

Outcome	Trait	# of sources	*k*	*n*	$\bar{r}$	$\bar{\rho}$	95% C.I.	*z*-value	Sig
4.) Performance	a.) Innovativeness	26	26	8941	0.24	0.30	0.16, 0.31	6.18	<0.001
	b.) Risk-taking	19	19	5038	0.17	0.22	0.10, 0.23	5.09	<0.001
	c.) Achievement	17	18	4625	0.22	0.28	0.14, 0.29	5.19	<0.001
	d.) Locus of control	12	13	3255	0.22	0.29	0.09, 0.34	3.27	0.001
	e.) Proactiveness	17	17	6348	0.27	0.34	0.16, 0.37	4.6	<0.001
	f.) Self-efficacy	9	10	2487	0.16	0.21	0.07, 0.24	3.53	<0.001
	g.) Autonomy	10	10	2622	0.21	0.28	0.11, 0.30	4.20	<0.001
	h.) Aggregate	23	24	7240	0.37	0.45	0.27, 0.46	6.91	<0.001

Achievement = Achievement Orientation; Autonomy = Autonomy Orientation; *k* = Number of unique samples; *n* = Total sample size; $\bar{r}$ = Uncorrected meta-analytic correlation; $\bar{\rho}$ = Meta-analytic correlation corrected for unreliability; 95% C.I. = 95% Confidence Interval of Uncorrected Meta-Analytic Correlation; *z*-value = *Z*-value of uncorrected meta-analytic correlation; Sig = *P*-value of uncorrected meta-analytic correlation.

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small ($\bar{r}$ = 0.11–0.14) and six moderate ($\bar{r}$ = 0.15–0.24) relations with entrepreneurial status, and all relations were statistically significant ($p < 0.05$). Hypothesis 3 was supported. Fourth, we tested the relations of entrepreneurial performance. Six of these relations were moderate in strength ($\bar{r}$ = 0.16–0.24), one was strong ($\bar{r}$ = 0.27), and one was very strong ($\bar{r}$ = 0.37). Each was statistically significant ($p < 0.01$). Hypothesis 4 was supported.

As a supplemental analysis, we calculated the average relation of the dimensions with each outcome. The average relation with entrepreneurial attitudes was 0.31, intent was 0.30, status was 0.18, and performance was 0.23. Thus, EP and its dimensions had strong relations with entrepreneurial attitudes and intent, whereas they had moderate relations with entrepreneurial status and performance.

Lastly, investigated the average relations of the dimensions and aggregate scores to assess Research Question 4. We investigated whether EP and its dimensions differed in their relations to outcomes. The average correlations with outcomes were: innovativeness ($\bar{r}$ = 0.28), risk-taking ($\bar{r}$ = 0.26), achievement orientation ($\bar{r}$ = 0.25), locus of control ($\bar{r}$ = 0.22), proactiveness ($\bar{r}$ = 0.27), self-efficacy ($\bar{r}$ = 0.24), autonomy orientation ($\bar{r}$ = 0.22), and aggregate scores ($\bar{r}$ = 0.30). In general, aggregate EP scores produced stronger relations than the dimensional scores.

5 Discussion

The study of personality is one of the oldest and most popular topics in entrepreneurship research (Chell 1985; Chell, Haworth, and Brearley 1991; Littunen 2000). Early researchers studied the effects of individual personality traits in predicting entrepreneurial outcomes (De Vries 1977; Kollmann, Christofor, and Kuckertz 2007); however, more recent research has increasingly developed multidimensional conceptualizations of EP (Awang et al. 2016; Bolton 2012; Shariff and Saud 2009), which we define as a collection of personality traits that broadly and strongly relate to entrepreneurial outcomes across most contexts. The goal of the current article was to provide much-needed clarity to the study of EP by performing a systematic literature review and meta-analysis.

The results of the systematic literature review identified seven dimensions that are most common in conceptualizations and operationalizations of EP: innovativeness, risk-taking, achievement orientation, locus of control, proactiveness, self-efficacy, and autonomy orientation. The meta-analysis supported that these dimensions are strongly interrelated, and meta-analytic SEM supported that all dimensions loaded onto a single latent factor. These results indicate that EP can be justifiably represented by these seven core dimensions. The meta-analysis showed

that EP and its dimensions have consistent moderate to very large relations with entrepreneurial outcomes, but varying strengths of relations were observed that were dependent on the specific outcome. In general, EP and its dimensions produced strong relations with attitudes and intent, whereas they produced moderate relations with status and performance. Aggregate scores also demonstrated stronger overall relations with outcomes than the individual dimensions, which has been proposed as a requirement for the conceptualization of second-order constructs (Luthans et al. 2007; Luthans, Youssef, and Avolio 2015; Newman et al. 2014). Given these findings, the current article provides many implications and directions for future research and practice.

5.1 Theoretical Implications and Future Research Directions

A multitude of conceptualizations exist for EP, including IEO, EAO, and many others. The current results do not invalidate these conceptualizations, but they do suggest that important aspects of EP may be missing from these conceptualizations by not including all seven common dimensions. For instance, IEO includes the dimensions of innovativeness, risk-taking, and proactiveness, whereas EAO includes the dimensions of innovativeness, achievement motivation, personal control, and self-esteem (Bolton and Lane 2012; Guerrero, Rialp, and Urbano 2008; Koe 2016; Lindsay 2005; Tan, Long, and Robinson 1996). These multidimensional constructs may predict important entrepreneurial outcomes, and including them within theoretical frameworks and study designs is preferred to omitting personality altogether; however, researchers should recognize that IEO and EAO may be limited as representations of EP. These constructs only include three and four dimensions, respectively, and they may fail to predict entrepreneurial outcomes that broader conceptualizations of EP may predict. For this reason, future researchers should explore broader conceptualizations of EP that include all seven dimensions identified in the current article. Specifically, no measure exists that gauges each of these dimensions with supporting psychometric and validity evidence, and such measures should be developed. After doing so, researchers should assess the extent that these new measures improve predictions beyond prior conceptualizations, such as IEO and EAO, which can support that EP may more strongly predict entrepreneurial outcomes than even observed in the current meta-analysis.

Further, each of these seven dimensions had similar interrelations with each other, produced adequate fit when modeled onto a single latent factor, and demonstrated comparable relations with entrepreneurial outcomes. These collective results support their inclusion within the scope of EP, and these seven

dimensions should be considered representative of EP. These results also identify guidelines for the inclusion of any subsequent dimensions. Additional constructs under consideration for inclusion should demonstrate strong intercorrelations with these seven dimensions, produce adequate model fit when modeled into a single latent factor with the other dimensions, and demonstrate adequate relations with entrepreneurial outcomes. We recommend that any dimension under consideration should demonstrate an average intercorrelation of 0.30 or above with existing dimensions, based on our meta-analytic results. The correlational criteria with entrepreneurial outcomes should also depend on the specific outcome of interest. Based on our meta-analytic results, any additional dimension considered for inclusion with EP should demonstrate a correlation of 0.30 or larger with entrepreneurial attitudes, 0.30 or larger with entrepreneurial intent, 0.15 or larger with entrepreneurial status, and 0.20 or larger with entrepreneurial performance. While prior research utilized vague notions to define the representative constructs of EP, future researchers can be more certain regarding their inclusion criteria for additional dimensions by using these newfound criteria.

Similarly, some authors have argued that a necessary requirement to support the validity of multidimensional constructs is to demonstrate their stronger relation with outcomes relative to their representative dimensions (Luthans et al. 2007; Luthans, Youssef, and Avolio 2015; Newman et al. 2014). We supported the aggregate scores of EP operationalizations produced stronger relations with outcomes than individual dimensions, which provides assurances that EP is a valid conceptualization; however, future research should further investigate this research question. Notably, a more conservative application of this requirement is to necessitate that aggregate constructs relate to outcomes beyond each of their representative dimensions when studied together. We could not conduct such an analysis via meta-analytic SEM due to too few authors assessing the relation of individual dimensions and aggregate scores, but future researchers should conduct these analyses using the seven dimensions of EP observed in the current article. For instance, a researcher could enter individual dimensions into the first step of a regression analyses, and they could then enter the aggregate score into the second step. Robust support for EP could be provided if the aggregate constructs significantly relate to the outcome beyond the predictors in the second step. Thus, while the current article provided strong support for EP and its dimensions, future research should not stray from providing even further support.

In supporting EP's relation with common entrepreneurial outcomes (attitudes, intent, status, and performance), we reemphasized the importance of personality in the entrepreneurial process. While some authors have doubted the influence of personality, EP should be seen as a pivotal determinant of entrepreneurial outcomes. This likewise suggests that theories used to predict these relations are

valuable for understanding EP, such as adaptations to TPB that correctly identify EP's positive relation to entrepreneurial attitudes, intent, status, and performance (Awang et al. 2016; Hashim et al. 2017; Hormiga, Hancock, and Valls-Pasola 2013). Future researchers should test entire models identified by these adaptations to determine whether attitudes and intent mediate the relation of EP with entrepreneurial status and performance. Similarly, future research should perform in-depth investigations using models of career fit to further understand why those high in EP are drawn to entrepreneurship. These individuals may have more positive expectations of entrepreneurial endeavors, and they may become entrepreneurs because they perform behaviors with the best anticipated outcomes (Ajzen 1985, 1991; Beck and Ajzen 1991). Lastly, relevant theories are continuously modified and extended by ongoing research in research domains outside of entrepreneurship (e.g., Armitage and Christian 2017; Kim et al. 2016), and future research should incorporate new developments into the study of EP.

Certain personality traits may become more important at certain phases of the entrepreneurial process or within certain contexts. Prior research has considered EP to have a strong and consistent effect on entrepreneurial outcomes, and it is often studied as a unitary second-order construct (Bolton and Lane 2012; Guerrero, Rialp, and Urbano 2008; Koe 2016; Lindsay 2005). While the current article supported its second-order nature, it is likely that certain dimensions of EP become more important in various times or circumstances (Baum and Locke 2004; Baum, Locke, and Smith 2001; Obschonka and Stuetzer 2017; Shane, Locke, and Collins 2003). If true, this suggests that no one optimal EP configuration exists across all times or circumstances, although the dimensions identified in the current article are those that demonstrate the largest and most consistent effects across times and circumstances. For example, innovativeness may play a pivotal role early in the entrepreneurial process, but it may have a smaller effect during the later phases; risk-taking may be more important for high-growth entrepreneurial endeavors, whereas it may be less important for low-growth entrepreneurial endeavors (Manimala 1992; Miner and Raju 2004; Moreno and Casillas 2008). Future research should test context-specific effects of EP and its dimensions, integrating a process- or context-oriented approach (e.g., trait activation theory; Tett et al. 2013).

The current results also support psychological theories of entrepreneurship (Hagen 1963; McClelland 1961; Swedberg 2013), which stress the importance of the entrepreneur in understanding entrepreneurial success. Future research should apply these theories with process-oriented approaches and intensive data collection methodologies to expand upon the current results. Because entrepreneurship is an unfolding process, researchers should utilize methodologies that obtain many assessments of entrepreneurs to understand the manner in which their personality and behaviors influence associated outcomes at all stages of the

entrepreneurial process. For instance, certain dimensions of EP and prototypical behaviors may be essential for early phases of the entrepreneurial process, but they may become less important during latter phases. Performing these investigations could develop more sophisticated and accurate theories surrounding entrepreneurship, but also satisfy broader calls in management for process-oriented (Grand et al. 2016; Oh and Farh 2017) and person-specific theories (Howard and Hoffman 2018).

While not tested in the current article, researchers may consider further expanding the study of personality and environment to a complementary perspective. That is, researchers should refrain from investigations into whether personality or environment is more important in predicting entrepreneurial outcomes, but researchers should instead study personality-environment interactions (Kanfer and Ackerman 1989; Meyer, Dalal, and Hermida 2010). Many authors have shown that personality rarely has universal effects. Instead, the effects of personality depend on the context, and a personality dimension may predict an outcome in one context but have no effect whatsoever in another. The same is almost assuredly true for EP; while EP may predict outcomes across most all contexts, it may have particularly stronger effects in specific contexts. EP may have stronger effects in adversarial environments, as only those apt for entrepreneurship may be able to succeed, and similar sentiments could be expressed for an array of other contexts. Therefore, both personality and environment influence entrepreneurial outcomes, and future researcher should investigate their interactive effects in predicting these outcomes.

Many relations of EP could also not be meta-analytically tested due to insufficient prior research. Many of these gaps represent directions for future research – not because they are gaps, but rather because they can contribute to our understanding of theory and practice. A growing number of researchers have studied the relation between entrepreneurship and general work outcomes, discovering that entrepreneurial endeavors are often taken for "deeply personal, idiosyncratic reasons" (Wiklund et al. 2019, p. 579) and entrepreneurial success results in more than economic well-being (Ryff 2019). EP may relate to greater general work outcomes, such as personal well-being, because it also relates to better entrepreneurial performance. That is, EP may influence performance, which subsequently influences personal well-being. Future research is needed, though, to link EP to these broader personal outcomes via this mediating mechanism.

Lastly, while we identified the dimensions of EP most commonly studied with entrepreneurial outcomes, but it should be recognized that these seven dimensions are not the only important influences on entrepreneurial outcomes. The Big Five has been previously supported to each relate to entrepreneurial outcomes, and the dimensions of conscientiousness and extraversion have been supported to

be particularly important (Zhao and Seibert 2006; Zhao, Seibert, and Lumpkin 2010). People see greater entrepreneurial success if they are hardworking and socially oriented, indicating that researchers should not abandon studying dimensions of personality beyond the seven identified in the current article. Instead, it may be beneficial to assess the extent that EP predicts outcomes beyond other established aspects of personality, such as the Big Five or HEXACO, and researchers can infer the relative contribution of the EP beyond general conceptualizations of personality. Likewise, it may be beneficial to assess the amount of the variance in these seven dimensions that is captured by the Big Five or HEXCO dimensions by performing facet-level studies (Howard 2020). That is, researchers could assess the extent that the facets of the Big Five and HEXACO dimensions converge with these seven dimensions of EP, which could provide strong support for the uniqueness and discriminant validity of EP.

5.2 Practical Implications

While the current results provide many practical implications, we highlight two. Organizations must assign leaders of their subsidiary organizations, whether newly created or long existing, and these leaders must possess the characteristics that enable their subsidiary organizations to succeed. The current results can guide organizations to the attributes that may benefit leaders in these positions, and they could even develop personnel selection measures that include our identified dimensions of EP. Personality is known to predict performance, and personnel selection measures are most effective when catered to the position if interest (Ones and Viswesvaran 1996). The current results can enable practitioners to maximize the predictive ability of their selection measures, resulting in large organizational benefits.

Alternatively, traits are believed to be relatively stable over the lifespan, but research has supported that traits can be altered by external influences (McCrae et al. 2021; Wood and Denissen 2015). For instance, a person's work environment can gradually cause them to express and subsequently internalize certain traits, resulting in the development of traits that are conducive to success in those environments (Bleidorn, Hopwood, and Lucas 2018). Aspiring entrepreneurs may investigate opportunities to develop these dimensions of EP to become more successful, such as enrolling in training courses or occupations that call for innovation, risk-taking, and the other dimensions of EP. Similarly, organizations can develop training programs for leaders selected for their subsidiary organizations. Therefore, EP may be developed via both nature and nurture.

6 Conclusions

We identified the seven common dimensions of EP: innovativeness, risk-taking, achievement orientation, locus of control, proactiveness, self-efficacy, and autonomy orientation. We determined criteria for the inclusion of constructs within the scope of EP, which were based on the relations demonstrated by these seven dimensions. We also supported that EP has strong relations with outcomes, which opens avenues for future research. Future researchers should consider novel theoretical integrations with EP, particularly those highlighted above.

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