

## ON USING BIG FIVE FACETS FOR ENTREPRENEURSHIP'S PERSONALITY RESEARCH: CONSCIENTIOUSNESS' TAXONOMY

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### Abstract:

Among the Big Five personality dimensions (i.e., Agreeableness, Conscientiousness, Extraversion, Neuroticism, and Openness), it is Conscientiousness that, more so than the others, predicts entrepreneurial intention, performance, and actual business creation (e.g., Zhou, Seibert and Lumpkin, 2010). Yet, despite its salience, the various facets of Conscientiousness and their association with specific entrepreneurial behaviors are not clearly understood. The present study cross-references the psychology literature and uncovers an extended set of thirteen Conscientiousness facets, ordering them in terms of prevalence and salience, and then links them to specific entrepreneurial behaviors. Following this, it also provides a host of implications as well as future research directions.

**Keywords:** Entrepreneurship, personality, Big Five, dimension, facet, conscientiousness

### Introduction

The personality approach to entrepreneurship assumes that entrepreneurs possess distinct inner qualities that make them fundamentally different from other individuals. Since these traits may lead to extraordinary achievements, they are worth studying (Gartner, 1988). Given the personality approach's intuitive nature, business has long theorized on entrepreneurs' key characteristics. Among others, Cole (1946) suggests particular *Perseverance*; McClelland (1961) *Need for Achievement*; and Liles (1974) *Risk Tolerance*.

Despite early skepticism, notably Gartner (1988), entrepreneurship' personality research has flourished. Refined methods not only met prior methodological objections, but produced substantial findings (Rauch, 2014). A number of recent meta-analysis, e.g. Rauch and Frese (2007), Zhao, Seibert, and Lumpkin (2010) and Brandstätter (2011), among others, examine the different relationships between personality and entrepreneurship. Results strongly suggest that the personality approach to entrepreneurship is both valid and useful, personality now generally accepted as influencing entrepreneurial behavior (Rauch, 2014).

Entrepreneurship's early skepticism was based on personality research producing weak results. This had to do, among others, with the lack of a generally-accepted personality structure. The development of the Big Five dimensions advanced entrepreneurship's personality research considerably (Nicholson, 1998). The framework's robustness made it ideal for business research, allowing the study of personality issues related to selection, evaluation and training (Barrick & Mount, 1991). Within entrepreneurship, the Big Five enabled the exploration of personality's relation to venture creation, growth and survival (Ciavarella, Buchholtz, Riordan, Gatewood & Stokes, 2004).

Broad, amalgamated dimensions like the Big Five describe general behaviors. However, fields like entrepreneurship comprise quite specific behaviors (Rauch, 2014). Omnibus dimensions, like the Big Five, are

therefore not really suited for behavioral prediction because they are not domain-specific (Bandura, 1997). This makes it difficult to produce and compare findings, essentially develop theory, at all but the most general levels.

A way to overcome this limitation, and help entrepreneurship's personality research further develop, is by using the Big Five's more specific sub-dimensions (facets). Their more precise level of explanation, coupled with their ability to be more relevantly targeted, allow to better predict behavioral outcomes (Paunonen & Ashton, 2001). However, there is still no clarity as to what exactly Big Five dimensions consist of. While business and entrepreneurship focus on only a few select dimensional domains, psychology is barely starting to reach consensus in regards to the Big Five's lower-order structure (Roberts, Lejuez, Krueger, Richards & Hill, 2014).

The present exploratory paper begins to resolve this situation. Following Lumpkin and Dess (1996), who addressed *Entrepreneurial Orientation's* more-specific components, this study looks into the taxonomy of one of the Big Five dimensions: *Conscientiousness*. This factor was chosen as a first exemplar given its entrepreneurial importance. *Conscientiousness* is mostly associated to task and goal-directed behaviors (Jackson, Wood, Bogg, Walton, Harms & Roberts, 2010) and is thus a core determinant of human capital (Roberts, Lejuez, Krueger, Richards & Hill, 2014). Of all Big Five dimensions only *Conscientiousness* consistently predicts job performance (Barrick, Mount & Judge, 2001). It also strongly correlates to superior group leadership (Judge, Bono, Ilies & Gerhardt, 2002); job satisfaction (Judge, Heller & Mount, 2002); and career success (Judge, Higgins, Thoresen & Barrick, 1999). Unlike other Big Five dimensions *Conscientiousness* encompasses quintessential entrepreneurial traits such as *Achievement Striving*, *Risk-Taking*, *Self-Efficacy*, *Discipline* and *Perseverance* Rauch (2014). It thus also correlates to key entrepreneurial behaviors like venture intention, creation, performance (Zhao, Seibert & Lumpkin, 2010) and long-term survival (Ciavarella, Buchholtz, Riordan, Gatewood & Stokes, 2004).

This paper begins with a brief overview of personality and its Big Five taxonomy. The *Conscientiousness* construct is then addressed, along with some empirical findings associated to it. A discussion on the benefits of using dimensional facets then leads into *Conscientiousness's* components. Finally, a series of future directions for personality research in entrepreneurship are offered. It is hoped that the extended set of *Conscientiousness* facets uncovered assists entrepreneurship in subsequent empirical efforts. It is also hoped that this taxonomical research be extended to other Big Five dimensions to further expand entrepreneurship's personality research.

## **Personality and the Big Five**

Psychology generally conceives *personality* as individuals' innate and pervasive mental characteristics which lead to distinct behavioral patterns (Costa & McCrae, 1994a). Characteristics may be overt, reflected by personal, professional and social behaviors; and covert, referring to how people perceive, think and feel (Widiger, 1998). Regardless of nature, these mental characteristics are consistent across situations and time (Cervone & Pervin, 2008).

Psychology has converged on an overarching five-factor personality structure (Digman, 1990). This framework consolidates decades of multidisciplinary research (Zhao & Seibert, 2006). These so-called *Big Five* have become the most widely used personality taxonomy (Rauch, 2014). Thorough and efficient, they consistently provide valid and reliable measures (Ashton & Lee, 2005). An impressive body of literature has come to support the Big Five. Despite some variation, there is general five-factor agreement between genders, age groups, self/peer ratings, longitudinal studies and cross-cultural contexts. There is thus consensus that the Big Five likely represent the basic and universal personality dimensions (Cervone & Pervin, 2008).

The Big Five account for most personality variation through a handful of broad bipolar dimensions: 1) *Extraversion*; 2) *Agreeableness*; 3) *Emotional Stability* (aka *Neuroticism*); 4) *Openness to Experience* (aka *Intellect*); and 5) *Conscientiousness* (Ashton, Lee & Goldberg, 2004). Each of these is hierarchical, going from general dimensions, through progressively specific sub-dimensions/facets, to ultimately traits. Table 1, below, illustrates Costa and McCrae's (1994a) Five-Factor Model with some representative facets.

1) Extraversion	2) Agreeableness	3) Neuroticism	4) Openness	5) Conscientiousness
Warmth	Trust	Anxiety	Fantasy	Competence
Gregariousness	Straightforwardness	Angry hostility	Aesthetics	Order
Assertiveness	Altruism	Depression	Feelings	Dutifulness
Activity	Compliance	Self-consciousness	Actions	Achievement
Excitement seeking	Modesty	Impulsiveness	Ideas	Self-discipline
Positive emotions	Tender mindedness	Vulnerability	Values	Deliberation

**Table 1: The Five-Factor Model and Some Representative Facets**

To provide some context, the first four personality dimensions will be briefly addressed. *Conscientiousness*, as the focus of this paper, will be discussed in its own section thereafter.

*Extraversion* is associated to the quantity and intensity of interpersonal relationships. It focuses on being *active*, *assertive* and *outgoing*. Extraverts enjoy people, groups and seek external stimulation (Costa & McCrae, 1992). Entrepreneurs' degree of *Extraversion* impacts their success. Often assuming sales roles, they must constantly interact with a variety of constituents like customers, employees, partners and investors (Zhao & Seibert, 2006).

*Agreeableness* relates to the quality of relationships. It encompasses being *caring*, *understanding* and *trusting* (DeNeve & Cooper, 1998). *Agreeableness* leads to positive, cooperative relationships. Though in excess it may thwart the ability to make difficult decisions and bargain to one's advantage. This is particularly detrimental for entrepreneurs who often operate on minimal resources with low margins of error (Zhao & Seibert, 2006).

*Emotional Stability* (aka *Neuroticism*) reflects individuals' inner resilience and outward adjustment. It refers to tolerance towards stress, irritability and anxiety. Individuals high in *Emotional Stability* are generally *self-confident*, *even-tempered* and *calm* (Judge, Higgins, Thoresen & Barrick, 1999). Entrepreneur's *Emotional Stability* impacts their success. Their unstructured work environment, and the higher workload, work-family conflict, and financial risk associated to new ventures, all cause mental stress beyond conventional professions (Zhao & Seibert, 2006).

*Openness to Experience* (aka *Intellect*) refers to individuals' broad-mindedness. It comprises being curious and exploring new ideas and experiences. Individuals high in *Openness* are *non-traditional*, *creative* and *innovative* (Rauch, 2014). Schumpeter (1942/2008) suggests that entrepreneurs are essentially defined by innovation. Identifying opportunities and growing a business require novel ideas and creative problem solving, both at the core of more recent entrepreneurship definitions, such as that of Shane and Venkataraman (2000).

Personality is thus important for opportunity recognition (Ardichvili, Cardozo & Ray, 2003), venture intention, creation, and performance (Zhao, Seibert & Lumpkin, 2010); and long-term business survival (Ciavarella, Buchholtz, Riordan, Gatewood & Stokes, 2004). Compared to managers, entrepreneurs operate in more self-directed environments. Entrepreneur's personality therefore has a larger impact on behaviors and outcomes. Particularly amongst smaller firms where owners/managers have a stronger presence, opposed to larger ones with an emerging or already established cadre of managers (Rauch, 2014).

As to the first four personality dimensions mentioned above, Zhao and Seibert (2006) found that entrepreneurs are indeed different than managers. Entrepreneurs are equally *extraverted*, but significantly less *agreeable*, and significantly more *open* and *emotionally stable*.

## Conscientiousness

The fifth personality dimension, *Conscientiousness* is central within the Big Five framework. It is consistently obtained across psychological studies and accounts for a relatively large portion of personality's total variance (Ashton, Lee & Goldberg, 2004). The *Conscientiousness* label implies moral adherence. Though this interpretation is too literal. The dimension actually encompasses a broad spectrum of characteristics (Cartwright & Peckar, 1993), variously called *Dependability*, *Will to Achieve*, *Self-Control*, *Prudence* and *Constraint* (Costa & McCrae, 1998).

*Conscientiousness* is mostly associated to task and goal-directed behaviors. These encompass both assertive and inhibitive qualities (Jackson, Wood, Bogg, Walton, Harms & Roberts, 2010). The former comprise traits related to achievement, e.g. *responsible*, *hard-working* and *persistent*. The latter to self-control, like *orderly*, *cautious* and *scrupulous* (Rauch, 2014). Going back to early notions like *persistence of motives* (Webb, 1915) or *super-ego* (Freud, 1922/1989), *Conscientiousness* builds on a long psychological tradition. The dimension has since become closely linked to a variety of important psychological constructs (Roberts, Lejuez, Krueger, Richards & Hill, 2014).

Though *Conscientiousness* is not only a theoretical notion. It also has real-life implications, linked to a range of positive individual and professional outcomes. At the personal level, *Conscientiousness* is associated with sound eating habits (Goldberg & Stycker, 2002); positive health, psychological adjustment and ageing (Roberts, Lejuez, Krueger, Richards & Hill, 2014); longevity (Kern & Friedman, 2008); marital stability (Roberts & Bogg 2004); college retention (Tross, Harper, Osher & Kneidinger, 2000); and college achievement (Noftle & Robins, 2007).

As to business, *Conscientiousness* is a core determinant of human capital (Roberts, Lejuez, Krueger, Richards & Hill, 2014). It positively correlates to superior job performance (Hogan, Rybicki, Motowidlo & Borman, 1998), group leadership (Judge, Bono, Ilies & Gerhardt, 2002), job satisfaction (Judge, Heller & Mount, 2002), and career success (Judge, Higgins, Thoresen & Barrick, 1999). Barrick and Mount's (1991) meta-analysis (verified by Barrick, Mount, and Judge (2001)) found that of all Big Five dimensions only *Conscientiousness* consistently predicted job performance across diverse occupational groups and performance criteria. *Conscientiousness*' relationship was also noticeably larger than that of other Big Five dimensions making it the strongest performance indicator. This has to do with *Conscientiousness*, unlike other dimensions, encompassing a series of performance-related traits. Individuals with a strong work ethic, sense of purpose, and persistence, all *Conscientiousness* components, not surprisingly tend to perform better at work than those who lack these qualities.

In regards to entrepreneurship, Zhao and Seibert's (2006) meta-analysis found entrepreneurs to be significantly more conscientious than managers. This makes entrepreneurs even more performance-oriented than the former. As to behaviors, *Conscientiousness* was found to strongly correlate with *entrepreneurial intention* (Zhao, Seibert & Lumpkin, 2010); *business creation* (Zhao & Seibert, 2006); and *entrepreneurial performance* (Zhao, Seibert & Lumpkin, 2010). Interestingly *Conscientiousness* relates mostly to latter venture phases: Ciavarella, Buchholtz, Riordan, Gatewood, and Stokes (2004) hypothesized strong positive relationships between all Big Five personality factors and entrepreneurial longevity. Though contrary to expectations, *Extraversion*, *Emotional Stability*, and *Agreeableness* were found to have no significant impact while *Openness* actually reported a substantial negative one. It seems that entrepreneurs who are excessively broadminded, and therefore opportunistically take their ventures in different directions, are more likely to fail due to lack of focus. Hence *Openness*' negative relationship. Only *Conscientiousness* was found to significantly predict venture survival, at 4-years after startup (adolescence), 8-years (maturity) and overall (long-term). Furthermore, the impact of *Conscientiousness* increased as post-launch time progressed. These results suggest that entrepreneurs need to shift from a creative mindset to a more managerial one as ventures mature. It is along this transition where *Conscientiousness* components such as *Constraint*, *Prudence*, *Responsibility* and *Persistence* become so important.

## Bandwidth

The Big Five are efficient. They explain a substantial portion of personality variation through a mere handful of variables (Ashton & Lee, 2005). The merits of this framework cannot be denied, having become the standard within personality research (Rauch, 2014).

However, the Big Five do pose limitations: A first one is conceptual: despite being statistically independent, Big Five dimensions cannot be seen as single, conceptually unique variables. They should instead be understood as *collections* of related personality variables aggregated into general, overarching themes (Ashton & Lee, 2005). This conceptual broadness results in ambiguity, the finer features of personality often lost (Saucier & Ostendorf, 1999). Individuals with identical dimensional scores may differ widely in their behavior due to how their scores are distributed among the more specific sub-dimensions/facets. This is why, for precise diagnostic purposes, psychology prefers using a series of more specific variables instead of a few general ones (Widiger, Trull, Clarkin, Sanderson & Costa, 1994).

Instead of using broad dimensions, as conventionally done within entrepreneurship research, it is better to address personality at the more-specific facet level as this increases conceptual fidelity (Saucier & Ostendorf, 1999). Facets constitute a sound level of aggregation balancing the need for parsimony and representativeness (Briggs, 1989; Perugini & Gallucci, 1997). Made up of traits more similar to each other, facets allow the relationship between personality and other variables of interest to be more precisely established. Personality research can thus be taken to another level (literally) with further reaching implications (Roberts, Lejuez, Krueger, Richards & Hill, 2014).

A second Big Five limitation concerns predictive ability. The debate of broad vs. narrow dimensions being more effective is not new. This bandwidth-fidelity discussion goes back at least half a century to Cronbach and Gleser (1965), among others. The Big Five have been extensively used within entrepreneurship to predict a variety of behaviors. Broad, amalgamated dimensions like the Big Five are no doubt appropriate for general situations (Rauch, 2014). Though their use leads to a loss of specific variance, lowering the overall composite validity (Goldberg, 1993). Omnibus dimensions, like the Big Five, are not really suited for behavioral prediction because they are not domain-specific (Bandura, 1997). This makes it difficult to produce and compare findings, essentially develop theory, at all but the most general levels.

In contrast, dimensions' narrower facets tend to be more effective. Their more precise level of explanation, coupled with their ability to be more relevantly targeted, allow to better predict particular behavioral outcomes. Facets are thus better able to capture criterion-related variance unexplained by broader dimensions, Carver (1989); Perugini and Gallucci (1997); Paunonen and Ashton (2001); Ashton and Lee (2005). And even when the more-specific facets offer little predictive advantage, it is still useful to know which ones provide the greatest correlation, thus enhancing the overall understanding of the construct measured (Saucier & Ostendorf, 1999). Limiting entrepreneurship research to single, broad constructs or a narrow range of related ones may lead to misleading results. The field should instead use more comprehensive measures which capture constructs' different areas Lumpkin and Dess (1996). In the particular case of entrepreneurship's personality research, facets are better suited than dimensions to understand the field's unique behaviors (Rauch, 2014).

Granted, using facets opposed to dimensions to study the relationship between personality and entrepreneurship comes at the expense of efficiency, more variables needed to represent each overarching domain. Statistical issues might also arise, as unlike dimensions, facets are not independent variables: Having originally loaded under the same dimension, they are statistically related and thus co-vary. And this co-variance extends to other dimensions through secondary item loadings (Hofstee, De Raad & Goldberg, 1992). The above limitations are certainly acknowledged. However, one must not forget that dimensions, and especially their items, are rarely perfectly independent. They also often cross-load. Entrepreneurship has long acknowledged the co-variance of factors. To illustrate, Lumpkin and Dess (1996) comment on how Entrepreneurial Orientation's *competitive aggressiveness*, *innovativeness* and *risk taking* dimensions are to a certain degree related.

With this in mind, the above issues should not be a major obstacle towards the use of facets to study personality's impacts upon entrepreneurship. Facets' conceptual fidelity, directed targeting, and superior ability to predict specific behavioral outcomes more than compensate any reasonably-resolved statistical issues Perugini and Gallucci (1997); Paunonen and Ashton (2001); Ashton and Lee (2005).

### **Conscientiousness Facets**

In the particular case of *Conscientiousness*, there is ongoing debate as to its lower-level structure. Its different facets are only starting to be pursued, researchers providing different interpretations (Roberts, Lejuez, Krueger, Richards & Hill, 2014). Mount and Barrick (1995), among others, suggest just two *Conscientiousness* facets: *Achievement Motivation* and *Dependability*. However, their narrow perspective does not do this rich dimension

justice, its other aspects ignored. Alternatively, more recent entrepreneurship literature, e.g. Rauch (2014), suggests that *Conscientiousness* encompasses facets like *Orderliness*, *Discipline*, *Self-Efficacy*, *Cautiousness*, *Achievement Striving* and *Dutifulness*. While this portrayal is certainly more varied, it is nevertheless skewed towards entrepreneurial features. Given the inconsistency in number and nature of dimensions reported, as well as the possible biases that different fields might introduce, a more thorough and objective taxonomical review is necessary.

Per Costa, McCrae, and Dye (1991), and to theoretically ground the present effort, psychology's personality literature was reviewed to identify studies addressing *Conscientiousness*' lower-order structure. This follows the personality construct, and more specifically the Big Five framework to which *Conscientiousness* belongs, having originated within psychology. Not elsewhere, say business or entrepreneurship, which at best provide an interpretation of the original psychological theory. While the latter literatures were consulted for reference purposes, they were nonetheless omitted from the analysis for emphasizing only certain aspects, not providing a complete picture of the construct.

Furthermore, the psychological studies were selected based on the theoretical model they followed. Only studies using the Big Five framework were included to ensure theoretical consistency. Studies using other taxonomies, say Cattell, Eber and Tatsuoka's (1970) 16 Personality Factors or Eysenck's (1965) 3-factor model were consulted for reference purposes. While their different dimensions and facets no doubt closely relate to the Big Five and *Conscientiousness* in particular, they were also omitted from the analysis given their different theoretical origin (Goldberg, 1982).

Table 2, below, shows some key studies addressing *Conscientiousness*' lower-order structure. That only a handful are presented has to do, on the one hand, with psychology only beginning to formally address the dimension's taxonomy (Roberts, Lejuez, Krueger, Richards & Hill, 2014). Being a rather new area of inquiry, the number of papers on the subject is from the start limited. On the other hand, the sparse number of studies presented has to do with the authors having eliminated those deemed redundant. Some of the studies listed function as meta-analysis of sorts, synthesizing previous efforts, i.e. those not listed. Including the latter would have otherwise skewed results. To illustrate, Roberts, Chernyshenko, Stark, and Goldberg (2005) empirically test 36 scales related to *Conscientiousness* drawn from seven major personality inventories. While the studies listed are by no means exhaustive, the results offered in Table 2 are nevertheless deemed representative.

Studies, to the far left, are chronologically organized. The *Conscientiousness* facets identified by each are arranged from left to right in order of prevalence. The top row mentions absolute and relative frequencies for each facet, just as a rough indicator. Though it should be noted that at this aggregate level facet's nature become a bit fuzzy: Despite their classification being based on facet name, and then on the traits contained thereunder, facet's meaning and resultant position is not that clear-cut. To illustrate, the difference between Paunonen and Jackson's (1996) *drive to succeed* and *ambition* facets is somewhat obscure. While by no means exhaustive, Table 2 does provide some initial insights as to *Conscientiousness*' different aspects.

Frequency	x 15 = 94%	x 14 = 88%	x 12 = 75%	x 8 = 50%	x 8 = 50%	x 6 = 38%	x 5 = 31%	x 5 = 31%	x 4 = 25%	x 3 = 19%	x 2 = 13%	x 2 = 13%	x 2 = 13%
Facet	Organi- zation	Respon- sibility	Indus- trious- ness	Self- Control	Decisive- ness	Perfec- tionism	Caution	Conven- tionality	Achieve- ment Striving	Effi- ciency	Logic	Consis- tency	Virtue
<b>Study</b>													
(Goldberg, 1990)	Organi- zation	Depen- dability Punctual	Persis- tence		Decisive- ness	Precision	Caution	Conven- tionality		Effi- ciency Thrift	Logic	Predicta- bility	Dignity
(Costa, McCrae & Dye, 1991)	Order	Dutiful- ness	Compe- tence	Self- Disci- pline	Delibe- ration				Achieve- ment Striving				
(Hofstee, De Raad & Goldberg, 1992)	Organi- zation	Reliabi- lity				Perfec- tionism	Caution	Conven- tionality	Ambition			Consis- tency	
(Saucier & Goldberg, 1996)	Orderly	Depen- dable Reliable	Indus- trious						Ambi- tious	Syste- matic			
(Paunonen & Jackson, 1996)	Metho- dical Orderly	Depen- dable Reliable	Drive to Succeed						Ambition				
(Perugini & Gallucci, 1997)		Reliabi- lity				Meticu- lousness							
(Saucier & Ostendorf, 1999)	Order- liness	Reliabi- lity	Indus- trious- ness		Decisive- ness		Cautious- ness						
(Goldberg, 1999)	Order- liness Organiz.	Dutiful- ness Consc.			Purpose- fulness	Perfec- tionism	Cautious- ness			Efficienc- y	Ration- ality		
(Peabody & De Raad, 2002)	Order liness	Respon- sibleness	Work	Impulse Control	(Persis- tence)								
(Roberts, Bogg, Walton, Chernyshenko & Stark, 2004)	Order liness	Reliabi- lity Punctu- ality	Indus- trious- ness	Impulse Control	Decisive- ness			Conven- tionality Formal- ness					
(Ashton & Lee, 2005)	Organi- zation	Respon- sibility		Disci- pline		Tho- rough- ness							
(De Raad & Peabody, 2005)	Order liness	Respon- sibleness	Work	Impulse Control	Persis- tence								
(Roberts, Chernyshenko, Stark & Goldberg, 2005)	Order- liness	Respon- sibility	Indus- trious- ness	Self- Control				Tradi- tionalism					Virtue
(DeYoung, Quilty & Peterson, 2007)	Order liness		Indus- trious- ness										
(MacCann, Duckworth & Roberts, 2009)	Tidiness Planning		Indus- trious- ness	Control	Perse- verance	Perfec- tionism	Cautious- ness						
(Jackson, Wood, Bogg, Walton, Harms & Roberts, 2010)	Clean- liness Organiz.	Respon- sibility Punctual.	Indus- trious- ness	Impul- sivity				Formalit- y Appea- rance					

Table 2: Select Conscientiousness Taxonomies with their Respective Facet Frequencies

## Findings

Thirteen different *Conscientiousness* facets were identified: 1) *Organization*, 2) *Responsibility*, 3) *Industriousness*, 4) *Self-control*, 5) *Decisiveness*, 6) *Perfectionism*, 7) *Caution*, 8) *Conventionality*, 9) *Achievement Striving*, 10) *Efficiency*, 11) *Logic*, 12) *Consistency*, and 13) *Virtue*. Though the facets uncovered were not all equally prevalent. Some were more frequent than others. Facets were thus classified into three tiers according to their incidence. This three-tiered classification is admittedly arbitrary, and other groupings are certainly possible. However, this three-tiered classification does provide a simple, intuitive and practical overview of *Conscientiousness*' components.

Core *Conscientiousness* facets were put forward by at least two thirds of the studies and are thus relatively frequent. This primary tier comprises the *Organization*, *Responsibility* and *Industriousness* facets.

1) *Organization* refers to having one's tasks, objects and environment systematically arranged. Especially at a broad scale, anticipating efficient future use (OED, 2015a). The facet thus includes traits like *playful*, *methodical*, *clean* and *tidy*, the latter two belonging to the more-specific *Orderliness* sub-facet. *Organization* is important for entrepreneurs as it increases their efficiency, a key characteristic given their limited resources and strong competitive pressures.

2) *Responsibility* refers to fulfilling specific obligations and general standards of behavior, acknowledging one's accountability for outcomes (OED, 2015b). The facet therefore encompasses traits like *dependable*, *trustworthy* and *dutiful*, as well as the more-specific *Punctuality* sub-facet. *Responsibility* is also important for entrepreneurs. Customers, employees, suppliers and especially venture capitalists will tend to favor entrepreneurs driven to fulfill commitments.

3) *Industriousness* refers to putting higher effort and commitment into the tasks that one undertakes (OED, 2015c). The facet thus comprises traits like *energetic*, *hard-working*, *diligent* and *productive*. *Industriousness* is also important for entrepreneurs. By working harder, and putting in more hours, entrepreneurs compensate for their relative lack of resources and are able to generate additional output making them more competitive.

Complementary *Conscientiousness* facets were put forward by between one third and two thirds of the studies and are therefore occasional. This secondary tier comprises the *Self-control*, *Decisiveness* and *Perfectionism* facets.

4) *Self-control* refers to individual's ability to constrain impulses, be it emotions or desires, especially in difficult situations (OED, 2015d). The facet thus includes traits like *non-impulsive*, *composed*, and *levelheaded*. *Self-control* is also important for entrepreneurs as it helps align personal behaviors with business goals. Given their relatively small scale, and the magnified consequences of their actions, entrepreneurs can rarely afford to make impulsive decisions.

5) *Decisiveness* refers to individual's ability to make quick and effective decisions towards a definite course of action (OED, 2015e). The facet therefore encompasses traits such as *deliberate*, *determined*, and *purposeful*. *Decisiveness* is also important for entrepreneurs. It is related to *self-efficacy*, understood as task-specific self-confidence (Bandura, 1982). Self-confident entrepreneurs strongly believe in their own abilities (Simon, Houghton & Aquino, 2000), which in turn helps sustain motivation, driving *Industriousness*, *Persistence*, and *Efficiency*.

6) *Perfectionism* refers to doing things extraordinarily well, with particular attention to detail, ideally refusing anything short of perfection (OED, 2015f). The facet thus comprises traits like *meticulous*, *precise*, *thorough*, and *fussy*. *Perfectionism* is also important for entrepreneurs as it can generate a competitive advantage. However, excessive perfectionism might make entrepreneurs inefficient and uncompetitive in today's fast-paced business environment.

Peripheral *Conscientiousness* facets were put forward by less than one third of the studies and are thus rare. This tertiary tier comprises the *Caution*, *Conventionality*, *Achievement Striving*, *Efficiency*, *Logic*, *Consistency*, and *Virtue* facets.

7) *Caution* refers to individual's propensity to avoid problems, harm or loss (OED, 2015g). The facet therefore includes traits like *careful* and *prudent*. Caution is directly associated to its opposite *Risk-taking*, another quintessential entrepreneurial feature (Rauch, 2014) related to *Entrepreneurial Orientation* Lumpkin and Dess



(1996). *Caution* is also important for entrepreneurs. It helps prevent entrepreneurs from engaging in excessively risky behaviors, thus jeopardizing assets, perhaps even the entire venture. However, excessive *Caution* might lead entrepreneurs to lose their entrepreneurial edge and fail to capitalize on important market opportunities. Stewart and Roth (2001) found that entrepreneurs are more risk-prone than managers. Risk propensity also differs significantly between entrepreneurs focused on venture growth opposed to those focused on income. Zhao, Seibert, and Hills (2005) found risk-taking to be moderated by entrepreneurial self-efficacy.

8) *Conventionality* refers to individual's propensity to follow what is commonly done or believed as acceptable (OED, 2015h). The facet thus encompasses traits such as *traditional*, *conservative* and *conforming*. It also includes the more-specific *Formality* sub-facet, which refers to social manners and etiquette (OED, 2015i). *Conventionality* is directly related to its opposite *Innovativeness*, another *Entrepreneurial Orientation* dimension associated to the departure of existing practices to support new ideas and experimentation Lumpkin and Dess (1996). *Conventionality* is also important for entrepreneurs as business operates within a social context whose norms should be observed. However, excessive observance of norms might stifle creativity and action, making entrepreneurs uncompetitive.

9) *Achievement-Striving* refers to eagerly wanting to accomplish goals and making vigorous efforts towards obtaining them (OED, 2015j). The facet therefore comprises traits like *ambitious*, *excellence-seeking*, and *competitive*. *Achievement-Striving* is another quintessential entrepreneurial feature (Rauch, 2014). It has been long considered a key driver of entrepreneurship (McClelland, 1961) and is directly related to Entrepreneurial Orientation's *Competitive Aggressiveness* dimension, which drives entrepreneurs to outperform rivals (Lumpkin & Dess, 1996). Zhao and Seibert (2006) report significantly higher *Achievement-Striving* among entrepreneurs than managers. Collins, Hanges, and Locke (2004) found achievement to also be related to entrepreneurial performance, while McHenry, Hough, Toquam, Hanson, and Ashworth (1990) found it to validly predict general job performance.

10) *Efficiency* refers to achieving goals with limited resource expenditure, i.e. minimum waste (OED, 2015k). The facet thus encompasses traits like *concise*, *prompt*, and *economical*. It also includes the more-specific *Thrift* sub-facet. Closely linked to *Efficiency*, and worth further looking into, perhaps even adding, is a *Skill/Competence* facet. Associated to *self-efficacy* (Bandura, 1982), individuals will tend to embark on ventures and put sufficient effort into them only if they perceive themselves to have the required skills. In contrast, those who perceive themselves as less competent are more likely to forego enterprises, prematurely give up, or fail.

11) *Logic* refers to individual's propensity to think clearly, sensibly and objectively, without being influenced by feelings or opinions (OED, 2015l). The facet therefore includes traits like *analytical* and *rational*. *Logic* is important for entrepreneurs as venture survival depends, among others, on a rational appreciation of situations. However, being excessively logical might be counterproductive, taking the inspiration and excitement out of a venture.

12) *Consistency* refers to individuals not having aspects that contradict one-another or that change over time (OED, 2015m). The facet thus includes traits like *predictable* and *steady*. Consistency is also important for entrepreneurs as it supports the efficiency of efforts, resources not wasted pursuing conflicting directions. It also lends reliability to the entrepreneur as an individual, being perceived as more trustworthy.

13) *Virtue* refers to individual's propensity towards high moral standards, those deemed socially-desirable (OED, 2015n). The facet therefore includes traits like *honest* and *moral*. It also encompasses the more-specific *Dignity* sub-facet. Virtue is also important for entrepreneurs. Not only is honesty a key business requirement, but as markets shift towards social and environmental sustainability ethical entrepreneurship will become increasingly important.

As already mentioned, and now probably clearer, the above facets are not independent variables. Having originally loaded under the same dimension, they conceptually overlap, all referring in one way or another to the overarching *Conscientiousness* theme. That said, and despite this conceptual overlap, the facets are semantically more specific than their overarching *Conscientiousness* dimension. Made up of traits more similar to each other, facets allow the relationship between personality and other variables of interest to be more precisely established (Roberts, Lejuez, Krueger, Richards & Hill, 2014). As Galton (1884) observed during his pioneering lexical studies (p. 181), each "has a separate shade of meaning, while each shares a large part of its meaning with some of the rest".

Personality characteristics should align with entrepreneurship theory (Rauch, 2014). Though interestingly this study revealed that they are to a certain extent at odds. On the one hand, *Conscientiousness* was found to be a much richer construct than conventionally thought of by the business and entrepreneurship literatures. Instead of consisting of only two facets, say *Achievement Motivation* and *Dependability* (Mount & Barrick, 1995), or even six, *Orderliness*, *Discipline*, *Self-Efficacy*, *Cautiousness*, *Achievement Striving* and *Dutifulness* (Rauch, 2014), *Conscientiousness* was found to encompass thirteen different aspects. This new-found richness underscores the importance of revisiting original theoretical sources, in this case psychology, to obtain a better understanding of the constructs borrowed by entrepreneurship, marketing and business in general. Doing so will not only help these fields develop along more theoretically correct lines, but provide useful insights that drive research into new, interesting areas.

On the other hand, some of entrepreneurship's most important personality variables, e.g. the *Risk-taking* and *Achievement-striving* facets, turned out to have a mere peripheral role within the broader psychology literature. This illustrates how fields who adopt psychological theory, be it entrepreneurship or marketing, selectively retain and emphasize only certain elements according to their interests. While understandable, this further underscores the importance of revisiting the original theoretical sources to avoid the biased theoretical picture fields might portray on their own. With this in mind, following some general directions in which entrepreneurship might take its personality research.

### **Future Research**

A first research direction pertains the personality construct itself. Some researchers, Hogan (1991) among others, suggest that personality also encompasses individuals' social reputation. This construal has been long present in popular speech and media, *personality* often equated with *popularity* (familiarity/liking), *charm* (influence), *attractiveness* (aesthetic value) or *character* (moral evaluation). However, this biosocial notion of personality, which evaluates individuals based on external social norms, is wrong (Allport, 1938). Instead of being an objective description of a persons' inner nature, the biosocial view distorts personality into a subjective, contextually-laden and thus ambiguous construct (Azoulay & Kapferer, 2003). Per its proper biophysical meaning, personality refers strictly to individuals' internal psychological characteristics, irrespective of how others evaluate or are influenced by them (Allport, 1938). It is these innate, pervasive and enduring mental characteristics which lead to distinct behavioral patterns consistent across situations and time (Cervone & Pervin, 2008). In the context of entrepreneurship, these innate mental characteristics, such as *Achievement Striving*, *Industriousness* and *Caution* are what lead to venture creation, growth and survival. It is thus strongly suggested that future entrepreneurship research abstain from biosocial notions of personality. The construct's incorrect application is seldom noticed, much less challenged. Though improper construct definitions hinder education, research and practice, basically field's development as sciences (Conejo & Wooliscroft, 2015). Neglecting personality's correct conceptualization might lead entrepreneurship down the same path as marketing: Despite decades of research on *brand personality*, there is still no commonly accepted definition, the field plagued by a plethora of inconsistent and contradictory notions, studies and scales.

A second research direction refers to the Big Five. With this framework's consolidation personality research might be thought of as having matured. However, there is ongoing debate within psychology as to whether the Big Five are still too general. Additional, more-specific dimensions might be yet required to improve personality's understanding. Some advocates of expanded models suggest that particular Big Five dimensions be split, for instance *Openness* becoming two distinct *Intellect* and *Culture* dimensions (Digman & Takemoto-Chock, 1981). Others suggest that entirely new dimensions be added to the Big Five. Ashton, Lee, and Goldberg (2004) propose two extra dimensions, *Honesty*, *Humility*, and perhaps *Religiosity*; while Paunonen and Jackson (2000) suggest a staggering nine additions: *Religiosity*, *Deception*, *Honesty*, *Frugality*, *Sensuality*, *Conservatism*, *Gender*, *Ego* and *Humor*. Future personality research in entrepreneurship might apply these newer taxonomies. These are no doubt interesting, and in certain circumstances perhaps even advantageous. However, and even though the present paper considers the dimensional approach as sub-optimal, if entrepreneurship research is to be conducted at this aggregate level, it is recommended that it continue using the Big Five. Not only has this framework proven itself extensively, but by still being the only generally-accepted personality taxonomy, it is particularly well suited towards producing, discussing and accumulating findings.

A third research direction pertains Big Five facets. This exploratory paper addressed the lower-order structure of *Conscientiousness*, chosen as a first, exemplifying effort given the entrepreneurial importance of its components. However, personality research in entrepreneurship needs to also address the taxonomy of the remaining Big Five dimensions. This approach not only keeps efforts within an accepted theoretical framework, but offers ample opportunities for expansion and refinement. A hierarchical Big Five model is thus advocated, ranging from broad general dimensions, through progressively-specific facets, all the way down to individual traits. Efforts in this regard should first address core facets, then complementary ones, and perhaps later even lower-level facets. Like with the development of Big Five, this stands to be a prolonged process also encompassing cross cultural research Saucier and Ostendorf (1999).

A fourth research direction refers to entrepreneurial phenomena addressed. Entrepreneurship's personality research has advanced considerably, an important body of knowledge having emerged. Though the identification of more precise Big Five facets expands research opportunities within the field: On the one hand, and instead of continuing to address rather general situations as done so far, future research may now begin to study the myriad of more-specific entrepreneurial behaviors and outcomes associated to personality (Rauch, 2014). This more targeted approach should both extend and refine existing knowledge. On the other hand, and given entrepreneurship's richness, coupled with this new array of personality variables available, more sophisticated research models become possible. The field may now go beyond conventional bivariate correlations towards more complex ones acknowledging the simultaneous impact of other entrepreneurial variables. Venkatraman (1989) suggests a series of approaches to this effect, variables alternatively seen as interacting, mediating, or moderating the different relationships.

A fifth research direction addresses situational impacts. Psychology generally conceives *personality* as the innate mental characteristics which lead to distinct and enduring patterns of behavior (Costa & McCrae, 1994a). The assumptions of internal origin and situational pervasiveness are certainly important and warrant further research. However, a substantial portion of personality variance is environmentally moderated (Krueger & Johnson, 2008). In some instances innate tendencies are even completely overridden by situational demands (Cervone & Pervin, 2008). Within entrepreneurship, the same individual, with the same general personality, might show different, perhaps even conflicting behaviors within different contexts. Contexts can be broad, say the volatile startup stage opposed to more stable maturity one, each with their own set of conditions (Baron & Markman, 2005). Contexts can also be more specific, associated to single watershed events such as partnerships unexpectedly failing or extraordinarily successful IPOs. Divergent contextual behaviors might also have to do with some traits, e.g. *self-control*, being able to be activated/deactivated as needed (Block & Block, 1980). Personality research in entrepreneurship should thus expand its scope into the oft-neglected situational factors moderating behavior. Lower-level facets are particularly suited for this, some highly contextualized (Roberts, Lejuez, Krueger, Richards & Hill, 2014).

A sixth research area refers to subjects. Psychology generally assumes personality to be stable throughout people's lives (Cervone & Pervin, 2008). Fully developed by age 30, changes thereafter are deemed more the exception than the rule (Costa & McCrae, 1994b). This agrees with entrepreneurship's perspective, which has long conceived personality as fixed (Gartner, 1988). However, more current research suggests that personality is not immutable. While still generally consistent, it continues to develop well into adulthood. To illustrate, *Conscientiousness* facet measures were found to change both in type and degree during ageing (Jackson, Bogg, Walton, Wood, Harms, Lodi-Smith, Edmonds & Roberts, 2009). Research might therefore also address how entrepreneurs' personality develops over time, as well as the difference between entrepreneurial cohorts, say *Millennials* vs. *Boomers*. That said, the above supposes a single kind of entrepreneur. Though Miner (1997), among others, suggests an entire entrepreneurial typology: different types of entrepreneurs each with unique goals and characteristics. Research could thus also address the personality differences between entrepreneur types, be it novice, serial or lifestyle entrepreneurs; low and high-growth entrepreneurs (Miner & Raju, 2004), or acquisitive, administrative, opportunistic, incubative and imitative entrepreneurs (Scholthammer, 1982). Though to examine different entrepreneurial types, as well as the longitudinal research mentioned above, the more-specific personality facets are again better suited.

A seventh research area involves methods. Personality research relies mostly on self and (occasionally) peer ratings, as used by Baum and Locke (2004). Though extending personality research beyond traditional methods allows non-conventional questions and situations to be approached (Roberts, Lejuez, Krueger, Richards & Hill,

2014). An alternative approach might be projective techniques. These address unconscious/implicit tendencies, thought to better predict spontaneous and long-term behavioral patterns. Among those using this approach are Vianello, Robusto, and Anselmi (2010) who correlated implicit measures of *Conscientiousness* with academic performance; and Miner and Raju (2004) who compared implicit risk-propensities among low and high-growth entrepreneurs. Another approach might be experimental, which directly assess behaviors through laboratory-controlled tasks. This was used by De Wit (2009) who experimentally addressed three *Conscientiousness* domains, *Impulsivity*, *Inattention*, and *Disinhibition*, to assess subject's persistence in goal-directed behavior. Though projective and objective measures of the same variable may produce different results. While methodological effects need to be controlled, cross-method assessments should provide additional and richer insights (Meyer, 1996). Extending traditional methods also refers to instruments. Both entrepreneurship and marketing, like psychology, rely almost exclusively on factor analytical scale development. However, alternative scaling methods might also be looked into. One might be Rasch Modelling, which transforms conventional nominal and ordinal data into continuous logarithmic units. This allows respondents to be placed along latent variables' intensity continuum, essentially be measured (Meads & Bentall, 2008). This technique was used by e.g. Conejo and Wooliscroft (2014) to develop a *Conscientiousness* brand personality scale.

An eighth and final research direction refers to the cross-cultural. The relationship between culture, personality, and entrepreneurship is no doubt complex. Though in general, behaviors which are culturally congruent are more acceptable and therefore more likely exhibited (Dorfman, 2004). With this in mind, research should be able to apply the different cross-cultural models, e.g. Hofstede (1984), to continue uncovering interesting entrepreneurial relationships. To illustrate, McClelland (1961) posited that a nation's level of entrepreneurial activity was linked to the extent to which its society emphasizes *achievement*. Such societies will value *striving*, *hard work* and *accomplishment*, and will encourage and reward achievement-oriented behaviors like launching a venture. Along these lines, Zhao and Seibert (2006) meta-analysis studied whether House and Javidan's (2004) *performance orientation* variable culturally moderated the relationship between *Conscientiousness*' *achievement-motivation* facet and entrepreneurial activity. Interestingly, the study found no significant difference between societies high and low in *performance orientation*. This is but one example, though the world's cultural diversity and myriad of associated variables do offer a wealth of opportunities which research might pursue.

The research directions mentioned above address situational impacts, nature and evolution of entrepreneurial subjects, likely cross-cultural differences, and alternative research methods. The rather precise nature of variables required to pursue these directions underscores the importance of approaching personality research from the more-specific facet perspective.

## **Conclusion**

This paper set out to build on prior psychological research and highlight the multidimensionality of Big Five personality dimensions, *Conscientiousness* as an exemplar. This was accomplished: thirteen different facets were identified and briefly discussed. Though the facets offered are by no means the final word on *Conscientiousness*' lower-order structure. They are neither the only nor the best possible ones, just a first step towards clarifying this issue. That said, the facets identified are reasonably representative of the psychology literature. As such, they should be useful for future personality research within entrepreneurship and marketing.

The authors do not suggest that the personality approach to entrepreneurship provides a complete understanding of the field. Personality is just part of a larger, more complex multidimensional model encompassing a series of processes and variables product of individual, organizational and environmental factors. Though personality does contribute towards the big picture. But in order to better understand personality's impact upon entrepreneurship, its variables should be refined. Hence the present effort advocating entrepreneurship's use of personality facets.

## **References:**

- Allport, G. W. (1938). *Personality – A Psychological Interpretation*. London: Constable & Co., Ltd.
- Ardichvili, A., Cardozo, R., & Ray, S. (2003). A theory of entrepreneurial opportunity identification and development. *Journal of Business Venturing*, 18(1), 105-123.

Ashton, M. C., & Lee, K. (2005). A Defence of the Lexical Approach to the Study of Personality Structure. *European Journal of Personality*, 19, 5–24.

Ashton, M. C., Lee, K., & Goldberg, L. R. (2004). A Hierarchical Analysis of 1,710 English Personality-Descriptive Adjectives. *Journal of Personality and Social Psychology*, 87(5), 707–721.

Azoulay, A., & Kapferer, J.-N. (2003). Do Brand Personality Scales Really Measure Brand Personality? . *Journal of Brand Management*, 11(2), 143-155.

Bandura, A. (1982). Self-efficacy mechanism in human agency. *American Psychologist*, 37(2), 122-147.

Bandura, A. (1997). *Self-Efficacy: The Exercise of Control*. New York, NY: W. H. Freeman & Co. .

Baron, R. A., & Markman, G. D. (2005). Toward a process view of entrepreneurship: The changing impact of individual level variables across phases of new venture development. In Rahim, M. A., Golembiewski, R. T. & Mackenzie, K. D. (Eds.), *Current Topics in Management* (Vol. 9, pp. 45–64). New Brunswick, NJ: Transaction Publishers.

Barrick, M. R., & Mount, M. K. (1991). The Big Five personality dimensions and job performance: A meta-analysis. *Personnel Psychology*, 44(1-26).

Barrick, M. R., Mount, M. K., & Judge, T. A. (2001). Personality and performance at the beginning of the new millennium: What do we know and where do we go next? *International Journal of Selection and Assessment*, 9(1-2), 9-30.

Baum, J. R., & Locke, E. A. (2004). The Relationship of Entrepreneurial Traits, Skill, and Motivation to Subsequent Venture Growth. *Journal of Applied Psychology*, 89(4), 587–598.

Block, J. H., & Block, J. (1980). The role of ego-control and ego-resiliency in the organization of behavior. In Collins, W. A. (Ed.), *Development of Cognition, Affect, and Social Relations: The Minnesota Symposia on Child Psychology* (pp. 39–101). Hillsdale, NJ: Lawrence Erlbaum Ass.

Brandstätter, H. (2011). Personality aspects of entrepreneurship: A look at five meta-analyses. *Personality and Individual Differences*, 51(3/August), 222-230.

Briggs, S. R. (1989). The optimal level of measurement for personality constructs. In Buss, D. M. & Cantor, N. (Eds.), *Personality Psychology: Recent Trends and Emerging Directions* (pp. 246-260). New York, NY: Springer.

Cartwright, D., & Peckar, H. (1993). Purposefulness: A fourth superfactor? *Personality and Individual Differences*, 14(4), 547-555.

Carver, C. S. (1989). How should multifaceted personality constructs be tested? Issues illustrated by self-monitoring, attributional style, and hardiness. *Journal of Personality and Social Psychology*, 56(4), 577-585.

Cattell, R. B., Eber, H. W., & Tatsuoka, M. M. (1970). *Handbook for the 16 Personality Factor Questionnaire (16PF) in Clinical Educational Industrial and Research Psychology*. Champaign, IL: Institute for Personality and Ability Testing.

Cervone, D., & Pervin, L. A. (2008). *Personality - Theory and Research* (10th ed.). Hoboken, NJ: John Wiley & Sons.

Ciavarella, M. A., Buchholtz, A. K., Riordan, C. M., Gatewood, R. D., & Stokes, G. S. (2004). The Big Five and Venture Survival: Is there a linkage? *Journal of Business Venturing*, 19, 465-483.

Cole, A. H. (1946). An approach to the study of entrepreneurship: A tribute to Edwin F. Gay. *Journal of Economic History*, 6(January/Supplement 1), 1-15.

- Collins, C. J., Hanges, P. J., & Locke, E. A. (2004). The relationship of achievement motivation to entrepreneurial behavior: A meta-analysis. *Human Performance*, 17(1), 95-117.
- Conejo, F., & Wooliscroft, B. (2014). Exploring Scale Development Using Rasch Modelling: The Case of Brand Personality. Paper presented at the 39th Annual Macromarketing Conference, London, UK.
- Conejo, F., & Wooliscroft, B. (2015). Brands Defined as Semiotic Marketing Systems. *Journal of Macromarketing*( Advance at <http://jmk.sagepub.com/content/early/2014/04/16/0276146714531147.full.pdf+html>).
- Costa, P. T., & McCrae, R. R. (1992). Revised NEO Personality Inventory (NEO PI-R) and NEO Five-Factor Inventory (NEO FFI): Professional Manual. Odessa, FL: Psychological Assessment Resources.
- Costa, P. T., & McCrae, R. R. (1994a). Personality Assessment. In Ramachandran, V. S. (Ed.), *Encyclopaedia of Human Behaviour* (Vol. 3, pp. 453-460). San Diego: Academic Press.
- Costa, P. T., & McCrae, R. R. (1994b). Set like plaster? Evidence for the stability of adult personality. In Heatherton, T. F. & Weinberger, J. L. (Eds.), *Can Personality Change?* (pp. 21-40). Washington, DC: American Psychological Association.
- Costa, P. T., & McCrae, R. R. (1998). Six approaches to the explication of facet-level traits: examples from conscientiousness. *European Journal of Personality*, 12, 117-134.
- Costa, P. T., McCrae, R. R., & Dye, D. A. (1991). Facet Scales for Agreeableness and Conscientiousness: A Revision of the NEO Personality Inventory. *Personality and Individual Differences*, 12(9), 887-898.
- Cronbach, L. J., & Gleser, G. C. (1965). *Psychological Tests and Personnel Decisions* (2nd ed.). Urbana, Ill.: University of Illinois Press.
- De Raad, B., & Peabody, D. (2005). Cross-culturally recurrent personality factors: analyses of three factors. *European Journal of Personality*, 19(6), 451-474.
- De Wit, H. (2009). Impulsivity as a determinant and consequence of drug use: A review of underlying processes. *Addiction Biology*, 14(1), 22-31.
- DeNeve, K. M., & Cooper, H. (1998). The happy personality: a meta-analysis of 137 personality traits and subjective well-being. *Psychological Bulletin*, 124(2/September), 197-229.
- DeYoung, C. G., Quilty, L. C., & Peterson, J. B. (2007). Between facets and domains: 10 aspects of the Big Five. *Journal of Personality and Social Psychology*, 93(5), 880-896.
- Digman, J. M. (1990). Personality Structure: Emergence of the Five Factor Model. *Annual Review of Psychology*, 41, 417-440.
- Digman, J. M., & Takemoto-Chock, N. K. (1981). Factors in the natural language of personality: Re-analysis, comparison and interpretation of six major studies. *Multivariate Behavioural Research*, 16(April), 149-170.
- Dorfman, P. W. (2004). Cultural influences on organizational leadership. In House, R. J., Hanges, P. J., Javidan, M., Dorfman, P. W. & Gupta, V. (Eds.), *Culture, Leadership, and Organizations: The GLOBE study of 62 societies* (pp. 51-73). Thousand Oaks, CA: Sage Publications.
- Eysenck, H. J. (1965). *The Structure of Human Personality*. London: Methuen & Co.
- Freud, S. (1922/1989). *Introductory Lectures on Psycho-Analysis*. New York, NY: W.W. Norton & Co.
- Galton, F. (1884). Measurement of Character. *Fortnightly Review*, 36, 179-185.

- Gartner, W. B. (1988). "Who is an entrepreneur" is the wrong question. *Entrepreneurship Theory and Practice*, 12(2/Summer), 47-68.
- Goldberg, L. R. (1982). From Ace to Zombie: Some Explorations in the Language of Personality. In Spielberg, C. D. & Butcher, J. N. (Eds.), *Advances in Personality Assessment* (pp. 203-234). Hillsdale, NJ: Lawrence Erlbaum Associates.
- Goldberg, L. R. (1990). An Alternative Description of Personality: The Big Five Structure. *Journal of Personality and Social Psychology*, 59(6), 1216-1229.
- Goldberg, L. R. (1993). The structure of personality traits: Vertical and horizontal aspects. In Funder, D. C., Parke, R. D., C., T.-K. & Widaman, K. (Eds.), *Studying lives through time: Personality and development* (pp. 169-188). Washington, DC: American Psychological Association.
- Goldberg, L. R. (1999). A broad-bandwidth, public domain, personality inventory measuring the lower-level facets of several Five-Factor models. In Mervielde, I., Deary, I. J., De Fruyt, F. & Ostendorf, F. (Eds.), *Personality Psychology in Europe* (Vol. 7, pp. 7-28): Tilburg University Press.
- Goldberg, L. R., & Stycker, L. A. (2002). Personality traits and eating habits: The assessment of food preferences in a large community sample. *Personality and Individual Differences*, 32(1/January), 49-65.
- Hofstede, G. (1984). *Culture's consequences: International differences in work-related values*. Newbury Park, CA: Sage Publications.
- Hofstee, W. K. B., De Raad, B., & Goldberg, L. R. (1992). Integration of the Big Five and Circumplex Approaches to Trait Structure. *Journal of Personality and Social Psychology*, 63(1), 146-163.
- Hogan, J., Rybicki, S. L., Motowidlo, S. J., & Borman, W. C. (1998). Relations between contextual performance, personality, and occupational advancement. *Human Performance*, 11(2-3), 189-207.
- Hogan, R. T. (1991). Personality and Personality Measurement. In Dunnette, M. D. & Hough, L. M. (Eds.), *Handbook of Industrial and Organizational Psychology* (Vol. 2, pp. 873-919). Palo Alto, CA: Consulting Psychologists Press.
- House, R. J., & Javidan, M. (2004). Overview of GLOBE. In House, R. J., Hanges, P. J., Javidan, M., Dorfman, P. W. & Gupta, V. (Eds.), *Culture, Leadership, and Organizations: The GLOBE study of 62 societies* (pp. 9-28). Thousand Oaks, CA: Sage Publications.
- Jackson, J. J., Bogg, T., Walton, K. E., Wood, D., Harms, P. D., Lodi-Smith, J., Edmonds, G. W., & Roberts, B. W. (2009). Not all conscientiousness scales change alike: a multimethod, multisample study of age differences in the facets of conscientiousness. *Journal of Personality and Social Psychology*, 96(2), 446-459.
- Jackson, J. J., Wood, D., Bogg, T., Walton, K. E., Harms, P. D., & Roberts, B. W. (2010). What do conscientious people do? Development and validation of the Behavioral Indicators of Conscientiousness (BIC). *Journal of Research in Personality*, 44(4), 501-511.
- Judge, T. A., Bono, J. E., Ilies, R., & Gerhardt, M. W. (2002). Personality and leadership: A qualitative and quantitative review. *Journal of Applied Psychology*, 87(4), 765-780.
- Judge, T. A., Heller, D., & Mount, M. K. (2002). Five-factor model of personality and job satisfaction: a meta-analysis. *Journal of Applied Psychology*, 87(3), 530-541.
- Judge, T. A., Higgins, C. A., Thoresen, C. J., & Barrick, M. R. (1999). The big five personality traits, general mental ability, and career success across the life span. *Personnel Psychology*, 52(3), 621- 652.
- Kern, M. L., & Friedman, H. S. (2008). Do conscientious individuals live longer? A quantitative review. *Health Psychology*, 27(5), 505-512.

- Krueger, R. F., & Johnson, W. (2008). Behavioral genetics and personality: A new look at the integration of nature and nurture. In John, O. P., Robins, R. W. & Pervin, L. A. (Eds.), *Handbook of personality: Theory and research* (Third ed., pp. 287–310). New York, NY: Guilford Press.
- Liles, P. R. (1974). Who are the entrepreneurs? *MSU BusinessTopics*, 22(1), 5-14.
- Lumpkin, G. T., & Dess, G. G. (1996). Clarifying the Entrepreneurial Orientation Construct and Linking it to Performance. *Academy of Management Review*, 21(1), 135-172.
- MacCann, C., Duckworth, A. L., & Roberts, R. D. (2009). Empirical identification of the major facets of conscientiousness. *Learning and Individual Differences*, 19(4), 451-458.
- McClelland, D. C. (1961). *The Achieving Society*. Princeton, NJ: Van Nostrand.
- McHenry, J. J., Hough, L. M., Toquam, J. L., Hanson, M. A., & Ashworth, S. (1990). Project A validity results: The relationship between predictor and criterion domains. *Personnel Psychology*, 43, 335-367.
- Meads, D. M., & Bentall, R. P. (2008). Rasch analysis and item reduction of the hypomanic personality scale. *Personality and Individual Differences*, 44(8/June), 1772-1783.
- Meyer, G. J. (1996). The Rorschach and MMPI: Toward a more scientifically differentiated understanding of cross-method assessment. *Journal of Personality Assessment*, 67(3), 558-578.
- Miner, J. B. (1997). *A psychological typology of successful entrepreneurs*. Westport, CT: Quorum Books.
- Miner, J. B., & Raju, N. S. (2004). Risk Propensity Differences between Managers and Entrepreneurs and Between Low- and High-Growth Entrepreneurs: A Reply in a More Conservative Vein. *Journal of Applied Psychology*, 89(1), 3-13.
- Mount, M. K., & Barrick, M. R. (1995). The Big Five personality dimensions: Implications for research and practice in human resources management. *Research in Personnel and Human Resources Management*, 13(3), 153-200.
- Nicholson, N. (1998). Personality and Entrepreneurial Leadership: A Study of the Heads of the UK's Most Successful Independent Companies. *European Management Journal*, 16(5), 529-539.
- Noftle, E. E., & Robins, R. W. (2007). Personality predictors of academic outcomes: Big five correlates of GPA and SAT scores. *Journal of Personality and Social Psychology*, 93(1), 116-130.
- OED. (2015a). Organized - Definition. Retrieved April 25, 2015, from [http://www.oxforddictionaries.com/us/definition/american\\_english/organized](http://www.oxforddictionaries.com/us/definition/american_english/organized)
- OED. (2015b). Responsible - Definition. Retrieved April 25, 2015, from [http://www.oxforddictionaries.com/us/definition/american\\_english/responsible](http://www.oxforddictionaries.com/us/definition/american_english/responsible)
- OED. (2015c). Industrious - Definition. Retrieved April 25, 2015, from [http://www.oxforddictionaries.com/us/definition/american\\_english/industrious](http://www.oxforddictionaries.com/us/definition/american_english/industrious)
- OED. (2015d). Self-Control - Definition. Retrieved April 25, 2015, from [http://www.oxforddictionaries.com/us/definition/american\\_english/self-control](http://www.oxforddictionaries.com/us/definition/american_english/self-control)
- OED. (2015e). Decisive - Definition. Retrieved April 25, 2015, from [http://www.oxforddictionaries.com/us/definition/american\\_english/decisive](http://www.oxforddictionaries.com/us/definition/american_english/decisive)
- OED. (2015f). Perfectionist - Definition. Retrieved April 25, 2015, from [http://www.oxforddictionaries.com/us/definition/american\\_english/perfectionist](http://www.oxforddictionaries.com/us/definition/american_english/perfectionist)



- OED. (2015g). Cautious - Definition. Retrieved April 25, 2015, from [http://www.oxforddictionaries.com/us/definition/american\\_english/cautious](http://www.oxforddictionaries.com/us/definition/american_english/cautious)
- OED. (2015h). Conventional - Definition. Retrieved April 25, 2015, from [http://www.oxforddictionaries.com/us/definition/american\\_english/conventional](http://www.oxforddictionaries.com/us/definition/american_english/conventional)
- OED. (2015i). Formal - Definition. Retrieved April 25, 2015, from [http://www.oxforddictionaries.com/us/definition/american\\_english/formal](http://www.oxforddictionaries.com/us/definition/american_english/formal)
- OED. (2015j). Striving - Definition. Retrieved April 25, 2015, from [http://www.oxforddictionaries.com/us/definition/american\\_english/strive?q=striving](http://www.oxforddictionaries.com/us/definition/american_english/strive?q=striving)
- OED. (2015k). Efficient - Definition. Retrieved April 25, 2015, from [http://www.oxforddictionaries.com/us/definition/american\\_english/efficient](http://www.oxforddictionaries.com/us/definition/american_english/efficient)
- OED. (2015l). Logical - Definition. Retrieved April 25, 2015, from [http://www.oxforddictionaries.com/us/definition/american\\_english/logical](http://www.oxforddictionaries.com/us/definition/american_english/logical)
- OED. (2015m). Consistent - Definition. Retrieved April 25, 2015, from [http://www.oxforddictionaries.com/us/definition/american\\_english/consistent](http://www.oxforddictionaries.com/us/definition/american_english/consistent)
- OED. (2015n). Virtue - Definition. Retrieved April 25, 2015, from [http://www.oxforddictionaries.com/us/definition/american\\_english/virtue](http://www.oxforddictionaries.com/us/definition/american_english/virtue)
- Paunonen, S. V., & Ashton, M. C. (2001). Big Five factors and facets and the prediction of behavior. *Journal of Personality and Social Psychology*, 81(3), 524–539.
- Paunonen, S. V., & Jackson, D. N. (1996). The Jackson Personality Inventory and the Five-Factor Model of personality. *Journal of Research in Personality*, 30, 42-59.
- Paunonen, S. V., & Jackson, D. N. (2000). What is beyond the big five? Plenty! *Journal of Personality*, 68(5), 821-835.
- Peabody, D., & De Raad, B. (2002). The substantive nature of psycholexical personality factors: A comparison across languages. *Journal of Personality and Social Psychology*, 83(4), 983-997.
- Perugini, M., & Gallucci, M. (1997). A hierarchical faceted model of the Big Five. *European Journal of Personality*, 11, 279-301.
- Rauch, A. (2014). Predictions of Entrepreneurial Behavior: A Personality Approach. In Chell, E. & Karatas-Özkan, M. (Eds.), *Handbook of Research on Small Business and Entrepreneurship* (pp. 165-183). Cheltenham, UK: Edward Elgar Publishing.
- Rauch, A., & Frese, M. (2007). Let's put the person back into entrepreneurship research: A meta-analysis on the relationship between business owners' personality traits, business creation, and success. *European Journal of Work and Organizational Psychology*, 16(4), 353-385.
- Roberts, B. W., & Bogg, T. (2004). A longitudinal study of the relationships between conscientiousness and the social-environmental factors and substance-use behaviors that influence health. *Journal of Personality*, 72(2), 325-354.
- Roberts, B. W., Bogg, T., Walton, K. E., Chernyshenko, O. S., & Stark, S. E. (2004). A lexical investigation of the lower-order structure of conscientiousness. *Journal of Research in Personality*, 38, 164–178.
- Roberts, B. W., Chernyshenko, O. S., Stark, S., & Goldberg, L. R. (2005). The structure of conscientiousness: An empirical investigation based on seven major personality questionnaires. *Personnel Psychology*, 58(1), 103-139.

Roberts, B. W., Lejuez, C., Krueger, R. F., Richards, J. M., & Hill, P. L. (2014). What Is Conscientiousness and How Can It Be Assessed? *Developmental Psychology*, 50(5), 1315–1330.

Saucier, G., & Goldberg, L. R. (1996). Evidence for the Big Five in Analyses of Familiar English Personality Adjectives. *European Journal of Personality*, 10, 61-77.

Saucier, G., & Ostendorf, F. (1999). Hierarchical Subcomponents of the Big Five Personality Factors: A Cross-Language Replication. *Journal of Personality and Social Psychology*, 76(4), 613-627.

Schollhammer, H. (1982). Internal Corporate Entrepreneurship. In Kent, C. A., Sexton, D. L. & Vesper, K. H. (Eds.), *Encyclopedia of Entrepreneurship* (pp. 209-223). Englewood Cliffs, NJ: Prentice Hall.

Schumpeter, J. A. (1942/2008). *Capitalism, socialism, and democracy*. New York, NY: Harper Perennial.

Shane, S., & Venkataraman, S. (2000). The promise of entrepreneurship as a field of research. *Academy of Management Review*, 25(1), 217-226.

Simon, M., Houghton, S. M., & Aquino, K. (2000). Cognitive biases, risk perception, and venture formation: How individuals decide to start companies. *Journal of Business Venturing*, 15(2), 113-134.

Stewart, W. H., & Roth, P. L. (2001). Risk propensity differences between entrepreneurs and managers: A meta-analytic review. *Journal of Applied Psychology*, 86(1/Feb), 145-153.

Tross, S. A., Harper, J. P., Osher, L. W., & Kneidinger, L. M. (2000). Not just the usual cast of characteristics: Using personality to predict college performance and retention. *Journal of College Student Development*, 41(3/May-Jun), 323–334.

Venkataraman, N. (1989). The concept of fit in strategy research: toward verbal and statistical correspondence. *Academy of Management Review*, 14(3), 423-444.

Vianello, M., Robusto, E., & Anselmi, P. (2010). Implicit conscientiousness predicts academic performance. *Personality and Individual Differences*, 48(4), 452-457.

Webb, E. (1915). *Character and Intelligence: An attempt at an exact study of character*. Cambridge, UK: Cambridge University Press.

Widiger, T. A. (1998). Personality Disorders. In Barone, D. F., Hersen, M. & Van Hasselt, V. B. (Eds.), *Advanced Personality* (pp. 335-352). New York: Plenum Press.

Widiger, T. A., Trull, T. J., Clarkin, J. R., Sanderson, C., & Costa, P. T. (1994). A description of the DSM-III-R and DSM-IV personality disorders with the five-factor model of personality. In Costa, P. T. & Widiger, T. A. (Eds.), *Personality disorders and the five-factor model of personality* (pp. 41-56). Washington, DC: American Psychological Association.

Zhao, H., & Seibert, S. E. (2006). The Big Five Personality Dimensions and Entrepreneurial Status: A Meta-Analytical Review. *Journal of Applied Psychology*, 91(2), 259–271.

Zhao, H., Seibert, S. E., & Hills, G. E. (2005). The Mediating Role of Self-Efficacy in the Development of Entrepreneurial Intentions. *Journal of Applied Psychology*, 90(6/Nov), 1265-1272.

Zhao, H., Seibert, S. E., & Lumpkin, G. T. (2010). The Relationship of Personality to Entrepreneurial Intentions and Performance: A Meta-Analytic Review. *Journal of Management*, 36(2/March), 381-404.

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