Personality and Individual Differences 106 (2017) 26–31

Contents lists available at ScienceDirect

Personality and Individual Differences

journal homepage: www.elsevier.com/locate/paid

Where is ambition in factor models of personality?

Ashley Bell Jones [a,*], Ryne A. Sherman [a], Robert T. Hogan [b]

[a] Florida Atlantic University, United States
[b] Hogan Assessment Systems, United States

ARTICLE INFO

Article history:
Received 12 July 2016
Accepted 29 September 2016
Available online 22 October 2016

ABSTRACT

Ambition is a personality construct with important implications for individual differences in educational and career success and status attainment. Although the best-known factor models of personality—the Five Factor Model (FFM) and the HEXACO—are widely regarded as comprehensive, they seem not to include ambition. The current study concerns whether ambition can be found in the HEXACO and FFM. Using data from the Eugene-Springfield Community Sample, our results indicate that ambition can be partially captured with a combination of HEXACO (or FFM) facets, especially Social Boldness and Liveliness (eXtraversion) and Diligence and Prudence (Conscientiousness), none of which, however, concern competitiveness, a key component of ambition. Overall, these findings suggest that important personality constructs are not found in conventional factor models of personality.

Ambition:
1.Merriam Webster Dictionary (Ambition, 2015): *a desire to be successful, powerful, or famous.*
2. American Psychological Association Dictionary (2015): no entry.

Personality predicts individual differences in every behavioral outcome of consequence (Ozer & Benet-Martinez, 2006; Roberts, Kuncel, Shiner, Caspi, & Goldberg, 2007). Ambition is the personality characteristic most closely linked with career success (Hogan & Holland, 2003; Hogan & Chamorro-Premuzic, 2015; Judge & Kammeyer-Mueller, 2012). Ambitious people seem competitive, assertive, achievement oriented, confident, and upwardly mobile (Hansson, Hogan, Johnson, & Schroeder, 1983). They pursue enterprising vocations, compete in athletics and participate in extracurricular activities (Johnson, 1997), perform well in school (Driskell, Hogan, Salas, & Hoskin, 1994), and learn quickly (Burris, 1976). In addition, ambitious people are more successful in life: they achieve higher levels of education, work in more prestigious occupations, and have higher net incomes (Judge & Kammeyer-Mueller, 2012; Kern, Friedman, Martin, Reynolds, & Luong, 2009; Van der Heijde & Van der Heijden, 2006).

Despite the importance of ambition for career success, it has been largely ignored and even stigmatized by academic psychology (see Judge & Kammeyer-Mueller, 2012).[1] The psychoanalytic tradition seems to have started the process. According to Freud, ambitious people are necessarily neurotic and potentially father murderers (Freud & Freud, 2001). From the Jungian perspective, ambitious people suffer from a regressive restoration of the persona which blocks their potential for personal growth (Jung, 1953). According to Adler, ambition is a neurotic defense against low self-esteem (Lundin, 1989).

Ambition has also been stigmatized in popular culture—King (2013) provides an excellent historical review. For example, from the 17th through the 19th centuries, people outside the United States regarded Americans as dangerous because of their territorial ambitions (Eggert, 1974). Today, many people mistrust politicians because of what they may do once they have the power they so eagerly seek (Fiske, Milberg, Destefano, & Maffett, 1980). Ambition can also be a problem for incumbents in jobs that lack opportunities for advancement (Rybicki & Hogan, 1997) or if they have too much ambition in the first place (McCall & Lombardo, 1983).

In the same way, and perhaps for the same reasons, personality psychologists have ignored ambition. Two important structural models of personality – the Big 5 (McCrae & Costa, 1992; McCrae & John, 1992) and the Big 6 HEXACO (Ashton & Lee, 2007; Ashton, Lee, & De Vries, 2014; Lee & Ashton, 2008) – do not assess ambition as a construct at the facet or the factor level. Nonetheless, their advocates claim these models are comprehensive, by which they mean the models cover the assessment space defined by ambition. We evaluate this claim empirically by investigating whether ambition can be found in these two models of personality. Before doing so, however, we describe some of the consequences of ignoring ambition.

1. The consequences of ignoring ambition

If mainstream practitioners in any field are unwilling to provide something that people want, the people will find it elsewhere. Consider the Myers-Briggs Type Indicator (MBTI: Myers & McCauley, 1985).

* Corresponding author at: Department of Psychology, Florida Atlantic University, 777 Glades Road, Boca Raton, FL 33431, United States.
E-mail address: ajone112@fau.edu (A.B. Jones).

[1] The exception here is Industrial / Organizational Psychology, which has historically focused on more applied outcomes.

http://dx.doi.org/10.1016/j.paid.2016.09.057
0191-8869/

Although academics consistently denounce the MBTI as psychometric fluff (e.g., Gardner & Martinko, 1996; McCrae & Costa, 1989; Pittenger, 1993), it is widely popular in business and modern culture. What accounts for the success of the MBTI? First, many people want to understand themselves and find the MBTI feedback interesting; second, when the MBTI first appeared on the commercial market, no academically credible alternatives were available. When needs exist, someone will fill them (for better or worse).

In the case of ambition, because academics have avoided the concept, applied researchers interested in human performance have created several parallel constructs. Consider for example "proactive personality" – a disposition to take proactive action to change one's environment (Bateman & Crant, 1993). Proactive people search for opportunities, take initiative to seize the opportunity, and persevere until they bring about change. Proactive behavior predicts transformational leadership, conscientiousness, extraversion, need for achievement and dominance, extracurricular and civic activities, and personal achievement. Proactive personality is related to subjective career outcomes such as career and job satisfaction (Erdogan & Bauer, 2005; Seibert, Crant, & Kraimer, 1999), and objective career outcomes (Byrne, Dik, & Chiaburu, 2008; Fuller & Marler, 2009). In terms of how it is defined and what it predicts, the concept of proactive personality closely resembles ambition.

Consider also the concept of grit – a persistent striving for long-term goals (Duckworth, Peterson, Matthews, & Kelly, 2007). People with high scores on a measure of grit set long term goals and persevere until they are attained, despite lack of encouragement. Grit predicts academic achievement and fewer career changes. Like gritty people, those with high scores on a measure of ambition also have long-term goals and pursue them until they are achieved (at which point they tend to find new goals). Our point is not to criticize the measures of proactive personality and grit. Rather we believe that these constructs (a) reflect the importance of ambition for predicting career success and (b) show that when there are important gaps in the way mainstream personality psychology predicts performance, other researchers will fill them. Ambition predicts too many important outcomes, for better or worse, to be ignored.

2. Ambition and factor models of personality

As noted earlier, modern personality psychology favors two structural models of personality: the Five Factor Model (FFM: McCrae & Costa, 1992) and the HEXACO (Ashton & Lee, 2009; Ashton et al., 2014). Both models include the concepts of Agreeableness, Conscientiousness, Emotional Stability (Neuroticism), Extraversion, and Openness to Experience; the HEXACO model adds Honesty-Humility. Both are regarded as higher-order models of personality (Ashton, Lee, Goldberg, & De Vries, 2009) and, with their component facets, they are considered to provide a comprehensive mapping of the personality domain.

Thus, it is important to ask whether these models can predict the same outcomes as a well validated measure of ambition. Some writers suggest that ambition is part of Extraversion (Hogan, 1986; Hogan & Hogan, 2007; Nettle, 2005). Others suggest that ambition is a combination of Conscientiousness and Extraversion (Roberts, Bogg, Walton, Chernyshenko, & Stark, 2004). The only empirical effort to answer this question—to our knowledge—examined data from the Terman study, and found that ambition was a combination of Emotional Stability, Extraversion, and Conscientiousness (Judge & Kammeyer-Mueller, 2012). Unfortunately, the nature of the Terman data required ambition to be assessed in an ad-hoc manner using a handful of reports from various sources over different time periods. Moreover, the personality measures in the Terman study were not those used by modern researchers, making it hard to evaluate the relationship between ambition and factor models of personality. The current study concerns whether the FFM and HEXACO models of personality adequately map ambition. The study uses data from the Eugene-Springfield Community Sample (Goldberg, 2008) and goes beyond prior research by examining both factor and facet level correlates of ambition.

3. Method

3.1. Participants

Lewis R. Goldberg from the Oregon Research Institute recruited the Eugene-Springfield Community Sample (Goldberg, 2008) by mail from lists of homeowners who then completed questionnaires through the mail for pay. The full sample contains data from more than 1100 participants. Among these participants, 170 completed the Hogan Personality Inventory (HPI: Hogan & Hogan, 1995), which directly assesses ambition. Data provided by these 170 participants were used for all analyses conducted here (62 Male, 108 Female; 168 Caucasian, 1 Asian, 1 Other; age ranged from 29 to 72, $M = 49.13$, $SD = 9.35$). Among these participants, 152 also completed the NEO-PI-R (McCrae & Costa, 1992) and all 170 completed the HEXACO-PI (Lee & Ashton, 2004).

3.2. Measures

3.2.1. Ambition

We assessed ambition with the Ambition scale from the HPI. The Ambition scale predicts the degree to which people seem competitive, leader-like, confident, and upwardly mobile. The scale contains 28 true/false items organized in terms of six subscales: competitive, self-confident, accomplishment, leadership, identity, and no social anxiety. The descriptive statistics for Ambition are shown in Tables 1 and 2.

3.2.2. NEO-PI-R

The NEO-PI-R is a 240-item measure of normal personality measuring 30 facets, six for each of the five domains of personality, and the five domain scores. The descriptive statistics for the NEO-PI-R facets and their bivariate correlations with Ambition are shown in Table 1.

3.2.3. HEXACO-PI

The HEXACO-PI is a 192-item measure that consists of 6 factors (Honesty-Humility, Emotionality, Extraversion, Agreeableness, Conscientiousness, and Openness) and 24 facets of personality. The descriptive statistics for the HEXACO facets and their bivariate correlations with Ambition are shown in Table 2.

4. Results

4.1. NEO-PI-R

Starting with the NEO-PI-R, we asked whether the NEO factors or facets, in any combination, could reproduce Ambition scores on the HPI. We first examined the associations between HPI Ambition and the NEO-PI-R at the factor level. Table 1 contains the bivariate associations, and Table 3a presents the results from a simultaneous multiple regression predicting ambition from the NEO factors. As the results in Table 3a indicate, the adjusted multiple R between the NEO factors and HPI Ambition is $R = 0.74$. Moreover, this association is largely driven by the NEO neuroticism, extraversion, and conscientiousness factors. This is consistent with the findings of Judge and Kammeyer-Mueller (2012) showing that ambition can be modeled with a combination of these three factors, with Neuroticism scores reversed.

Using facet level data, we dug deeper into these associations. The NEO extraversion factor, for example, includes warmth, gregariousness, assertiveness, activity, excitement seeking, and positive emotions as facets. Are these facets all equally relevant to ambition?

To answer the question, we used a genetic algorithm to build predictive models of ambition from the NEO facets using the 'GA' package (Scrucca, 2013) in R (R Core Team, 2015). Genetic algorithms use

Table 1
Descriptive statistics for the NEO-PI-R variables.

	M	*SD*	Med	α	*r*
HPI – Ambition	19.80	5.73	20.00		
Neuroticism	77.73	24.16	73.00	0.89	−0.56
Extraversion	106.89	18.19	107.00	0.94	0.52
Openness to experience	112.99	21.06	113.50	0.89	−0.06
Agreeableness	125.01	15.43	127.00	0.91	−0.11
Conscientiousness	125.41	20.09	127.00	0.87	0.55
N1 – Anxiety	13.96	5.73	13.0	0.35	−0.44
N2 – Angry hostility	11.78	5.17	11.0	0.74	−0.21
N3 – Depression	12.10	6.09	11.0	0.74	−0.47
N4 – Self-consciousness	14.41	4.78	14.0	0.72	−0.54
N5 – Impulsiveness	16.09	4.74	15.5	0.78	−0.38
N6 – Vulnerability	9.39	4.51	8.0	0.83	−0.56
E1 – Warmth	22.45	4.62	24.0	0.85	0.19
E2 – Gregariousness	14.28	5.37	14.0	0.85	0.29
E3 – Assertiveness	16.72	4.99	17.0	0.86	0.56
E4 – Activity	18.18	4.48	18.0	0.73	0.40
E5 – Excitement seeking	15.03	4.62	15.0	0.76	0.16
E6 – Positive emotions	20.24	5.26	21.0	0.83	0.30
O1 – Fantasy	17.79	5.27	18.0	0.83	−0.19
O2 – Aesthetics	18.08	6.08	19.0	0.81	−0.08
O3 – Feelings	21.06	4.07	21.0	0.81	0.05
O4 – Actions	15.86	4.11	16.0	0.72	0.06
O5 – Ideas	19.85	5.21	20.0	0.65	0.11
O6 – Values	20.36	5.40	21.0	0.85	−0.15
*A*1 – Trust	22.27	4.24	23.0	0.83	0.22
A2 – Straightforwardness	22.38	3.80	23.0	0.84	−0.07
A3 – Altruism	23.47	3.37	24.0	0.75	0.14
A4 – Compliance	19.54	4.34	20.0	0.63	−0.14
A5 – Modesty	17.91	4.50	18.0	0.81	−0.30
A6 – Tender-mindedness	19.45	3.72	20.0	0.82	−0.21
*C*1 – Competence	23.49	3.72	24.0	0.86	0.53
C2 – Order	18.75	4.86	20.0	0.69	0.33
C3 – Dutifulness	24.29	4.03	24.5	0.71	0.30
*C*4 – Achievement striving	18.79	4.88	19.0	0.64	0.54
C5 – Self-discipline	21.65	4.79	22.0	0.72	0.55
C6 – Deliberation	18.44	3.90	18.0	0.60	0.25

Note. N = 152. *r* = bivariate association between Ambition and respective scale.

Table 2
Descriptive Statistics of HEXACO Variables.

	M	*SD*	Med	α	*r*
HPI – Ambition	20.02	5.66	20.00		
Honesty-humility	3.91	0.45	3.91	0.90	−0.07
Emotionality	3.12	0.48	3.19	0.88	−0.29
eXtraversion	3.21	0.46	3.23	0.88	0.54
Agreeableness	3.15	0.47	3.19	0.90	−0.10
Conscientiousness	3.58	0.47	3.62	0.90	0.45
Openness to experience	3.35	0.55	3.41	0.90	0.04
H – Sincerity	3.85	0.59	3.88	0.81	0.02
H – Fairness	4.31	0.53	4.38	0.78	0.20
H – Greed avoid	3.63	0.63	3.69	0.79	−0.15
H – Modesty	3.86	0.62	3.88	0.78	−0.23
E – Fearfulness	3.01	0.71	3.12	0.77	−0.31
E – Anxiety	3.02	0.72	3.00	0.82	−0.28
E – Dependence	2.86	0.63	2.88	0.77	−0.14
E – Sentimentality	3.61	0.64	3.62	0.80	−0.06
X – Expressiveness	2.87	0.67	2.75	0.81	0.19
X – Soc. boldness	3.23	0.71	3.38	0.83	0.63
X – Sociability	3.08	0.67	3.12	0.80	0.23
X – Liveliness	3.64	0.60	3.62	0.81	0.46
A – Forgiveness	2.94	0.68	3.00	0.84	−0.04
A – Gentleness	3.15	0.58	3.25	0.76	−0.17
A – Flexibility	3.04	0.52	3.00	0.65	−0.12
A – Patience	3.46	0.63	3.50	0.81	−0.02
C – Organization	3.55	0.86	3.75	0.91	0.30
C – Diligence	3.57	0.63	3.62	0.83	0.56
C – Perfectionism	3.54	0.59	3.62	0.74	0.12
C – Prudence	3.67	0.50	3.75	0.73	0.33
O – Aesthetics	3.58	0.71	3.75	0.82	−0.06
O – Inquisitive	3.57	0.70	3.62	0.78	0.12
O – Creativity	3.16	0.69	3.25	0.78	0.19
O – Unconventional	3.10	0.65	3.12	0.76	−0.12

Note. N = 170. *r* = bivariate association between Ambition and respective scale.

principles of evolutionary biology (e.g., survival of the fittest) to select the best predictors for an outcome variable based on a pre-defined fitness (i.e., goodness of model fit) statistic. In this case, AIC was used as the fitness statistic where lower AICs are considered better. To avoid overfitting, we randomly selected 25% ($n = 38$) of the cases for a cross-validation sample. We then applied the genetic algorithm to the $n = 114$ training sample and allowed it to iterate for 100 generations. An inspection of model fits indicated that it converged to the best solution on the 43rd generation, and showed virtually no improvement thereafter. Fig. 1 shows the scatterplots predicting Ambition from the best fitting model for both the training and cross-validation samples. The best fitting model predicted Ambition scores in the training sample (adjusted $R = 0.76$) and the cross-validation sample ($R = 0.77$) quite well. Table 4a shows the regression coefficients for the best fitting model on the training sample.

Four points from Table 4a shoud be noted. First, at least one facet from each NEO factor uniquely contributed to Ambition scores. Second, no NEO factor had more than three facets (Neuroticism) that contributed uniquely to Ambition. Third, the largest unique contribution from the NEO facets was β = 0.29 (achievement-striving). Fourth, the square root of the sum of the squared semi-partial correlations was 0.65, which is almost the full model *R* of 0.79. These facts suggest that several different NEO facets are required to predict Ambition and that much of that prediction is unique to the facets themselves (i.e., not shared among them). Additionally, the facets that best predict Ambition show that ambitious people seem upwardly mobile (achievement-striving), socially ascendant and forceful (assertiveness), and self-disciplined (low impulsivity).

4.2. HEXACO-PI

We used the foregoing analytic strategy to study the links between HPI Ambition and the HEXACO. We first estimated a simultaneous multiple regression predicting Ambition from the six HEXACO factors. Table 3b presents the results of this analysis. As the results indicate, the HEXACO factors yielded an adjusted multiple $R = 0.71$. The three HEXACO factors with large unique contributions to HPI ambition were Emotionality, Extraversion, and Conscientiousness. This is also consistent with the conclusions of Judge and Kammeyer-Mueller (2012). As before, we next studied facet level patterns to better delineate the relationship between the HEXACO and Ambition.

We again randomly selected 25% of the cases ($n = 44$) to use as a cross-validation sample and employed a genetic algorithm to the remaining training sample ($n = 126$) to identify the best subset of predictors of Ambition. The model reached its maximum fit at the 30th generation and showed no further improvement thereafter. Fig. 2 shows the scatterplots predicting Ambition from the best fitting model for both the training and cross-validation samples. The best fitting model predicted Ambition scores in the training sample

Table 3a
Multiple Regression Predicting Ambition from NEO-PI-R Factors.

Factor	b	se	β	95% CI	*sr*
Intercept	19.80	0.31	−0.04	[−0.15, 0.07]	
Neuroticism	−0.07	0.02	−0.30	[−0.44, −0.17]	−0.25
Extraversion	0.12	0.02	0.39	[0.27, 0.50]	0.35
Openness to Experience	0.00	0.02	0.01	[−0.11, 0.13]	0.01
Agreeableness	−0.07	0.02	−0.20	[−0.31, −0.08]	−0.19
Conscientiousness	0.09	0.02	0.34	[0.20, 0.46]	0.28

Note. N = 152. Adjusted $R = 0.74$. b = unstandardized regression coefficient. β = standardized regression coefficient. *sr* = semi-partial correlation. All predictors mean centered.

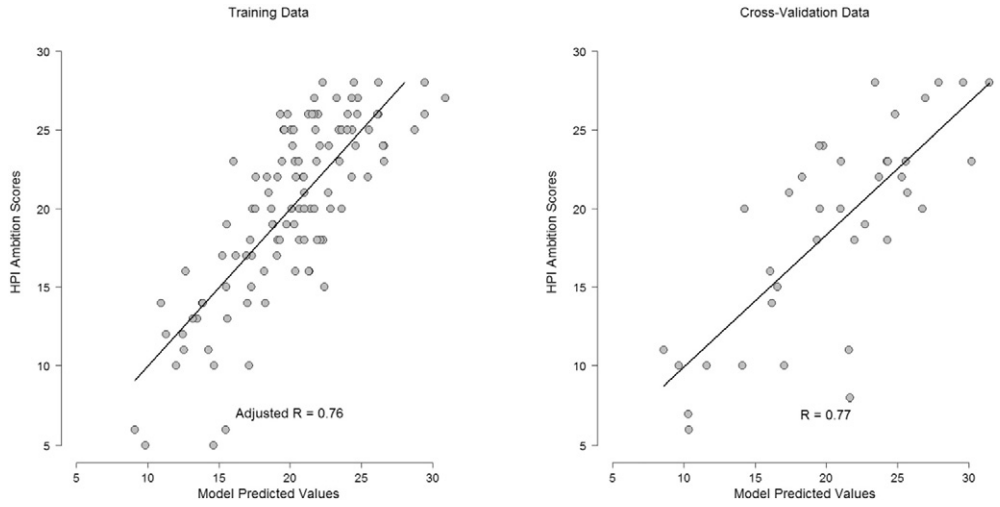

Fig. 1. Training and Cross-Validation of Genetic Algorithm Models for NEO-PI-R Facets Predicting HPI Ambition.

(adjusted $R = 0.81$) and the cross-validation sample ($R = 0.77$). Table 4b shows the regression coefficients for the best fitting model on the training sample.

Four points about Table 4b are also worth noting. First, many HEXACO facets predict Ambition. Second, all of the Extraversion, Agreeableness, and Conscientiousness facets were included in the best fitting model. Third, many of the facets predicted Ambition in the opposite direction from one another. For example, three Extraversion facets—social boldness, sociability, and liveliness—were positively related to Ambition whereas expressivity was negatively related when the other facets were in the model. Similarly, perfectionism was positively associated with Ambition at the bivariate level ($r = 0.12$), but negatively associated in the final model ($sr = -0.10$). Fourth, the square root of the sum of the squared semi-partial correlations is 0.77, which is almost the total model R of 0.83. As with the NEO, these four points suggest that many HEXACO facets predict Ambition and that much of the contribution to the prediction is unique to the facets themselves (i.e., not shared among them). Additionally, the facets most strongly related to Ambition suggest that ambitious people seek leadership positions (social boldness), and seem energetic (liveliness), sociable (sociability), self-assured (low dependence), hard working (diligence), and self-controlled (prudence).

5. Discussion

The goal of this study was to determine: (a) the degree to which prominent factor models of personality (the FFM and the HEXACO) assess ambition, and (b) where ambition might be located in the factor model space. Using the NEO-PI-R and the HEXACO-PI in conjunction with the Ambition scale of the HPI, we analyzed data at the facet and factor levels. The analyses converged on similar answers. At the factor level, the adjusted multiple correlation between the NEO-PI-R, the HEXACO-PI, and HPI Ambition was $R = 0.74$ and 0.71, respectively. For both the NEO-PI-R and the HEXACO-PI, at the facet level, the cross-validated multiple R with HPI Ambition was 0.77. These values approach the test-retest reliability of the HPI Ambition scale; consequently, it is clear that the factor model frameworks can recover ambition. Moreover, and consistent with the findings of Judge and Kammeyer-Mueller (2012), Ambition was most closely related to the factors of Neuroticism, Extraversion, and Conscientiousness. Taken together, these results suggest that, although Ambition can be predicted by factor models of personality, the construct is spread across multiple factors.

To further specify Ambition using factor models of personality, we examined the facet level predictors of Ambition using genetic algorithms to identify the best combination of facets. As noted, the facet level models predicted Ambition slightly better than the factor-level models. Moreover, the associated facets within the factors of the NEO-PI-R and the HEXACO had unique, but often differing, correlations with Ambition. For example, although Neuroticism in the NEO-PI-R is correlated with Ambition, our analyses suggest that the anxiety and impulsivity facets of the NEO Neuroticism are most relevant to Ambition. Similarly, the assertiveness facet of Extraversion and the achievement striving facet of Conscientiousness are the best predictors of Ambition; the other facets add very little predictive validity. The HEXACO-PI analyses yielded a similar pattern of facet level associations. The best predictor of Ambition on the HEXACO Extraversion dimension was social boldness—which parallels the NEO assertiveness facet. From HEXACO Conscientiousness, prudence—which parallels the NEO impulsivity

Table 3b
Multiple regression predicting Ambition from HEXACO factors.

Factor	b	se	β	95% CI	*sr*
Intercept	20.02	0.31	−0.00	[−0.10, 0.11]	
Honesty-Humility	−0.29	0.71	−0.00	[−0.13, 0.09]	−0.02
Emotionality	−3.09	0.64	−0.26	[−0.37, −0.16]	−0.26
eXtraversion	6.20	0.68	0.51	[0.40, 0.62]	0.49
Agreeableness	−0.09	0.70	−0.00	[−0.12, 0.11]	−0.01
Conscientiousness	4.52	0.68	0.38	[0.27, 0.49]	0.36
Openness to Experience	−0.07	0.58	−0.00	[−0.11, 0.10]	−0.01

Note. N = 170. Adjusted $R = 0.71$. b = unstandardized regression coefficient. β = standardized regression coefficient. *sr* = semi-partial correlation. All predictors mean centered.

Table 4a
Genetic algorithm final model regression results for predicting Ambition from NEO-PI-R.

Factor – facet	b	se	β	95% CI	*sr*
Intercept	20.10	0.33	–		
N1 – Anxiety	−0.18	0.07	−0.18	[−0.32, −0.04]	−0.15
N4 – Self-Consciousness	−0.15	0.10	−0.13	[−0.28, 0.03]	−0.10
N5 – Impulsiveness	−0.27	0.09	−0.22	[−0.36, −0.08]	−0.19
E2 – Gregariousness	0.15	0.06	0.15	[0.02, 0.28]	0.14
E3 – Assertiveness	0.30	0.08	0.27	[0.12, 0.41]	0.22
O2 – Aesthetics	0.16	0.06	0.18	[0.03, 0.32]	0.15
O6 – Values	−0.11	0.07	−0.12	[−0.26, 0.02]	−0.10
A5 – Modesty	−0.15	0.08	−0.13	[−0.26, 0.01]	−0.11
A6 – Tender-mindedness	−0.21	0.11	−0.13	[−0.28, 0.01]	−0.11
C4 – Achievement striving	0.32	0.08	0.29	[0.14, 0.44]	0.24

Note. n = 114. Adjusted $R = 0.76$. Cross-validated $R = 0.77$ on n = 38 holdout sample. b = unstandardized regression coefficient. β = standardized regression coefficient. *sr* = semi-partial correlation. All predictors were measured on a 0 to 32 scale and mean centered. Ambition was measured on a 0 to 28 scale.

Table 4b
Genetic Algorithm Final Model Regression Results for Predicting Ambition from HEXACO.

Factor – Facet	b	se	β	95% CI	*sr*
Intercept	19.86	0.29	–		
H – Greed Avoidance	0.94	0.53	0.11	[−0.01, 0.22]	0.09
E – Dependence	−1.52	0.57	−0.16	[−0.29, −0.04]	−0.14
X – Expressivity	−1.39	0.60	−0.17	[−0.31, −0.02]	−0.12
X – Social Boldness	3.38	0.64	0.41	[0.25, 0.56]	0.28
X – Sociability	2.35	0.62	0.28	[0.13, 0.42]	0.20
X – Liveliness	1.99	0.61	0.22	[0.09, 0.35]	0.17
A – Forgiveness	0.85	0.55	0.10	[−0.02, 0.22]	0.08
A – Gentleness	−1.08	0.70	−0.11	[−0.26, 0.03]	−0.08
A – Flexibility	−1.86	0.82	−0.16	[−0.31, −0.02]	−0.12
A – Patience	−1.28	0.72	−0.14	[−0.30, 0.02]	−0.09
C – Organization	0.78	0.46	0.12	[−0.02, 0.25]	0.09
C – Diligence	1.48	0.69	0.16	[0.01, 0.31]	0.11
C – Perfectionism	−1.13	0.62	−0.12	[−0.26, 0.01]	−0.10
C – Prudence	3.36	0.76	0.30	[0.17, 0.44]	0.23
O – Creativity	1.27	0.56	0.15	[0.02, 0.29]	0.12
O – Unconventionality	−1.69	0.58	−0.20	[−0.33, −0.06]	−0.15

Note. n = 126. Adjusted $R = 0.81$. Cross-validated $R = 0.77$ on n = 44 holdout sample. b = unstandardized regression coefficient. β = standardized regression coefficient. *sr* = semi-partial correlation. All predictors measured on a 1 to 5 scale and mean centered. Ambition was measured on a 0 to 28 scale.

facet—and diligence—which parallels the NEO achievement striving dimension—best predicted Ambition.

Our findings suggest that ambitious people: (a) are energetic (i.e., NEO-activity, HEXACO-liveliness), (b) want to be in charge and lead others (i.e., NEO-assertiveness, HEXACO-social boldness), (c) are determined to be successful (i.e., NEO-achievement striving, HEXACO-diligence), and (d) are self-controlled (i.e., low NEO-impulsiveness, HEXACO-prudence). Putting the point another way, ambitious people are energetic, status-seeking, determined to reach their goals, and rarely procrastinate or lose sight of their mission. It is this particular syndrome that predicts career and life success. Furthermore, we suspect that missing any one of these four characteristics will have a significant negative effect on career success. People who lack energy will not exert the effort needed to achieve their goals; people who are uninterested in status will not pursue it; people who lack the determination to see projects through and win will struggle to get ahead; and people who are easily distracted will rarely have great careers.

5.1. Implications for personality assessment

We noted in the introduction that modern personality psychology ignores ambition—for reasons about which we can only speculate. Based on the results of this study, however, we conclude that the prominent structural models of personality do not ignore ambition; they obscure it. It is worth noting that factor models of personality are taxonomies not theories of personality. Inventories such as the NEO were developed with two methodological goals in mind. The first goal (of the factor analytic approach to personality) is to reduce the domain of interpersonal behavior to its most parsimonious set of behavioral dimensions. The second goal (about which Cattell, Eysenck, Guilford, and Costa and McRae were quite clear) is to identify a set of factors (representing behavioral dimensions) that will replicate across samples. In this view, validity is defined by the degree to which factor structures replicate. Personality inventories in the factor analytic tradition are intended to solve statistical questions; using them to predict real world outcomes is a side benefit.

In contrast, the HPI was explicitly designed to predict career success; it was developed using working adults, and predictive validity data are available for the HPI for every job in the US economy. The HPI is based on socioanalytic theory (Hogan, 1982), which proposes that the two big problems in life—mandated by the exigencies of biological fitness—concern getting along (building networks of social support) and getting ahead (acquiring status, power, and the control of resources). The advocates of factor models of personality argue that ambition is a function of extraversion and conscientiousness. From a socioanalytic perspective, extraversion and conscientiousness concern getting along, whereas ambition concerns getting ahead. But our larger claim is that ambition is a crucial aspect of personality that is required by theory and justified by data. The external correlates of Ambition, Extraversion, and Conscientiousness are quite different—these three constructs predict different outcomes. Extraversion predicts noisy socializing; conscientiousness predicts diligent compliance; Ambition predicts competitive striving and aspiring to positions of leadership. Although ambition can be captured with elements of extraversion and conscientiousness, the key aspects of ambition are competitive striving, aspiring to status, and wanting to be in charge—and these are as unique to ambition as ambition is necessary for career success.

5.2. Limitations and future directions

The Eugene-Springfield Community Sample provided one of the few, if not the only, data sets measuring both the Big 5 and HEXACO structures of personality, and HPI Ambition. However, a larger sample would yield more precise effect size estimates and provide an even more definitive view on the relationship between factor models of personality and ambition. Additionally, the lack of diversity in the sample limits the generalizability and robustness of these findings.

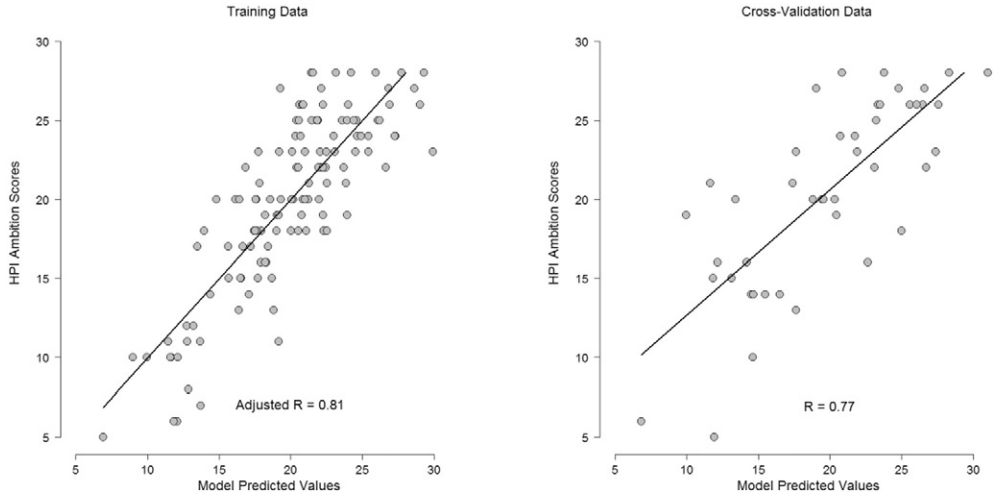

Fig. 2. Training and Cross-Validation of Genetic Algorithm Models for HEXACO Facets Predicting HPI Ambition.

5.3. Conclusions

Despite the importance of ambition for predicting many important outcomes, it is largely ignored in modern personality research. This may be due to the ambivalence many people feel about the subject—all of the evil men in history (e.g., Stalin, Hitler, Mao) were monsters of ambition—ambition clearly has a dark side. Although mainstream personality research ignores the topic, applied researchers in other fields have "discovered" new psychological constructs (e.g., proactive personality and grit), that closely resemble ambition, and research with these constructs has been productive and even newsworthy. This paper shows that prominent factor models of personality can predict ambition, but that the topic is obscured by the factor structure of the models themselves. Ambition can be found using a combination of facets relating to energy level, social dominance, achievement motivation, and self-control. At the ultimate level then, this paper highlights the difference between factor analytic models of personality structure and socioanalytic theory, differences that have implications for personality assessment and the study of important life outcomes.

Appendix A. Supplementary data

Supplemental materials, including data and analytic scripts for reproducing the results presented herein are available at http://dx.doi.org/10.1016/j.paid.2016.09.057.

References

Ambition. 2015. In *American Psychological Association Dictionary of Psychology*. *Merriam-Webster.com*. Retrieved August 20, 2015, from http://www.merriam-webster.com/dictionary/ambition

Ashton, M. C., & Lee, K. (2007). Empirical, theoretical, and practical advantages of the HEXACO model of personality structure. *Personality and Social Psychology Review*, *11*, 150–166.

Ashton, M. C., & Lee, K. (2009). The HEXACO–60: A short measure of the major dimensions of personality. *Journal of personality assessment*, *91*(4), 340–345.

Ashton, M. C., Lee, K., & De Vries, R. E. (2014). The HEXACO honesty-humility, agreeableness, and emotionality factors: A review of research and theory. *Personality and Social Psychology Review*, *18*(2), 139–152.

Ashton, M. C., Lee, K., Goldberg, L. R., & De Vries, R. E. (2009). Higher-order factors of personality: Do they exist? *Personality and Social Psychology Review*, *13*, 79–91.

Bateman, T. S., & Crant, J. M. (1993). The proactive component of organizational behavior. *Journal of Organizational Behavior*, *14*(2), 103–118.

Burris, R. W. (1976). *Human learning. Handbook of Industrial and Organizational Psychology*. Chicago: Rand McNally.

Byrne, Z. S., Dik, B. J., & Chiaburu, D. S. (2008). Alternatives to traditional mentoring in fostering career success. *Journal of Vocational Behavior*, *72*(3), 429–442.

Driskell, J. E., Hogan, J., Salas, E., & Hoskin, B. (1994). Cognitive and personality predictors of training performance. *Military Psychology*, *6*(1), 31.

Duckworth, A. L., Peterson, C., Matthews, M. D., & Kelly, D. R. (2007). Grit: Perseverance and passion for long-term goals. *Journal of Personality and Social Psychology*, *92*(6), 1087–1101.

Eggert, G. G. (1974). *Richard Olney: Evolution of a statesman*. University Park: Pennsylvania State University Press.

Erdogan, B., & Bauer, T. N. (2005). Enhancing career benefits of employee proactive personality: The role of fit with jobs and organizations. *Personnel Psychology*, *58*(4), 859–891.

Fiske, S. T., Milberg, S. J., Destefano, T. T., & Maffett, S. (1980). *Schemas and affect in political person perception*. Carnegie-Mellon University: Unpublished manuscript.

Freud, S., & Freud, A. (2001). *Complete psychological works of Sigmund Freud. Vol. 1*, Random House.

Fuller, B., & Marler, L. E. (2009). Change driven by nature: A meta-analytic review of the proactive personality literature. *Journal of Vocational Behavior*, *75*(3), 329–345.

Gardner, W. L., & Martinko, M. J. (1996). Using the Myers-Briggs type indicator to study managers: A literature review and research agenda. *Journal of Management*, *22*, 45–83.

Goldberg, L. R. (2008). The Eugene-Springfield community sample: Information available from the research participants. *Oregon research institute technical report. 48(1)*, .

Hansson, R. O., Hogan, R., Johnson, J. A., & Schroeder, D. (1983). Disentangling type A behavior: The roles of ambition, insensitivity, and anxiety. *Journal of Research in Personality*, *17*(2), 186–197.

Hogan, J., & Holland, B. (2003). Using theory to evaluate personality and job-performance relations: A socioanalytic perspective. *Journal of Applied Psychology*, *88*(1), 100.

Hogan, R. (1982). A socioanalytic theory of personality. In M. M. Page (Ed.), *Nebraska symposium on motivation, 1982. Vol. 29*. (pp. 55–89). Lincoln: University of Nebraska Press.

Hogan, R. (1986). *Manual for the Hogan personality inventory*. Minneapolis: National Computer Systems.

Hogan, R., & Chamorro-Premuzic, T. (2015). *Personality and career success*.

Hogan, R., & Hogan, J. (1995). *Hogan personality inventory manual* (2nd ed.). Tulsa, OK: Hogan Assessment Systems.

Hogan, R., & Hogan, J. (2007). *Hogan personality inventory manual*. Tulsa, OK: Hogan Press.

Johnson, J. A. (1997). Seven social performance scales for the California psychological inventory. *Human Performance*, *10*(1), 1–30.

Judge, T. A., & Kammeyer-Mueller, J. D. (2012). On the value of aiming high: The causes and consequences of ambition. *Journal of Applied Psychology*, *97*(4), 758–775.

Jung, C. G. (1953). *Two essays on analytical psychology. Bollingen series 20*.

Kern, M. L., Friedman, H. S., Martin, L. R., Reynolds, C. A., & Luong, G. (2009). Conscientiousness, career success, and longevity: A lifespan analysis. *Annals of Behavioral Medicine*, *37*(2), 154–163.

King, W. C. (2013). *Ambition, a history: From vice to virtue*. New Haven: Yale University Press.

Lee, K., & Ashton, M. C. (2004). Psychometric properties of the HEXACO personality inventory. *Multivariate Behavioral Research*, *39*, 329–358.

Lee, K., & Ashton, M. C. (2008). The HEXACO personality factors in the indigenous personality lexicons of English and 11 other languages. *Journal of Personality*, *76*, 1001–1053.

Lundin, R. W. (1989). *Alfred Adler's basic concepts and implications*. Taylor & Francis.

McCall, M. W., & Lombardo, M. M. (1983). *Off the track: Why and how successful executives get derailed (no. 21)*. Center for Creative Leadership.

McCrae, R. R., & Costa, P. T. (1989). Reinterpreting the Myers-Briggs type indicator form the perspective of the five-factor model of personality. *Journal of Personality*, *57*(1), 17–40.

McCrae, R. R., & Costa, P. T. (1992). *Revised NEO personality inventory (NEO-PI-R) and NEO five-factor inventory (NEO-FFI) manual*. Odessa, FL: Psychological Assessment Resources.

McCrae, R. R., & John, O. P. (1992). An introduction to the five-factor model and its applications. *Journal of Personality*, *60*, 175–215.

Myers, I. B., & McCauley, M. H. (1985). *Manual: A guide to the development and use of the Myers-Briggs type indicator*. Palo Alto: CA: Consulting Psychologists Press.

Nettle, D. (2005). An evolutionary approach to the extraversion continuum. *Evolution and Human Behavior*, *26*(4), 363–373.

Ozer, D. J., & Benet-Martinez, V. (2006). Personality and the prediction of consequential outcomes. *Annual Review of Psychology*, *57*, 401–421.

Pittenger, D. J. (1993). Measuing the MBTI…And coming up short. *Journal of Career Planning and Employment*, *54*(1), 48–52.

R Core Team (2015). *R: A language and environment for statistical computing. [computer software]*. Vienna, Austria: R Foundation for Statistical Computing (http://www.R-project.org/).

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*(2), 164–178.

Roberts, B. W., Kuncel, N., Shiner, R. N., Caspi, A., & Goldberg, L. R. (2007). The power of personality: The comparative validity of personality traits, socio-economic status, and cognitive ability for predicting important life outcomes. *Perspectives on Psychological Science*, *2*, 313–345.

Rybicki, S., & Hogan, R. (1997). Validity of the Hogan Personality Inventory for selecting Facility Administrators. *Tulsa, OK: Hogan Assessment Systems* Study # (118).

Scrucca, L. (2013). GA: A package for genetic algorithms in R. *Journal of Statistical Software*, *53*(4), 1–37.

Seibert, S. E., Crant, J. M., & Kraimer, M. L. (1999). Proactive personality and career success. *Journal of Applied Psychology*, *84*(3), 416–427.

Van der Heijde, C. M., & Van Der Heijden, B. I. (2006). A competence-based and multidimensional operationalization and measurement of employability. *Human Resource Management*, *45*(3), 449–476.