



# The proactive personality: bright-side trait correlates

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## Abstract

This study set out to establish to what extent demographic, ideological, self-esteem and work-related personality traits are correlated with the Proactive Personality (PP)? In all, 389 working adults completed a number of questionnaires including the well-established PP measure and a work-related, six trait measure. They also indicated whether they were junior, middle, senior or non-managers. Correlations and regressions showed that neither demography (sex, age, education) nor ideology (political and religious beliefs) were related to PP while many of the traits were strong correlates (Conscientiousness, Curiosity, Courage, Competitiveness). In all the traits accounted for 45% incremental variance over demography, ideology, self-ratings of optimism and self-esteem. The results highlight two traits hitherto not examined in this literature namely Tolerance of Ambiguity and Risk Approach (Courage) both related to PP. With Management Level as criterion variable, PP added only 1% variance above age and education, but the six traits added 11%. This suggests established personality traits are better predictors of Management Level compared to the PP measure. Implications and limitations, particularly sample diversity, are discussed.

**Keywords** Proactive personality · Demography · Self-esteem · Conscientiousness · Curiosity · Courage · Competitiveness

## Introduction

The concept of the Proactive Personality (PP) goes back around 30 years (Tornau & Frese, 2013; Crant et al., 2021). Early papers appeared in the 1990s (Bateman & Crant, 1993; Crant, 1995, 1996) and there has been various reviews of the PP literature (Crant et al., 2017; Crant, & Chen, 2024). It has attracted a great deal of research from a range of different research areas but primarily work, applied and managerial psychology (Jiang, 2017; Major et al., 2006; Mubarak et al., 2021; Wang et al., 2017; Weng et al., 2020; Yang et al., 2011; Yousaf et al., 2013). The concept and measure of the PP still attracts many publications each year (AlShamsi et

al., 2025; Bakidamteh et al., 2022; Chen, 2024; Fang et al., 2024; Hendrikx et al., 2024; Li et al., 2024; Lin et al., 2024; Mumpuni & Handayani, 2024; Nawaz et al., 2024; Stephan et al., 2024; Yang et al., 2024; Zhang et al., 2022, 2024; Zimmermann et al., 2023). In their overview of this literature Crant and Chen (2024) stress “*the need for scholars to explore untested aspects of existing pro activity theories, replicate some key findings, enhance measurement precision, and deepen theoretical insights with meta-analytical techniques*” (p. 292).

In this study we attempt to move the PP literature forward in three ways. *First*, we examine not only the demographic correlates of PP but also ideological correlates, namely religious and political beliefs. It seems reasonable to assume that both belief systems are linked to PP and have not been previously examined. *Second*, we explore work personality correlates of PP with a particular focus on three traits, not hitherto considered in this literature namely Competitiveness, Courage (Risk Taking) and Tolerance of Ambiguity. As all three traits have been shown to relate to various measures of success at work, our concern is the extent to which they correlate with PP. *Third*, we attempt to determine the incremental validity of PP over and above our measure of

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work traits, in the prediction of management level, as this would be a crucial reason for measuring it. That is, does PP add any significant variance over and above more standard measures in attempting to assess the level a person has achieved at work.

Proactivity is a forward-looking personality trait related to challenging the status quo rather than passively adapting to it. Proactive behaviors are self-starting, change-oriented, and future-focused and which are forward-looking and long-term rather than reacting to current problems. According to Crant and Chen (2014) there are two broad research streams with respect to proactivity at work: one focused on individual differences in the predisposition to behave proactively, and the other on behaviors classified as proactive. This study focuses on trait correlates of PP.

It should be noted that there is not a complex or sophisticated theory as the origin of the PP trait such as may be found in other personality theories (Wu et al., 2013; Wu & Li, 2016). Nor have there been many studies trying to locate PP in Big Five factor space, or investigate the possible genetic or physiological correlates of the trait. The appeal of the measure seems primarily that it is short, easy to translate into different languages and settings, and predicts behaviour in the workplace (Nielsen et al., 2022; Vignoli & Depolo, 2019; Yan et al., 2021).

In a recent review, Din et al. (2023) argued that it is the most widely studied proactivity-related construct explored in the field of management and organisational behaviour. They noted that proactive individuals have the potential and disposition to face their work constraints effectively, exhibit initiative, explore available opportunities and persevere until meaningful change happens. They also suggest PPs are described as pathfinders who find new ways to solve problems.

Din et al. (2023) analysed 730 papers on the topic and classified them into five clusters: (i) entrepreneurship and corporate social responsibility, (ii) career development and performance, (iii) job crafting and work engagement, (iv) leadership and innovation, and (v) socialisation and information seeking. They argued that the PP has been empirically linked job and life satisfaction, work engagement, occupational commitment, creativity, in-role, extra-role, and leadership performance. It is notable that there seem relatively few studies on the construct, convergent and divergent validity of the concept or measure, nor a sophisticated account of its development over time. Indeed, it is notable that most of the papers that examine PP are in the applied, rather than differential psychology journals.

In this study we look at the relationship between PP and six work traits as well as its relationship to management level in a working population. We were particularly interested in where PP sits in Big-Five type factor space

but using a related measure of work personality (MacRae & Furnham, 2020). Moreover, we were interested in the incremental validity of work-related personality traits over standard demographic variables (age, class, sex), ideological variables like political and religious beliefs (not before examined), and self-concept. Finally, we were interested in the extent to which PP could add incremental variance in explaining all the above groups of variables in explaining an individual's management level. In short, does PP add something extra in try to understand factors associated with seniority in organisations?

The PP construct was first introduced by Bateman and Crant (1993) who noted that the proactive dimension of behaviour is rooted in people's needs to manipulate and control the environment. They noted "*we conceive of proactive behaviour as a process that is foreactive more than counteractive, transcendent more than acquiescent, a means of primary more than secondary control, and as agency more than passivity*" and "[p]roactive people scan for opportunities, show initiative, take action, and persevere until they reach closure by bringing about change" (p105).

In the original study they devised and validated a measure and looked at the relationship between PP and a range of other variables. In doing so, they established that scores on the proactive scale correlated with need for achievement, need for dominance, and independent measures of the nature of subjects' extracurricular and civic activities, the nature of their major personal achievements, and peer nominations of transformational leaders. They also found PP significantly related to traits Conscientiousness and Extraversion. Moreover, they found discriminant validity was shown between the proactive scale and Neuroticism, Openness, Agreeableness, intelligence, private self-consciousness, and locus of control, as well as age, sex, and years of work experience. Part of the attraction of the PP concept is that it is highly focused on predictive validity in the workplace.

Early studies were concerned with the relationship between PP and job performance (Crant, 1995, 1996, 2000; Grant & Ashford, 2008; Grant et al., 2009, 2011; Parker et al., 2006; Parker & Collins, 2010). Some studies attempted to understand how PP is related to job productivity and satisfaction (Bakker et al., 2012; Brown et al., 2006; Jawahar & Liu, 2017; Li et al., 2010, 2017). Others have quite naturally looked at PP as a marker of entrepreneurship (Hu et al., 2018) and being a successful change agent (Ohly & Fritz, 2007).

There have been various reviews of the PP literature including a meta-analysis. Fuller et al. (2009) looked at 313 correlations from 107 studies which clearly demonstrated PP is positively related to objective and subjective career success. Interestingly, PP correlations with supervisor-rated, overall job performance were stronger than that reported for

any of the Big Five factors (Extraversion, Openness, Agreeableness, Conscientiousness, and Neuroticism), but was unrelated to social desirability.

Over a decade ago Tornau and Frese (2013) did a large meta-analysis of the PP including over 20 studies with an  $N > 10,000$  that looked at PP and the Big Five. Their results showed that Conscientiousness Extraversion and Openness were significantly and positively while Neuroticism and Agreeableness were negatively correlated. However, they found that PP did not show incremental validity over and above the Big Five. This may lead researchers to question its usefulness. We will test the incremental validity idea with respect to management level.

As noted above, the question for many researchers is where PP sits in Big Five (or equivalent) factor space and whether it has incremental and discriminant validity over other work-related, or general, measures in explaining job performance. Most results are replicative with few contradictory results.

However, it is worthwhile investigating the relationship of other established traits, outside the Big Five framework, such as Courage and Tolerance of Ambiguity, which is partly the point of this study. Indeed, this is a unique feature of this study. In this study we are particularly interested in two traits that have not been related to PP both of which have been shown to be related to management success and proactive interest in investing (Cuppello et al., 2024; Furnham et al., 2024). The first is a well-established concept, namely ambiguity tolerance (also known as Uncertainty Avoidance) which is clearly related to the central concept of PP, in that highly proactive people appear less inhibited by lack of clarity, and having a full understanding of events. That is, they feel able to be proactive without a comprehensive analysis and understanding of the (business) situation. In this sense they become less paralysed by ambiguity and uncertainty, feeling able to act. We assume this to be a central, yet unexplored, trait associated with PP. Likewise by definition the PP is, no doubt, less risk-averse than others showing various forms of courage in their business life. Risk Aversion is a well-known concept in the decision making literature, and related to taking “courageous action”. Indeed, it seems that one of the hallmarks of the PP is willingness to take risks. Again, this concept is missing from the Big Five yet associated with many forms of work success (Furnham & Marks, 2013).

This study used relatively new and validated measures of both personality and intelligence: the *High Potential Trait Indicator* (HPTI) which was designed to assess traits in a work setting. Several papers have used the HPTI (Cuppello et al., 2023a, b; Furnham & Cuppello, 2023a, b; Furnham & Treglown, 2018, 2021; Furnham & Impellizzeri, 2021; MacRae & Furnham, 2020; Teodorescu et al., 2017; Treglown

et al., 2020a, b). There are now around a dozen published papers using this measure which has been used in business contexts for over a decade. It purports to focus particularly on traits in the work-place.

Four of the six HPTI scales are similar to those in the Big Five - Conscientiousness, Adjustment (low Neuroticism), Curiosity (Openness) and Competitiveness (low Agreeableness) with two additional scales, which gives it a unique perspective. We were particularly interested in how these two traits related to PP. The first, *Ambiguity Acceptance* (or Tolerance of Ambiguity: ToA) which assesses how an individual processes and perceives unfamiliarity or incongruence. Those tolerant of ambiguity perform well in new or uncertain situations, and are able to learn and function in unpredictable times or environments (Furnham & Marks, 2013). The other variable is *Approach to Risk* or *Courage* which is the ability to combat or mitigate negative or threat-based emotions and broaden the potential range of responses. Unchecked fear restricts the potential range of responses, and typically leads to behaviours like conflict avoidance or contrived ignorance. Courage, on the other hand, is exhibited as the willingness to confront difficult situations and solve problems in spite of adversity. Courage is thought to be curvilinearly related to success in many work settings, with both high and low scorers being less successful. This study examined the relationship between these six traits and PP to determine whether we could replicate previous studies as well as explore the relationship of ToA and Courage to PP.

In this study we also examine three other possible correlates of PP. The *first* is demography specifically age, sex, and education. It is possible that for both evolutionary and socialisation reasons males more than females, and younger more than older people have higher PP. We thought that proactivity increased with age because of the rewarding experience of being more proactive at work. We also hypothesised that it would be correlated with education as the relationship is reciprocal forming a virtuous circle: that is proactive people “sign up for” more education of all types, which enhances their understanding and hence be more proactive in a range of situations. Importantly, we examined the incremental validity of our personality measure over these demographic variables.

*Second*, we explored whether PP is related to ideological factors like religion and politics. This has been little explored but we tentatively hypothesise that work ethic beliefs are related to both religion and politics, suggesting that those with higher PP scores would be more religious and more politically conservative. Some religious beliefs like the Protestant Work Ethic seem clearly related to PP values, like achievement orientation, and behaviours (Furnham, 2021). Religion may serve to give people more certainty in their convictions and the desire to “get things done”. Further, more right-wing, conservative political values seem related

to proactivity in the market-place, though not necessarily in other settings (Furnham & Cuppello, 2023b).

*Third*, we also looked at trait Optimism and Self-esteem (SE) to determine whether these might be related to PP. We hypothesised that both those who were more optimistic and those with higher SE would be more proactive, exploratory, and opportunistic with the belief that being proactive would lead to more positive ends. Optimism and Self-esteem are positively correlated with each other as well as Self-efficacy which seems at the heart of the PP concept (Furnham & Cheng, 2024). People with high self-esteem would be more likely to have the confidence to take actions they think desirable and necessary. Hence, we were interested in the incremental validity of our traits about these two measures in related to PP.

*Fourth*, we predict, based on the previous literature that all six HPTI traits will be significantly positively related to PP. Another objective of this study was to examine correlates of management level data. There have been a number of studies looking at correlates of management level (ML; Ahmetoglu et al., 2010; Bucur, 2011; Treglown & Furnham, 2022). The assumption is that certain personal and stable characteristics played a part in promotion from junior to senior levels of management, across all organisations. They have all be concerned with what traits are associated with different management levels (junior, middle, senior). Thus, in a recent study of 10,836 individuals, Cuppello et al. (2023a) found ML was positively associated most with traits Risk Aversion, Ambiguity Acceptance and Conscientiousness which accounted for around 6.6% of the variance above the demographic variables, particularly age. In this study we were interested to know if PP was associated with ML and whether it added incremental variance above the HPTI variables, or in predicting ML.

We believe that this study offers three contributions to the PP literature: first, the examination of trait concepts not before examined (Risk Approach, Self-esteem; Tolerance of Ambiguity), second the use of hierarchical multiple regressions to establish how much variance various classes of variables (e.g. demographic, ideological, personality) accounts for in PP: and third the question of whether PP is a more powerful predictor of management level compared to personality traits: i.e. whether it has incremental validity over classic personality variables (Tornau & Frese, 2013).

## Method

### Sample

Table 1 provides a breakdown of the sample which were all working adults, mainly in middle age from all over the world. Non-responders to key demographic questions were

**Table 1** Demographic statistics of the sample

	<i>n</i>	%
Total	389	-
Gender		
Female	228	58.6%
Male	161	41.4%
Global region		
British	209	53.7%
South African	50	12.9%
Canadian	43	11.1%
American	38	9.8%
European	16	4.1%
Australian	14	3.6%
Asian	8	2.1%
Other	11	2.8%
University degree		
Yes	273	70.2%
No	116	29.8%
Marital status		
Single/Never married	67	17.2%
Married/Civil partnership	244	62.7%
Widowed	4	1.0%
Divorced	33	8.5%
Cohabiting	41	10.5%
Managerial level		
Non-management	108	27.8%
First-line management	58	14.9%
Middle management	107	27.5%
Executive and senior management	80	20.6%
Not specified	36	9.3%

excluded. For statistical purposes, participants who selected the “other” category to the question related to sex were also excluded due to the small sample ( $n=2$ ). In all, 389 individuals completed the survey, of which 228 (58.6%) were female, 161 (41.4%) were male. The sample was a global one with a total of 8 regions. However, roughly half ( $n=209$ , 53.7%) were British, followed by South African ( $n=50$ , 12.9%), Canadian ( $n=43$ , 11.1%), American ( $n=38$ , 9.8%), European ( $n=16$ , 4.1%), Australian ( $n=14$ , 3.6%), and Asian ( $n=8$ , 2.1%). Eleven (2.8%) participants were from other regions. The age of the participants ranged from 18 to 73 ( $M=45.8$ ,  $SD=11.6$ ). Most respondents ( $n=273$ , 70.2%) indicated that they have a university degree. For managerial level, 108 (27.8%) indicated that they are not in a managerial position, 58 (14.9%) reported to be first-line managers or supervisors, 107 (27.5%) were middle managers, 80 (20.6%) were executives or senior managers, and 36 (9.3%) did not specify.

### Measures

The participants completed three questionnaires: A demographic questionnaire, the High Potential Trait Indicator

(HPTI; MacRae & Furnham, 2016, 2020), and the Proactive Personality scale (Bateman & Crant, 1993). All measures were administered in English and none of them were timed.

**HPTI** The HPTI is a self-reporting six-trait personality-based questionnaire with a seven-point Likert-type scale and 78 items (13 items per trait). The six traits of the HPTI are Conscientiousness, Adjustment, Curiosity, Risk Approach (also known as Courage), Ambiguity Acceptance, and Competitiveness (MacRae & Furnham, 2020).

**Proactive scale (PP)** is a 17-item Likert-type scale designed to measure individuals' disposition toward proactive behaviours (Bateman & Crant, 1993).

**Self-esteem** participants were requested to rate themselves on four traits and on a 100-point scale on physical attractiveness ( $M=60.0$ ,  $SD=19.2$ ), physical health ( $M=63.7$ ,  $SD=20.6$ ), intelligence ( $M=75.1$ ,  $SD=13.7$ ), and emotional intelligence ( $M=76.0$ ,  $SD=16.9$ ). These were combined into a single variable estimating individuals' self-esteem ( $M=68.7$ ,  $SD=13.4$ ). The alpha was 0.71.

Participants rated their ideology on two scales: Religiousness (1=Not at all to 9=Very,  $M=3.54$ ,  $SD=2.63$ ), and political alignment (1=Conservative to 9=Liberal,  $M=5.59$ ,  $SD=1.93$ ). They were also asked to rate their level of optimism from 1 (Not at all) to 9 (Very;  $M=6.85$ ,  $SD=1.97$ ). Participants were also asked whether they had obtained a university degree ("degree"), coded as 0 = "No" ( $n=116$ , 29.8%) and 1 = "Yes" ( $n=273$ , 70.2%).

## Procedure

The questionnaires were hosted on an online survey platform and sent to individuals who had indicated their interest in voluntary participation in further research. They are in essence a research panel run by the test publisher Thomas International. Data was collected in 2022 and 2023. The individuals received an email inviting them to complete the online questionnaires for research purposes. Participants who clicked on the link in the email were directed to a webpage where they were given the instructions and purpose of the study with the opportunity to provide their informed consent to participate in the study. They received full feedback on the measures they completed, which was their major motive for participating. The ethical and research review was considered to be low risk due to the nature of the research project (i.e. anonymous, non-invasive questionnaires administered to healthy employed adults whose participation was entirely voluntarily) (LSA/TI/2022). Moreover, compared to other samples we know

the participants took longer to respond and are incentivized to be more honest in their answers given that they are interested in their detailed feedback.

## Results

### Data analysis

Descriptive statistics were calculated using Jamovi (Version 2.3; The Jamovi Project 2023). Sex was coded as 0=male and 1=female. Individuals' scores were calculated as Rasch person measures using Winsteps<sup>®</sup> (version 5.6.0, Linacre, 2023b). The person measures were then used for statistical analysis. Person measures are favoured over raw scores due to their linear nature and interval level of measurement, a better suited form for parametric statistical tests (Boone et al., 2014). Cronbach's alpha (Cronbach, 1951) and person reliability statistics of the scales were calculated using Winsteps<sup>®</sup>. Adequate alpha of a scale is 0.70 (Kaplan & Saccuzzo, 2018), and adequate Rasch reliability statistics are 0.70 for person reliability (P.rel) and 1.50 for person separation (P.sep) indices (Linacre, 2023a).

### Inferential statistics

#### Reliability

The reliability indices were mostly adequate (see Table 3). From the HPTI, Adjustment was evaluated to be the most reliable scale ( $\alpha=0.81$ , P.rel=0.80, P.sep=2.01) followed by Competitiveness ( $\alpha=0.79$ , P.rel=0.78, P.sep=0.78), Curiosity ( $\alpha=0.77$ , P.rel=0.75, P.sep=1.73), Risk Approach ( $\alpha=0.77$ , P.rel=0.73, P.sep=1.66), Ambiguity Acceptance ( $\alpha=0.75$ , P.rel=0.71, P.sep=1.56), and Conscientiousness ( $\alpha=0.70$ , P.rel=0.67, P.sep=1.43). The Proactive Personality scale was evaluated to have high reliability ( $\alpha=0.91$ , P.rel=0.88, P.sep=2.77).

#### Correlations

Table 2 shows the full correlation table. The correlations demonstrated that there is a statistical association with being male and self-esteem, Risk Approach, Competitiveness, and Proactive personality. There was a positive correlation between individuals' age and optimism, Adjustment, Risk Approach, Ambiguity Acceptance; and a negative correlation with age and Competitiveness. There was also a statistical association with being female and having a degree and being liberal. All were below 0.30, suggesting that the associations were small but not negligible (Cohen, 1988).

**Table 2** Mean, standard deviation, reliability, and correlation of scales

	M	SD	Alpha	P.rel	P.sep	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	
(1) Sex	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
(2) Age	45.8	11.6	—	—	—	-0.02	—	—	—	—	—	—	—	—	—	—	—	—	—	—
(3) Degree	—	—	—	—	—	0.10*	-0.11*	—	—	—	—	—	—	—	—	—	—	—	—	—
(4) Religiousness	3.54	2.63	—	—	—	-0.01	0.09	0.07	—	—	—	—	—	—	—	—	—	—	—	—
(5) Politics	5.59	1.93	—	—	—	0.21***	-0.08	0.18***	-0.23***	—	—	—	—	—	—	—	—	—	—	—
(6) Optimism	6.85	1.97	—	—	—	0.07	0.18***	0.00	0.03	0.05	—	—	—	—	—	—	—	—	—	—
(7) Self-esteem	68.7	13.4	0.75	—	—	-0.11*	0.06	0.08	0.15**	-0.09	0.29***	—	—	—	—	—	—	—	—	—
(8) Conscientiousness	0.85	0.54	0.70	0.67	1.43	-0.06	0.07	-0.08	0.14**	0.00	0.18***	0.21***	—	—	—	—	—	—	—	—
(9) Adjustment	0.55	0.64	0.81	0.80	2.01	-0.08	0.18***	0.00	0.04	-0.05	0.36***	0.31***	0.22***	—	—	—	—	—	—	—
(10) Curiosity	0.99	0.68	0.77	0.75	1.73	-0.07	-0.02	0.11*	0.06	0.16**	0.23***	0.10*	0.19***	0.16**	—	—	—	—	—	—
(11) Risk Approach	0.53	0.57	0.77	0.73	1.66	-0.21***	0.22***	-0.04	0.13*	-0.11*	0.27***	0.25***	0.43***	0.55***	0.46***	—	—	—	—	—
(12) Ambiguity Acceptance	-0.02	0.44	0.75	0.71	1.56	-0.09	0.21***	0.05	-0.05	0.09	0.23***	0.13*	0.15**	0.41***	0.31***	0.48***	—	—	—	—
(13) Competitiveness	-0.143	0.53	0.79	0.78	1.87	-0.17***	-0.19***	-0.02	0.08	-0.18***	-0.04	0.20***	0.28***	-0.07	0.01	0.17***	0.04	—	—	—
(14) Proactive Personality	1.34	1.07	0.91	0.88	2.77	-0.14**	0.01	0.08	0.17***	0.02	0.24***	0.32***	0.54***	0.23***	0.56***	0.57***	0.20***	0.31***	—	—
(15) Managerial level	—	—	—	—	—	-0.09	0.41***	0.14*	0.05	0.00	0.17**	0.03	0.19***	0.13*	0.06	0.30***	0.34***	0.11*	0.13*	—

Note

Sex, 0 = Male, 1 = Female, Degree, 0 = No, 1 = Yes, Religiousness, 1 = Not at all, 9 = Very, Politics, 1 = Very Conservative, 9 = Very Liberal

P.rel = person reliability, P.sep = person separation,

\*  $p < .05$ , \*\*  $p < .01$ , \*\*\*  $p < .001$

Proactive personality had statistically significant large positive correlations with Risk Approach ( $r=.570, p<.001$ ), Curiosity ( $r=.558, p<.001$ ), and Conscientiousness ( $r=.536, p<.001$ ). It had a moderate to small positive correlation with Self-esteem ( $r=.323, p<.001$ ), Competitiveness ( $r=.314, p<.001$ ), Optimism ( $r=.244, p<.001$ ), Adjustment ( $r=.225, p<.001$ ), and Ambiguity Acceptance ( $r=.198, p<.001$ ).

## Regression

Hierarchical multiple regression was used to evaluate the model. Sex, age, and degree were entered in the first step followed by religiousness and political alignment. Self-esteem and Optimism were entered into the third step followed by the six HPTI traits in the fourth. The independent variable was the totalled PP scale score. The results of the hierarchical regression model are presented in Tables 3 and 4.

In the first step, age and sex made a significant model,  $F(3, 385)=3.84, p=.010$ , accounting for 2.15% of the explained variance ( $R^2=0.0215$ ) in proactive personality. The unstandardised coefficient (B) indicated that males portrayed more proactive behaviour than females ( $B = -0.320, p=.003$ ). Age ( $B=0.002, p=.698$ ) and having a degree or not ( $B=0.226, p=.054$ ) did not significantly contribute to the model, although having a degree approached significance.

After controlling for sex, age, and degree, religiousness and political alignment were added as predictors of proactive personality in the second step. The overall model was statistically significant,  $F(5, 383)=5.11, p<.001$ . The addition of religiousness and political alignment increased the explained variance in proactive personality ( $\Delta R^2=0.0288, p<.001$ ). Age ( $B=0.001, p=.893$ ) and degree ( $B=0.159, p=.177$ ) remained non-significant contributors to the model, joined by political alignment ( $B=0.047, p=.109$ ). Sex ( $B =$

**Table 3** Hierarchical regression model of variables onto proactive personality

	R	R <sup>2</sup>	$\Delta R^2$	B	SE	$\beta$	t
<i>Step 1</i>	0.170**	0.022					
Sex				-0.320	0.108	-0.303	-2.962**
Age				0.002	0.005	0.020	0.389
Degree				0.226	0.117	0.214	1.930
<i>Step 2</i>	0.250**	0.050	0.028				
Sex				-0.349	0.109	-0.331	-3.212**
Age				0.001	0.004	0.007	0.135
Degree				0.159	0.118	0.151	1.354
Religiousness				0.075	0.021	0.186	3.623***
Political alignment				0.047	0.029	0.085	1.606
<i>Step 3</i>	0.416**	0.158	0.108				
Sex				-0.321	0.104	-0.303	-3.098**
Age				-0.004	0.004	-0.040	-0.827
Degree				0.106	0.111	0.100	0.949
Religiousness				0.061	0.020	0.152	3.116**
Political alignment				0.047	0.027	0.086	1.719
Optimism				0.099	0.027	0.185	3.709***
Self-esteem				0.019	0.004	0.235	4.692***
<i>Step 4</i>	0.782**	0.597	0.439				
Sex				-0.060	0.073	-0.056	-0.807
Age				-0.001	0.003	-0.011	-0.299
Degree				0.146	0.078	0.138	1.865
Religiousness				0.016	0.014	0.040	1.167
Political alignment				0.021	0.020	0.038	1.043
Optimism				0.024	0.020	0.044	1.200
Self-esteem				0.010	0.003	0.128	3.512***
Conscientiousness				0.565	0.073	0.291	7.754***
Adjustment				-0.089	0.072	-0.054	-1.238
Curiosity				0.583	0.061	0.373	9.500***
Risk Approach				0.531	0.094	0.286	5.640***
Ambiguity Acceptance				-0.270	0.093	-0.114	-2.904**
Competitiveness				0.318	0.074	0.158	4.272***

Note

Sex, 0=Male, 1=Female

\*  $p<.05$ , \*\*  $p<.01$ , \*\*\*  $p<.001$

**Table 4** Hierarchical regression model of management level

	<i>R</i>	<i>R</i> <sup>2</sup>	$\Delta R^2$	<i>B</i>	<i>SE</i>	$\beta$	<i>t</i>
<i>Model 1</i>	0.460**	0.206					
Sex				-0.193	0.111	-0.168	-1.73
Age				0.044	0.005	0.434	9.00***
Degree				0.551	0.124	0.480	4.44***
<i>Model 2a</i>	0.473**	0.215	0.009				
Sex				-0.15	0.11	-0.136	-1.390
Age				0.044	0.005	0.434	9.060***
Degree				0.520	0.124	0.453	4.19***
Proactive personality				0.115	0.052	0.107	2.24*
<i>Model 2b</i>	0.573**	0.311	0.105				
Sex				-0.062	0.107	-0.054	-0.582
Age				0.040	0.005	0.391	8.142***
Degree				0.544	0.117	0.474	4.631***
Conscientiousness				0.146	0.118	0.064	1.236
Adjustment				-0.236	0.103	-0.129	-2.294*
Curiosity				-0.188	0.087	-0.113	-2.159*
Risk Approach				0.373	0.138	0.186	2.708**
Ambiguity Acceptance				0.616	0.135	0.240	4.552***
Competitiveness				0.245	0.106	0.114	2.307*
<i>Model 3</i>	0.574**	0.310	-0.001				
Sex				-0.066	0.107	-0.057	0.613
Age				0.040	0.005	0.390	8.126***
Degree				0.555	0.119	0.484	4.678***
Conscientiousness				0.178	0.127	0.079	1.402
Adjustment				-0.236	0.103	-0.129	-2.296*
Curiosity				-0.157	0.098	-0.095	-1.611
Risk Approach				0.400	0.143	0.199	2.792**
Ambiguity Acceptance				0.602	0.137	0.235	4.390***
Competitiveness				0.263	0.109	0.122	2.402*
Proactive personality				-0.050	0.073	-0.047	-0.688

Note

Sex, 0=Male, 1=Female

\*  $p < .05$ , \*\*  $p < .01$ , \*\*\*  $p < .001$

-0.349,  $p = .001$ ) remained a significant contributor to the model, joined by religiousness ( $B = 0.075$ ,  $p < .001$ ).

After controlling for sex, age, degree, religiousness, and political alignment, optimism and self-esteem were added as predictors of proactive personality in the third step. The overall model was statistically significant,  $F(7, 381) = 11.42$ ,  $p < .001$ . The addition of optimism and self-esteem significantly increased the explained variance in proactive personality ( $\Delta R^2 = 0.1079$ ). Age ( $B = -0.004$ ,  $p = .409$ ), degree ( $B = 0.106$ ,  $p = .343$ ), and political alignment ( $B = 0.047$ ,  $p = .086$ ) remained non-significant contributors to the model. Sex ( $B = -0.321$ ,  $p = .002$ ) and religiousness ( $B = 0.061$ ,  $p = .002$ ) remained significant contributors to the model, joined by optimism ( $B = 0.099$ ,  $p < .001$ ) and self-esteem ( $B = 0.019$ ,  $p < .001$ ).

After controlling for sex, age, degree, religiousness, political alignment, optimism, and self-esteem, the six HPTI traits were added as predictors of proactive

personality in the second step. The overall model was statistically significant,  $F(13, 375) = 45.29$ ,  $p < .001$ . The addition of the HPTI traits significantly increased the explained variance in proactive personality ( $\Delta R^2 = 0.4392$ ,  $p < .001$ ). Sex ( $B = -0.060$ ,  $p = .420$ ), religiousness ( $B = 0.016$ ,  $p = .244$ ), and optimism ( $B = 0.024$ ,  $p = .231$ ) ceased to be statistically significant contributors to the model. Age ( $B = -0.001$ ,  $p = .765$ ), degree ( $B = 0.146$ ,  $p = .063$ ), and political alignment ( $B = 0.021$ ,  $p = .298$ ) remained non-significant contributors to the model, joined by Adjustment ( $B = -0.089$ ,  $p = .216$ ) from the HPTI. Whereas self-esteem ( $B = 0.010$ ,  $p < .001$ ) remained a statistically significant positive contributor to the model, joined by Curiosity ( $B = 0.583$ ,  $p < .001$ ), Conscientiousness ( $B = 0.565$ ,  $p < .001$ ), Risk Approach ( $B = 0.531$ ,  $p < .001$ ), and Competitiveness ( $B = 0.318$ ,  $p < .001$ ). On the other hand, Ambiguity Acceptance ( $B = -0.270$ ,  $p = .001$ ) made significant negative contributions.

## Management Level

A hierarchical regression was conducted to evaluate the model predicting management level. Sex, age, and degree obtained were entered in the first step (Model 1), followed by the Proactive personality questionnaire (Model 2a). The Proactive personality scale was then replaced by the six HPTI traits (Model 2b), then added to the final model (Model 3). The results are presented in Table 4.

Model 1 shows that two demographic factors, Age ( $B=0.044$ ,  $p<.001$ ), and education ( $B=0.551$ ,  $p<.001$ ) are related to ML and account for a fifth of the variance. When PP ( $B=0.115$ ,  $p=.026$ ) was added (Model 2a) it was significant and accounted for an extra percent of the variance. However, when the six work traits were added in Model 2b five were significant, particularly Ambiguity Acceptance. These accounted for an additional 11% of the variance. Model 3 shows that when PP was added after the six traits it was not significant and accounted for no incremental variance.

## Discussion

This study attempted to advance the Big Five and PP literature looking specifically at two things: the use of a new work-related trait measure that included two traits, not measured in the Big Five system, and secondly the incremental validity of these traits above standard demographic, ideological and self-concept measures. A major concern was whether PP added incremental validity over classic personality variables in explaining management level. We believe the results of this study advance our understanding of PP in five ways: *first*, confirmation that the PP trait is a significant correlate of various other traits associated with adaptation, health and productivity at work; *second*, that it seems less related to demographic and ideological factors suggesting fewer situational factors in its development; *third*, that it adds little incremental validity over Big-Five type measures in predicting such things as management level; *fourth*, that the PP is clearly high in courage and risk taking; and *fifth*, that the association of PP may be thought of as a virtuous circle which probably increases over time.

This study highlighted five traits, as well as SE, as most closely related to the PP. The regressions indicated that sex had an effect on PP, while neither age nor education had a significant effect. Males have higher PP scores than females (mean difference=0.30;  $t(387)=2.78$ ,  $p=.006$ ; Cohen's  $d=0.286$ ). This may be due to a number of factors not tested in this study such that proactive behaviours are more acceptable from, required of, and rewarded to, males in most western cultures. Though sex was significant in the

correlations and literature suggesting males are more agentic than women who are more community oriented, it was not significant in the regression. It is interesting to note that there was no age or education effect suggesting it is a relatively stable trait, but could also be partly due to restricted range in the sample tested here.

Some evidence of the effect of being religious, but not political, on PP was found. Religious people tended to be more proactive, though it is not clear why. It could be that some, but not all, religions advocate an internal locus of control, agentic outlook which leads to proactive behaviour (Furnham, 1982). This finding clearly warrants more investigation, with a more comprehensive measure of religious beliefs.

Some evidence of the relationship between SE and PP was also found. Those with higher self-ratings tended to be more proactive. Again, it is possible that proactivity in its many forms requires self-confidence to take risks; and which is later rewarded and therefore increasing self-confidence. That is, there is evidence of a “virtuous circle” where both traits boost each other: that is, self-confident people tend to be more proactive which further boosts their confidence to act again in a variety of situations.

Interestingly, in the fourth step of the regressions, it was apparent, that when personality was entered, both Self-Esteem and personality traits were significant. In accordance with previous studies, we found that Conscientiousness ( $r=.56$ ) and Openness (Curiosity,  $r=.54$ ) were strongly related to PP. The proactive personality is hard-working and curious which other studies have established. Many studies have shown that nearly all the Big Five traits (except Agreeableness) are related to PP (Fuller & Marler, 2009; Tornau & Frese, 2013). Other studies have examined the incremental validity of PP over the Big Five in assessing important real world outcomes. For instance, Major et al. (2006) found PP had significant incremental validity in the prediction of motivation to learn over all relevant Big Five facets. However, Rodrigues and Rebelo (2013) looking at software engineers, found PP did not show a relevant increment on the prediction yielded by any of the Big Five and organizational tenure.

However, it also implicated three other work-related traits, unique to this study and measure. The first was Risk Approach (Courage) which showed the highest correlation ( $r=.57$ ). The HPTI manual notes “*Risk approach indicates how someone deals with challenging, difficult, or threatening situations. People who score high consider a broad range of options, choose whichever they believe to be the best one and then act quickly. They are willing to confront challenges directly and immediately. Individuals with lower risk approach scores tend to avoid challenges or conflict until they have no other choice*”. Thus, high scorers are

assertive, modest risk takers which chimes well with the concept of PP.

The second was Ambiguity Acceptance. The HPTI manual notes: “*Ambiguity acceptance describes people’s reaction to complexity and contradictory information: situations where outcomes, decisions and evidence are not immediately obvious or clear. Individuals with high ambiguity acceptance enjoy such situations. Individuals with low ambiguity acceptance prefer straightforward problems, situations and solutions.*” The results of this dimension are particularly interesting as the correlations indicated a modest ( $r=.20$ ) positive correlation and the regression a negative relation. This possibly suggests that often in many work and social situations, which may be complex, dynamic and ambiguous, if people are inhibited in any sense by ambiguity they would not act proactively. This could be that Ambiguity Acceptance acts as a suppressor variable (Pandey & Elliott, 2010). In this case, Risk Approach was identified as the variable being suppressed, increasing its standardised beta from 0.57 in a simple regression to 0.62 when Ambiguity Acceptance is added to the model. This suggests that positive correlation between Ambiguity Acceptance and PP was spurious, and when comparing two individuals with similar Risk Approach, an individual with less tolerance of ambiguity is likely more proactive than the individual with more tolerance for ambiguity. Clearly the relationship between PP and Ambiguity Acceptance seems to indicate the presence of a suppressor effect, which merits further exploration.

The third was Competitiveness. The HPTI manual notes: “*Competitiveness describes people’s relative desire to win, need for power and reaction to winning and losing. Individuals with higher competitiveness need to feel that their achievements are recognised and appreciated. Higher competitiveness can drive performance and a desire to self-improve.*” The overlap between this concept and PP is fairly self-evident: the PP individual is action-oriented and persevering which are traits relevant for work success.

While the correlations indicated a modest positive relationship with Adjustment (low Neuroticism;  $r=.23$ ) the regressions suggested that this factor was unrelated to PP. Given that some would want to select those who were personally proactive these results suggested that we should seek out creative (Curiosity/Openness), hard-working (Conscientious), courageous (Risk Approach) and achievement-oriented (Competitiveness) people with confidence. This is not a surprising finding, though some may be concerned that the PP is too competitive rather than Agreeable and supportive.

The results from the analysis on ML show four things. *First*, that PP provided a small but significant incremental validity over age and education in achieving success as measured by managerial level. *Second*, that the six HPTI

traits add considerably more variance though this partly for statistical reasons. *Third*, the PP adds nothing above the six traits in explaining ML. *Fourth*, the results replicate other studies on ML. Adjustment may be acting as a suppressor on Risk Approach and Ambiguity Acceptance, whereas Curiosity may be suppressing Risk Approach. One question for researchers is that value of measuring six traits with a 78-item questionnaire (HPTI) over the 17 items in the PP.

Indeed, the results suggest that PP may be seen as a second order trait made up of different facets of more established traits, especially Conscientiousness and Openness (Curiosity).

## Implications

What are the practical implications for people in real-world settings? The first is that PP is easy to measure on a short, reliable, self-report scale that is related to many of the Big Five traits. In this sense it may prove very economical at assessing candidates. Second, it is also related to both self-esteem and a general optimistic outlook which is clearly important for work success. Third, while it is related to sex, partly because of the concepts link with agency, it is unrelated to education and age, suggesting that it is very stable over time. There are however questions of change over time and whether it can be trained or moderated. This remains a vexed question in personality psychology: namely whether, why and how traits change over time. Given the interest of applied and I/O psychologists in PP and its apparent benefits in the workplace, the issue of change in the trait is highly important.

Finally, what of future directions for this research? One obvious study would involve obtaining longitudinal data over time seeking to understand both the changes in PP and indeed factors associated with its long-term stability or change. It is only data such as this that settles issues of causality and offer a more dynamic perspective on the development and impact of PP traits. This may involve attempting to persuade governments and research bodies to support large-scale longitudinal studies over long periods of time (decades) (e.g. Furnham & Cheng, 2015, 2024).

## Conclusion and Future Directions

We found that our work-related traits were systematically related to PP, but that PP did not add any incremental variance over the traits in explaining a participants’ ML. As noted above the literature is equivocal as regards incremental validity but this may depend heavily on the outcome variable assessed (i.e. job performance, motivation, and satisfaction) and how that is measured. This is often difficult, yet important, research in applied settings to collect

“real world” performance data. The attractiveness of PP as a measure over most Big Five measures is its brevity and psychometric properties.

## Limitations

This study was based on self-report, cross-sectional data with concomitant issues of method invariance, possible impression management and the inability to infer causation. Our adult sample tended to be middle-class, middle-aged individuals and the results may have been slightly different in much younger or older people. There were therefore range restrictions, primarily in terms of age, education and management experience, which might have suppressed the results, though there is no theoretical reason why the trait relationships should be affected. Furthermore, the majority were British and it may have been desirable to have a more cross-nationally representative sample and indeed examine national differences.

Ideally it would have been most desirable to have observational measure of PP, and a larger, more representative population. However, we have observed that reliabilities are higher when using the panels compared with live assessment data. Participants on the panels, such as used in this study, are giving their time to get insights into their personality, so are motivated to read questions carefully, answer honestly and suppress social desirability as they’ll be the only ones seeing their individual results. This is also observable in survey timings as participants take a lot longer to complete than on average.

Also, three of our measures (religiousness, political orientation and optimism) were single item measures. It is always advisable to have multi-item measures with good internal reliability and even, where appropriate facet scores. However, we note in a recent review: “...most research published on single-item measures shows that they are often as valid and reliable as their multi-item counterparts” (Allen et al., 2022, p4).

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**Data availability** This is obtainable from the first author upon request.

## Declarations

**Registration** This paper was not pre-registered with the journal.

**Ethics** This was sought and obtained (SLA/2022/02). The study involved secondary analysis of anonymised data, collected from a non-vulnerable population with informed consent that allowed the use of the data by third party researchers.

**Informed consent** Participants gave consent for their anonymised data to be analysed and published.

**Conflict of interest** There is no conflict of interest.

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