# Are there Unexplained Financial Rewards for the Snakes in Suits? A Labour Market Analysis of the Dark Triad of Personality.

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## Abstract

The Big Five personality test is used to generate psychopathy, narcissism and Machiavellianism scores using a large UK individual level micro data set. These scores show that high levels of narcissism and Machiavellianism can be associated with a higher incidence of employment in managerial occupations, whilst high levels of psychopathy is related to higher employment in the other services sector. The paper finds a wage premium to Machiavellianism that is largest at the 90$^{th}$ percentile, over and above all productivity related explanations. The average hourly wage increase for a one-point move up the Machiavellianism scale is around 2.1 percent.

Keywords: occupations, wages, personality traits, cognitive skills

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## 1. Introduction

Economists have become increasingly interested in quantifying the labour market returns to non-cognitive skills and personality traits, (Heckman and Kautz 2012). Yet there is a dearth of information on the incidence and implications of socially aversive personalities within the industrial relations literature. One reason for this is a shortage of data. Publically available data that contains labour market information alongside the relevant questions required to identify such individuals does not exist. Consequently this paper makes a number of important contributions to the existing industrial relations literature. Firstly, it is the first study to use the Big Five personality taxonomy from a publically available large UK data source to predict socially aversive personality measures. Secondly, it is the first study to investigate how these predicted measures relate to the labour market and to quantify any unexplained wage premiums or penalties associated with these personality traits.

The Dark Triad of personality (psychopathy, narcissism and Machiavellianism) demonstrate low scores for agreeableness whilst at the same time scoring high on emotional stability, (Jonason et al 2013). They are also associated with being manipulative, exploitative and untrustworthy. If high scoring Dark Triad workers earn more than their colleagues for reasons that cannot be explained through productivity related characteristics, then this could be generating a direct cost to organisations that arise as a consequence of their duplicitous behaviour. There may also be indirect costs to the firm through their anti-social behaviour towards other co-workers, since there is evidence in the organisational psychology literature that counter-productive work behaviours are higher amongst some socially aversive personality types, (Grijalva et al 2014b).

An economist might argue that any unexplained pay premium would arise as a consequence of excess demand for such workers. But if Dark Triad behaviour is duplicitous, this is more difficult to explain through market forces, since such mechanisms rely on perfect information. Therefore identifying unexplained wage premiums to workers with socially aversive personalities might be thought of as unveiling previously asymmetric information. This is of particular interest to employment relations scholars, given the financial implications for organisations when they evaluate and promote individuals. Organisations would be in a better position to hire workers and bargain over wages if they could surreptitiously and accurately measure the integrity of their workers.

The paper starts with a review the existing empirical literature on the workplace behaviour of Dark Triad workers and the financial returns to the Big Five personality traits. Section 3 then describes the econometric methods used in the paper. Section 4 derives measures for the Dark Triad personality constructs using student data and section 5 describes the labour market characteristics of workers who score relatively highly in psychopathy, narcissism and Machiavellianism using micro survey data. We then estimate the financial returns to Dark Triad scores in section 6 and present our conclusions in section 7.

## 2. Background Literature.

In this section we review some important findings from the psychology literature on the performance of the Dark Triad in the workplace, followed by evidence from the industrial relations literature on the financial rewards to personality traits. Paulhus and Williams (2002) devised the term `Dark Triad' to highlight the shared `dark' features of these traits. Their paper was followed by a surge of Dark Triad publications in the psychology literature. Furnham et al (2013) summarise this literature.

In terms of workplace behaviours, workers with high Dark Triad scores demonstrate counter-productive work behaviour, O' Boyle et al (2012). They also demonstrate more manipulation at work, (Jonason et al 2012) and exhibit high desire for power, (Lee et al 2013). There is also evidence that Dark Triad traits are associated with charismatic leadership, (Grijalva et al 2015a). These characteristics draw Dark Triad individuals towards occupations that offer opportunities to achieve these outcomes, (Jonason et al 2014). Vedel and Thompsen (2017) show that the Dark Triad characteristics also predict degree subject choices. Economics/business students demonstrate significantly higher Dark Triad scores, whilst psychology students demonstrate significantly lower Dark Triad scores, relative to law and political science students. This supports the notion that individuals choose their occupations based on their personalities, rather than the idea that occupations mould personalities. These results motivate the first hypothesis to be tested in this paper: *Workers with higher Dark Triad traits exhibit a higher propensity to be employed in occupations of power and leadership.* Failure to reject this hypothesis suggests that the Dark Triad measures used in this paper are consistent with those used in the existing psychology literature.

The Big Five taxonomy (BFT) has been extensively used by psychologists, (John and Srivastava 1999), but more recently interest has also grown amongst social scientists. The five traits are considered to be relatively fixed throughout adulthood, (Cobb-Clark and Schurer 2012). They consist of openness to experience, conscientiousness, extraversion, agreeableness and emotional stability. This is often abbreviated to OCEAN since the inverse of emotional instability is frequently referred to as neuroticism. Individuals who are open to experience are typically flexible and creative which may enhance their job performance. However, they can also be too autonomous which can be detrimental to their performance. Conscientiousness captures an individual's self-control and might also be thought to capture willingness to work hard, be responsible and organised. Hence conscientiousness is usually associated with high job performance. Extraversion is a broad construct that mainly consists of sociability and assertiveness. This can be positively related to job performance since high extraversion can be related to high ambition and leadership but the effects of dominance can sometime be counter-productive and so the overall effect on job performance is ambiguous. Agreeableness is also ambiguously related to job performance, since it encompasses the degree to which individuals co-operate with others. However, highly agreeable individuals may sacrifice their own success to please others. Finally, emotional stability captures the individual's ability to handle stress. Emotional instability can lead to worker's performing their tasks poorly as a consequence of experiencing either too much or too little stimulation, (Gardner and Cummings 1988).

In terms of earnings, the existing empirical evidence has found agreeableness to be negatively correlated with earnings, whilst conscientious and emotionally stable individuals do better in the labour market, (Mueller and Plug 2006; Heineck and Anger 2010; Nyhus and Pons 2005). High levels of openness and extraversion pay more, on average, but for openness the advantage is totally explained by differences in worker socio-economic characteristics (especially education and occupation) whereas for extraversion this remains largely unexplained and is therefore likely a consequence of demand side factors including employer discrimination or worker ability, (Nandi and Nicoletti 2014). People who score high in agreeableness and low in emotional stability earn less and this is also largely unexplained by socio-economic characteristics. Heineck (2011) used lagged values of the BFT traits in 2005 on wages in the 2008 British Household Panel Survey (BHPS) to show that the correlations just described are causal.

The unexplained pay return to low agreeableness is an important result that helps to motivate the second hypothesis to be tested in this paper: *Workers with high Dark Triad scores receive higher financial rewards that cannot be explained by productivity related characteristics.* Low agreeableness involves competitive and self-serving traits. So it is not immediately obvious why low agreeableness should be associated with higher earnings. One can only conjecture that this is a consequence of its close relationship to the Dark Triad traits of manipulation, exploitation and duplicity. Failure to reject this second hypothesis would help to explain the unexplained wage return to low agreeableness.

## 3. Methods.

Publically available survey data do not typically contain Dark Triad measures. However, the BHPS and the Understanding Society Survey (USS) contain detailed information on the socio-economic and labour market characteristics of adults, as well as BFT measures. Consequently, to test our hypotheses it is necessary to generate Dark Triad measures using the BFT. To achieve this, we follow the existing psychology literature by analysing student data.

### *3.1 Generating Dark Triad Measures from the BFT*

The study by Paulhus and Williams (2002) was one of the first to link the Dark Triad of personality to the BFT using a survey of students. However, we draw heavily on the study by O'Boyle et al (2012), since they use 310 independent samples from 215 data sources and conduct a meta-analysis that establishes a direct links between the Dark Triad and the BFT personality traits. They show that the psychopathy model of Lynam et al (2011) and the narcissism model of Glover et al (2012) can be largely explained using facets of the BFT. They demonstrate that 18 of the 30 facets of the BFT can explain 88 percent of the variance in psychopathy, whilst 13 facets can explain 42 percent of the variance in narcissism. O Boyle et al (2015) do not provide dominance statistics for Machiavellianism on account of having too few studies to analyse.

In this paper, we collect data from an online survey of 158 undergraduate students from the King's College London Business School. We then generate Dark Triad scores using the BFT. Vedel and Thomsen (2017) found relatively high Dark Triad scores amongst economics and

management students, and therefore we expect our data to have an over-representation of Dark Triad individuals. Our student questionnaire contains the 15 BFT questions along with the 12 questions from the Dark Triad Dirty Dozen (DTDD). The DTDD can be used to uniquely identify psychopathy, narcissism and Machiavellianism, (Jonason and Webster 2010).[1] Our approach follows Jonason et al (2013) who correlated the 44 facets of the BFT with the DTDD. For our 15 BFT questions, respondents were asked to provide a value between 1 and 7 for each question, whereby 1 denotes `does not apply to me at all' and 7 denotes `applies to me perfectly'. For the DTDD questions, respondents were asked to provide a value between 1 and 7 for each question, whereby 1 denotes `strongly disagree' and 7 denotes `strongly agree'.

In O'Boyle et al (2015), the three largest predictors of psychopathy are low straightforwardness (16.7 percent), high anger/hostility (11.1 percent) and low deliberation (9.5 percent), whilst for narcissism they are low modesty (24.0 percent), high anger/hostility (21.1 percent) and low straightforwardness (15.1 percent). We cannot directly measure these facets using the 15 BFT questions. However we have a completely different set of BFT questions to the 30 used in O'Boyle et al (2015), and so we cannot know to what extent our questions are capturing these key traits indirectly. Consequently, we include four extra questions in our student questionnaire that directly measure anger/hostility, modesty, and straightforwardness. These are `I am often angry', `I am sometimes violent', `I am good looking' and `I am obedient'. Respondents were asked to provide a value between 1 and 3 for each question, whereby 1 denotes `does not apply' and 3 denotes `applies very much'. We then conduct regression analyses to quantify the relationship between our 15 BFT questions and the DTDD Dark Triad measures, conditioning on these four extra personality measures.

We generate Dark Triad scores in the BHPS and USS data using the correlations from the student-level regressions of the BFT on the DTDD Dark Triad measures. We maximise the predictive power of the BFT variables, by using all 15 BFT facets to generate Dark Triad scores for psychopathy, narcissism and Machiavellianism. Each Dark Triad score consists of the sum of all 15 BFT variables using the dominance statistics as weights. The dominance statistics are the standardised relative weights or epsilon, Johnson (2000). These determine the relative importance of each BFT variable based on its contribution to the overall $R^2$ when predicting DTDD Dark Triad measures. The reverse of the BFT variable is used in each case where there is a negative correlation with the DTDD Dark Triad measures. This provides

Dark Triad scores which have the potential to range between 1 and 7 for each individual. Our results are presented in section 4.

*3.2 Testing Our Hypotheses*

In order to test our first hypothesis, we investigate the relationship between our generated Dark Triad scores and the likelihood of employment in occupations, using the BHPS and USS datasets. We estimate the Multinomial Logit equation

$$O_{it} = \alpha + \beta_1 P_{it} + \beta_2 N_{it} + \beta_3 M_{it} + \mathbf{X}_{it}\Gamma + \delta Y_{it} + \varepsilon_{it} \qquad (1)$$

where $O_{it}$ is a categorical variable that takes the value between 1 and 9 representing the occupation of employment for worker *i* in year *t*. $P_{it}$ , $N_{it}$ and $M_{it}$ are the psychopathy, narcissism and Machiavellianism scores. Vector **X** contains controls for highest qualification (postgraduate degree or college degree), age, the number of unemployment spells in the last 12 months, whether female, whether works part time, whether lives in London and whether the worker considers themselves in good health**.** $Y_{it}$ is a dummy that equals one if the worker was observed in 2012 and zero otherwise, whilst $\varepsilon_{it}$ is the error term. To look for further evidence to support our first hypothesis at the sectoral level, we replace the dependent variable in equation (1) with a variable that takes values between 1 and 8 representing the sector of employment for worker *i* in year *t*. The results are presented in section 5.

To test our second hypothesis, we use the USS data to estimate wage equations. Estimating standard cross sectional wage equations would provide estimates that are likely to suffer from biases arising as a consequence of unobservable characteristics that are both correlated with wages, as well as with the Dark Triad scores.[2] Consequently we exploit the panel nature of our data. The USS follows some of the BHPS individuals after the survey ended in 2008. However, this provides a small truncated sample of only 2984 individuals. Moreover, since personality traits are assumed to remain fairly fixed over an individual's lifetime, controlling for fixed effects is not really appropriate in this instance. Instead we use the panel element of the USS and estimate

$$Y_{it} = \alpha + \beta_1 P_{it-2} + \beta_2 N_{it-2} + \beta_3 M_{it-2} + \mathbf{X}_{it}\Gamma + \varepsilon_{it} \qquad (2)$$

where $Y_{it}$ is the log wage of worker *i* in 2014 and $P_{it-2}$, $N_{it-2}$ and $M_{it-2}$ are Dark Triad scores in 2012. Hence we are assuming that the Dark Triad scores observed in 2012 will be less correlated with the unobservable characteristics that explain wages in 2014. Balancing the USS panel between 2012 and 2014 provides a sample of 13582 workers. Controls include highest qualification (postgraduate degree or college degree), age, the number of unemployment spells in the last 12 months, whether female, whether works part time, whether lives in London, whether considers themselves in good health and cognitive test scores. These are included in the vector **X** and $\varepsilon_i$ is the error term.

If workers with high Dark Triad scores are over-represented at the top of the pay distribution, we might want to isolate pay premiums by quantile. In quantile regression models the full (conditional) distribution of wages is expressed as a function of the explanatory variables, including the Dark Triad scores, rather than just evaluating differences at the mean wage. So the differences between worker wages can be observed at each quantile of the wage distribution. Practically, obtaining quantile regression coefficients involves minimising the weighted sum of the absolute residuals, where the weights are determined by the quantile being considered. Specifically, quantile regression chooses the β coefficients to minimise the expression in equation (3) below for any quantile, τ, we choose:

$$\widehat{\beta_\tau} = min \sum_{i=1}^{n} \rho_\tau (Y_i - \boldsymbol{X_i \beta_i}) \qquad (3)$$

where $\rho_\tau$ is a check function for the τth quantile, taking the value of τ for positive residuals and (τ-1) for negative residuals, hence ensuring positive values in all cases. The results for all of our wage equations are presented in section 6.

## 4. Measuring the Dark Triad Personalities Using the Big Five Traits.

In this section we begin by using the student data described in section 3.1 to generate measures for psychopathy, narcissism and Machiavellianism. Model (1) in Table 1 provides the results for the regression of the 15 BFT questions on the DTDD psychopathy measure. Overall the BFT questions explain 31 percent of the total variation in psychopathy, with the largest predictors being for 'sometimes rude to others' (30.4 percent), `has a forgiving nature'

(17.0 percent) and `gets nervous easily' (15.3 percent). These are all statistically significant at the 1 percent level. Model (2) includes the extra four questions that directly measure anger, violent behaviour, modesty and obedience. These have little effect on the overall R squared increasing it to 0.32. Their inclusion also has very little impact on the dominance statistics for the main predictors. The top three are still 'sometimes rude to others' (27.1 percent), `has a forgiving nature' (17.2 percent) and `gets nervous easily' (12.7 percent).

The final two columns in Table 1 aggregate the dominance statistics from model (1) to the OCEAN levels described earlier, and compare these to those found in O Boyle et al (2015). We can see that our 15-question predictions are very similar to those found by O Boyle et al (2015), bearing in mind that the latter omits all of their openness variables from their analyses ex-ante. Most of the predictive power for psychopathy comes from low agreeableness, emotional stability and low conscientiousness, which is also consistent with the findings of Jonason et al (2013). The direction of these correlations is discussed in Table 4.

Model (1) in Table 2 shows that the 15 BFT questions explain 31 percent of the total variation in narcissism. The largest three predictors of narcissism are for 'is sometimes rude to others' (25.0 percent), `is original, comes up with ideas' (16.6 percent) and `is relaxed, handles stress well' (9.69 percent). These are statistically significant at the 1 percent, 2 percent and 9 percent level, respectively. Conditioning on anger, violent behaviour, modesty and obedience has a greater effect on the narcissism predictors than the predictors of psychopathy. The $R^2$ increases to 0.39 and the three largest predictors are now 'is sometimes rude to others' (20.0 percent), `is original, comes up with ideas' (12.8 percent) and `I am obedient' (10.0 percent). The `is relaxed, handles stress well' variable is now the fourth largest predictor at 8.4 percent. The predictive power of `is original, comes up with ideas' falls by 3.7 percent, which is not far from the extra predictive power of `I am good looking' (4.8 percent). This suggests that `is original, comes up with ideas' might be capturing the immodesty that is typically associated with narcissism.

Again our 15-question OCEAN predictions are very similar to those found by O Boyle et al (2015), even though the latter only includes `fantasy' from their 6 measures of openness and `achievement striving' from their 6 measures of conscientiousness. In O Boyle et al (2015) modesty is a composite of the agreeableness group. Hypothetically removing the predictive power of `is original, comes up with ideas' from the openness group and adding it to the

agreeableness group reduces the predictive power of openness from 26.6 percent to 10.0 percent and increases the predictive power of agreeableness from 35.9 percent to 52.41 percent, where the latter is now almost identical to the predictive power of agreeableness found in O Boyle et al (2015) of 52.8 percent. This further supports the idea that `is original, comes up with ideas' is capturing immodesty.

Most of the predictive power for narcissism comes from low agreeableness, openness and emotional stability, although the predictive power for extraversion is twice as large for narcissism compared to psychopathy (14.5 percent compared to 8.3 percent). This is consistent with O Boyle et al (2015) and Jonason et al (2013).

The regression results and dominance statistics for Machiavellianism are provided in Table 3. Given O Boyle et al (2015) do not include Machiavellianism, the final two columns in Table 3 contain the OCEAN aggregated dominance statistics for psychopathy and narcissism from Tables 1 and 2. Overall the BFT questions predict 34 percent of the total variation in Machiavellianism. The largest three predictors are for `gets nervous easily' (15.8 percent), `is relaxed, handles stress well' (13.9 percent) and `is original, comes up with ideas' (10.6 percent). These are statistically significant at the 3 percent, 27 percent and 12 percent level, respectively. As with psychopathy, conditioning on anger, violent behaviour, modesty and obedience has only a minor effect on the most dominant predictors, since the largest predictors remain as `gets nervous easily' (11.7 percent), `is relaxed, handles stress well' (13.7 percent) and `is original, comes up with ideas' (8.7 percent). The $R^2$ increases to 0.37 and it appears that this is completely explained by the extra predictive power of `I am obedient' (6.5 percent).

The final three columns of Table 3 show that most of the predictive power for Machiavellianism comes from the emotional stability and openness variables, and much less is explained by low agreeableness. Machiavellianism appears more similar to psychopathy in terms of the predictive power of emotional stability (38.3 percent compared to 27.3 percent) and to narcissism with regard to the predictive power of openness (24.4 percent compared to 26.6 percent). The predictive power of agreeableness (14.2 percent) is much lower than for psychopathy (49.4 percent) and narcissism (35.9 percent), although the signs on the composite variables are the same.

Table 4 provides a direct comparison of the direction and magnitudes of the predictors across the Dark Triad measures. The `is original, comes up with ideas' variable is positively correlated with all three Dark Triad measures, though the predictive power is much larger for narcissism (16.6 percent) and Machiavellianism (10.6 percent) than for psychopathy (3.32 percent) If this variable is capturing immodesty then this result is consistent with O Boyle et al (2015) who find a negative relationship for modesty, which is larger for narcissism (24 percent) than for psychopathy (2.2 percent). Most of the other variables have the same sign for all three Dark Triad measures but have different magnitudes in terms of their predictive power. These are often consistent with the existing literature, although it is difficult to make direct comparisons because in most cases the questions are different. The 'sometimes rude to others' variable is positive for all three Dark Triad measures but the magnitude is much larger for psychopathy (30.4 percent) and narcissism (25.0 percent) than for Machiavellianism (9.0 percent). This is consistent with the negative relationship for politeness found in Jonason et al (2013), although they find a similar magnitude across all three Dark Triad measures. Again this could be a consequence of differences in the wording of the questions. Similarly, `has a forgiving nature' is negatively correlated with all three Dark Triad scores but the predictive power is larger for psychopathy (17.0 percent) and narcissism (8.6 percent) than for Machiavellianism (4.13 percent). This is also consistent with the negative relationship for compassion found in Jonason et al (2013).

Finally, all three Dark Triad measures can be associated with high levels of emotional stability, though this is generally larger for Machiavellianism. The `is relaxed, handles stress well' variable is positively correlated with all three Dark Triad scores. The dominance statistics are 6.14, 9.69 and 13.89 for psychopathy, narcissism and Machiavellianism respectively. Similarly, the `worries a lot' variable is negatively correlated with Dark Triad measures, with dominance statistics of 5.85, 5.48 and 8.58 for psychopathy, narcissism and Machiavellianism respectively. The `gets nervous easily' variable is negative for psychopathy and Machiavellianism with large predictive power (15.3 percent and 15.8 percent, respectively), whereas this is positively correlated with narcissism and has little predictive power (2.4 percent). Overall, these results are consistent with Jonason et al (2013) who find a positive relationship for emotional stability across all three Dark Triad measures.

The dominance statistics detailed in Table 4 are used to generate the three Dark Triad scores as described in Section 3.1. The regression of the generated Dark Triad scores on the actual

DTDD Dark Triad measures using the student data, produces gradient coefficients (standard errors) of 0.745 (0.099), 1.236 (0.168) and 0.882 (0.113) for psychopathy, narcissism and Machiavellianism respectively. These are all statistically significant at the 1 percent level.

The three Dark Triad scores are analogously constructed using the BHPS and the USS data. The descriptive statistics are provided in Table 5. These are based on a sample of 10552 individuals from the 2005 BHPS and 30743 individuals from the 2012 USS. The Cronbach alpha reliability coefficients are 0.72, 0.72 and 0.73 for psychopathy, narcissism and Machiavellianism respectively. The mean score for psychopathy was 3.27 in 2005 and this is slightly lower than that for narcissism (3.53) and Machiavellianism (3.87). The mean scores have fallen over time and the distribution has significantly widened for psychopathy and narcissism. However, there has been no statistically significant change in the distribution of the Machiavellianism score.

## 5. The Characteristics of Workers with Relatively Higher Dark Triad Scores.

We begin by describing the human capital and socio-economic characteristics of workers with high Dark Triad scores. Table 6 presents the partial correlations for the Dark Triad scores using the 41295 individuals from the BHPS and USS aged between 20 and 65. Given the high correlation between the three scores, we have controlled for the other two scores in all of our analyses. Table 6 shows that higher psychopathy scores can be associated with being male, being slightly older, having a university or post-graduate degree, living in London, being in relatively poorer health and being out of employment. Higher psychopathy scores amongst men is consistent with Forth et al. (1996). The psychopathy scores are also positively correlated with the narcissism scores and Machiavellianism scores, as expected. The fall in the average psychopathy score over time is higher (-0.048 vis-à-vis -0.07 in Table 5), once human capital and socio economic characteristics are taken into consideration.

Table 6 also demonstrates that individuals with relatively higher narcissism scores tend to be male, slightly younger, have a university degree, be in relatively poor health and be out of employment. This is consistent with Foster et al (2003) who also find that men report being more narcissistic than females. There has been a slight fall in the average narcissism score over time, once other human capital and socio economic characteristics are taken into

consideration. Finally, Table 6 also shows that individuals with higher Machiavellianism scores tend to be male, slightly older, to not have a university degree, be in relatively good health and be in employment. There has been an increase in the average Machiavellianism score over time.

In summary, Machiavellianism scores are higher amongst those who are in good health and are employed, whereas psychopathy and narcissism scores tend to be higher for those who are in relatively poor health and are not in employment. Also, the gender correlations are stronger for psychopathy and Machiavellianism than they are for narcissism. We also find significantly higher verbal fluency for high narcissism and significantly higher numerical ability for psychopathy, after conditioning on personal characteristics (results not shown). This is broadly supportive of Paulhus and Williams (2002). These results are available from the author on request.

We now return to our first hypothesis. Table 7 presents the key marginal effects from the estimation of equation (1) for the likelihood of employment in broad occupations, after conditioning on human capital and socio-economic characteristics. The occupations are ranked from left to right in descending order of average monthly gross pay. The first row shows that individuals who score relatively higher on psychopathy are more likely to be employed in elementary occupations, as administrators/clerical workers, as process/plant/machine operatives, and to a lesser extent in skilled trades. However, those who score highly on narcissism are much more likely to be employed as managers, professionals or as associate professionals, with managerial occupations clearly demonstrating the highest partial correlation. A one point move up the narcissism scale results in a 4.6 percent higher probability of being employed as a manager. Individuals who score high on Machiavellianism are also more likely to be employed as managers since a one point move up the Machiavellianism scale results in a 3.0 percent higher probability of being employed as a manager, although they are less likely to be employed as professionals. Higher Machiavellianism scores can also be associated with a higher propensity to be employed as process/plant/machine operatives, but to a much smaller extent.

There is clear evidence that Dark Triad scores are higher in managerial occupations (for narcissism and Machiavellianism scores) and in professional occupations (for narcissism scores) relative to the average worker, which strongly suggests that our measures do correctly

predict the occupational characteristics of Dark Triad workers since they show that Dark Triad workers select into occupations of power and leadership.

Table 8 presents the marginal effects from the estimation of equation (1) for the likelihood of employment in broadly defined industries. Again the sectors are ranked from left to right in descending order of their average wage. This shows that higher psychopathy scores can be associated with higher employment probability in the `other services' sector. A one point move up the psychopathy scale results in a 4.5 percent higher probability of being employed in the other services sector. This is supportive of our first hypothesis, given that this sector contains the real estate, advertising and management consultancy firms. High narcissism scores are associated with employment in the education sector whilst high Machiavellianism scores are associated with employment in the health sector. Managers in the education sector are likely to consist of university vice chancellors, deans, university professors and head teachers, whilst in the Health sector they will consist of Trust CEOs and surgeons. Workers in the financial sector are no more (or less) likely to have high Dark Triad scores relative to the average worker. Again these results are broadly supportive of our first hypothesis.

## 6. The Financial Returns to the Dark Triad Scores.

In this section we look for evidence of our second hypothesis by estimating the wage returns associated with our generated Dark Triad scores. Table 9 presents the results of equation (2), where we regress log wages in 2014 on the Dark Triad scores in 2012, before additionally conditioning on human capital and socio-economic status in 2014, followed by cognitive test scores in 2012, and finally conditioning on detailed occupation categories (with 81 categories) and sector in 2014. We find significant pay premiums associated with all three Dark Triad scores. Additionally conditioning on human capital and socio-economic characteristics explains away most of the premium to narcissism scores. We find an average pay penalty to psychopathy and narcissism falls to zero once we further condition on cognitive ability. This suggests that the higher levels of qualifications associated with higher narcissism scores (observed in Table 6) and the higher levels of numeric ability associated with higher psychopathy scores, explain the higher wage returns. Overall therefore, Table 9 suggests that one point move up the Machiavellianism scale provides a 4.0 percent increase in gross monthly pay, even after fully conditioning on worker characteristics.

The existing empirical evidence suggests that personality traits are largely fixed over the life time, (Mueller and Plug 2006; Viinikainen et al. 2010). However, any changes would be much less likely to occur after the age of 30 and therefore the magnitude of any reverse causality will be small for an older sample. Table A1 in the appendix restricts the sample to workers aged over 30. This shows that the unexplained Machiavellianism pay premium observed in Table 9 is robust to excluding younger workers, although the fully conditional return to Machiavellianism increases slightly to 4.4 log percentage points (4.5 percent).

Table 10 reports the quantile regression results for our sample of 13582 workers, again where wages and characteristics are taken from 2014, whilst psychopathy, narcissism, Machiavellianism and cognitive test scores are measured in 2012. Table 10 shows that there are unexplained pay premiums to Machiavellianism at all levels, except the $10^{th}$ percentile. At the $75^{th}$ percentile of the wage distribution these are around 3.1 log percentage points, whilst there are larger premiums at the $90^{th}$ percentile of 5.8 log percentage points. These premiums are within occupations and sectors. The top three occupations in the top tenth percentile of the earnings distribution consist of Functional Managers (20 percent); Teaching Professionals, the highest paid of which are likely to be Vice Chancellors, University Deans and to some extent Professors (11 percent); and Production Managers (7 percent).

It has been documented that workers with high Dark Triad scores are more likely to work longer hours, (Clark et al 2010), and consequently this could partly explain their higher monthly wages. Table 11 therefore presents the results from the estimation of equations (2) and (3) using the log of hourly wages from the 2014 USS and Dark Triad scores in 2012. The sample is now slightly smaller at 13551 as a consequence of missing information on hours normally worked. The premiums to high Machiavellianism scores remain very strong at 3.7 log percentage points at the $90^{th}$ percentile.

Finally, if Machiavellianism is over-represented in highly productive firms, then it might be the case that the higher wage premiums for Machiavellianism are capturing the higher productivity associated with working in a more productive sector. O'Boyle et al (2012) find that counter-productive work behaviour can be associated with higher psychopathy and narcissism scores, whilst Grijalva et al (2015b) showed that this is much less correlated with narcissism, once other behavioural characteristics are taken into consideration. Also

Kopelman et al (1992) find that narcissism can be associated with low job satisfaction and that this leads to a higher labour turnover. So the effect of employing more workers with higher Dark Triad scores could affect firm productivity in a variety of different ways.

As a final robustness test we include industry level log gross value added per hours worked as a measure of sectoral productivity in equations (2) and (3), clustering the standard errors on industry.[3] Table 12 shows that there is a positive wage premium from working in a productive industry of around 13 percent for a 1 percent higher GVA per hour, on average. The pay premium to higher Machiavellianism scores remains statistically significant throughout the distribution (above the 10th percentile) and is particularly large at the 90$^{th}$ percentile, at around 3.8 log percentage points (3.9 percent). This provides clear evidence to support our second hypothesis. Machiavellian Dark Triad workers do receive a non-productivity related financial reward.

## 7. Concluding Comments.

Measures of psychopathy, narcissism and Machiavellianism all involve low agreeableness. They mainly differ in terms of their scores in openness, extraversion and emotional stability. So the first part of the paper predicts Dark Triad scores using data from a student survey. We then construct Dark Triad measures that are fundamentally capturing low agreeableness, combined with differing facets of openness, extraversion and emotional stability. The paper makes an important contribution to the existing literature. Our constructed Dark Triad scores predict results that are consistent with the existing psychology literature. Higher narcissism and Machiavellianism scores are associated with a higher probability of employment in managerial occupations, whilst higher psychopathy is related to a higher incidence of employment in `other services' sector. These results support the literature whereby Dark Triad workers select into occupations that involve power and leadership.

The second half of the paper uses the constructed Dark Triad scores to find evidence of significant wage premiums to high Machiavellianism, which exists across the whole distribution, except at the 10$^{th}$ percentile, and which are largest at the 90$^{th}$ percentile. We find no such premiums for psychopathy or narcissism. The pay returns we uncover are robust to controlling for human capital, socio-economic characteristics, cognitive test scores,

occupations and industries. They also exist for hourly wages and remain significant for Machiavellianism at around 2 percent at the mean, and 4 percent at the 90$^{th}$ percentile, even after we have controlled for sectoral level productivity. Given that our constructed Dark Triad scores are not perfect predictors of actual Dark Triad scores, one might conjecture that these results are likely to be underestimates of the true unobservable pay premiums.

The higher productivity, in terms of higher average wages, associated with psychopathy and narcissism are explained by their higher qualifications and numerical test scores. Unexplained financial rewards only exist for the snakes in suits.[4] High Machiavellianism workers are snakes because they possess the manipulative, exploitative and untrustworthy traits from the Dark Triad characteristics, and they are in suits because they are more likely to be employed in managerial occupations.[5] This suggests that high Machiavellianism scores may be associated with better skills for pay bargaining and that their unexplained pay premiums exist as a consequence of their duplicity, although it is impossible using these data, to identify to what extent these might arise as a consequence of other non-productivity related reasons, such as making more job moves, see Kopelman et al (1992), and these are important avenues for future research. The paper has utilised the DTDD psychological test that is frequently used by psychologists to identify socially aversive personalities. Two main suggestions emerge from this research. The first is that tests like the DTDD should be integrated into publically available data to facilitate further research. The second is that the Big Five constructs, which are less transparent than the DTDD when measuring Dark Triad traits, can be used by organisations during the hiring and promotion process to potentially make financial gains throughout the entire earnings distribution, with the largest occurring at 90$^{th}$ percentile.

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Table 1: The Multivariate Regression Results for Psychopathy Defined using the DTDD Taxonomy.

| | | Model (1) | | | Model (2) | | | Dominance OCEAN | O' Boyle (2015) OCEAN |
|---|---|---|---|---|---|---|---|---|---|
| | | Coeff | T-stat | Dominance | Coeff | T-stat | Dominance | | |
| O1 | Is original, comes up with ideas | 0.097 | 1.03 | 3.32 | 0.076 | 0.78 | 2.63 | | |
| O2 | Values artistic, aesthetic experiences | -0.070 | -0.98 | 2.26 | -0.049 | -0.67 | 1.74 | | |
| O3 | Has an active imagination | -0.004 | -0.01 | 0.69 | -0.035 | -0.48 | 0.84 | | |
| | Total Openness | | | | | | | 6.27 | 0.00 |
| C1 | Does a thorough job | 0.116 | 1.51 | 0.83 | 0.139* | 1.75 | 1.00 | | |
| C2 | Tends to be lazy | 0.057 | 1.09 | 4.80 | 0.063 | 1.02 | 4.6 | | |
| C3 | Does things efficiently | -0171* | -2.63 | 2.64 | -0.171* | -2.56 | 2.51 | | |
| | Total conscientiousness | | | | | | | 8.27 | 17.90 |
| E1 | Is talkative | -0.111* | -1.90 | 6.21 | -0.109* | -1.79 | 5.74 | | |
| E2 | Is outgoing/sociable | 0.007 | 0.01 | 1.51 | -0.011 | -0.14 | 1.54 | | |
| E3 | Is reserved | -0.029 | -0.53 | 1.11 | -0.044 | -0.76 | 0.95 | | |
| | Total extraversion | | | | | | | 8.83 | 9.60 |
| A1 | Is sometimes rude to others | 0.243* | 3.87 | 30.44 | 0.239* | 3.61 | 27.12 | | |
| A2 | Has a forgiving nature | -0.167* | -2.76 | 16.95 | -0.184* | -3.03 | 17.16 | | |
| A3 | Is considerate and kind | 0.072 | 0.90 | 2.00 | 0.080 | 0.94 | 1.75 | | |
| | Total agreeableness | | | | | | | 49.39 | 41.20 |
| N1 | Worries a lot | -0.009 | -0.15 | 5.85 | -0.001 | -0.00 | 5.03 | | |
| N2 | Gets nervous easily | -0.165* | -2.85 | 15.26 | -0.144* | -2.51 | 12.68 | | |
| N3 | Is relaxed, handles stress well | 0.013 | 0.25 | 6.14 | 0.037 | 0.73 | 6.33 | | |
| | Total emotional stability | | | | | | | 27.25 | 31.50 |
| I am often angry | | | | | -0.079 | -0.63 | 1.02 | | |
| I am sometimes violent | | | | | 0.239 | 1.52 | 5.35 | | |
| I am good looking | | | | | 0.101 | 0.70 | 0.88 | | |
| I am obedient | | | | | -0.016 | -0.12 | 1.11 | | |
| Constant | | 3.674* | 4.65 | | 3.277* | 3.47 | | | |
| $R^2$ | | | 0.31 | | | 0.32 | | | |
| Total | | | | 100 | | | 100 | 100 | 100 |

Notes: Using 158 undergraduate students from the King's College London Business School. Students were anonymously surveyed using the Moodle online module website. Psychopathy is defined in accordance with Jonason and Webster (2010) and the questions are identical (and appeared in the same order) to those in Jonason et al (2013). The Cronbach alpha reliability coefficient is 0.75. The results presented in model (1) are from the OLS multivariate regressions of the 15 Big Five facets on the psychopathy DTDD scores. Model (2) additionally conditions on measures for modesty, anger/hostility and straightforwardness/compliance. The dominance statistics are the standardised relative weights or epsilon, Johnson (2000). These determine the relative importance of each variable based on its contribution to the overall fit statistic (the $R^2$). The final two columns aggregate the dominance statistics from model (1) to the Big Five Taxonomy level and compare these to those found in O Boyle et al (2015). * denotes statistically significant at the 10 percent level.

Table 2: The Multivariate Regression Results for Narcissism Defined using the DTDD Taxonomy.

| | | Model (1) | | | Model (2) | | | Dominance OCEAN | O' Boyle (2015) OCEAN |
|---|---|---|---|---|---|---|---|---|---|
| | | Coeff | T-stat | Dominance | Coeff | T-stat | Dominance | | |
| O1 | Is original, comes up with ideas | 0.334* | 2.46 | 16.55 | 0.349* | 2.64 | 12.82 | | |
| O2 | Values artistic, aesthetic experiences | -0.143* | -2.32 | 3.14 | -0.148* | -2.41 | 2.55 | | |
| O3 | Has an active imagination | 0.186 | 1.49 | 6.88 | 0.134 | 1.06 | 4.14 | | |
| | Total Openness | | | | | | | 26.57 | 1.10 |
| C1 | Does a thorough job | 0.112 | 1.00 | 0.53 | 0.223* | 1.80 | 0.88 | | |
| C2 | Tends to be lazy | 0.005 | 0.01 | 2.09 | -0.003 | -0.04 | 1.93 | | |
| C3 | Does things efficiently | -0.268* | -2.60 | 2.85 | -0.314* | -3.16 | 2.95 | | |
| | Total conscientiousness | | | | | | | 5.47 | 1.10 |
| E1 | Is talkative | -0.061 | -0.68 | 1.72 | -0.058 | -071 | 1.39 | | |
| E2 | Is outgoing/sociable | 0.118 | 1.09 | 5.26 | 0.120 | 1.07 | 4.05 | | |
| E3 | Is reserved | -0.172* | -1.93 | 7.48 | -0.143 | -1.56 | 5.03 | | |
| | Total extraversion | | | | | | | 14.46 | 13.10 |
| A1 | Is sometimes rude to others | 0.268* | 3.42 | 25.0 | 0.304* | 3.69 | 20.0 | | |
| A2 | Has a forgiving nature | -0.194* | -2.41 | 8.59 | -0.155* | -2.15 | 5.58 | | |
| A3 | Is considerate and kind | -0.008 | -0.08 | 2.27 | 0.011 | 0.12 | 1.53 | | |
| | Total agreeableness | | | | | | | 35.86 | 52.80 |
| N1 | Worries a lot | -0.073 | -0.95 | 5.48 | -0.089 | -1.25 | 4.51 | | |
| N2 | Gets nervous easily | 0.149 | 1.45 | 2.44 | 0.233* | 2.30 | 2.88 | | |
| N3 | Is relaxed, handles stress well | 0.172* | 1.75 | 9.69 | 0.199* | 2.12 | 8.41 | | |
| | Total emotional stability | | | | | | | 17.61 | 31.90 |
| I am often angry | | | | | 0.337* | 2.00 | 5.69 | | |
| I am sometimes violent | | | | | -0.193 | -1.23 | 0.80 | | |
| I am good looking | | | | | 0.302* | 2.03 | 4.77 | | |
| I am obedient | | | | | -0.537* | -3.12 | 9.98 | | |
| Constant | | 2.529* | 2.13 | | 1.786 | 1.36 | | | |
| $R^2$ | | | 0.31 | | | 0.39 | | | |
| Total | | | | 100 | | | 100 | 100 | 100 |

Notes: Using 158 undergraduate students from the King's College London Business School. Students were anonymously surveyed using the Moodle online module website. Narcissism is defined in accordance with Jonason and Webster (2010) and the questions are identical (and appeared in the same order) to those in Jonason et al (2013). The Cronbach alpha reliability coefficient is 0.88. The results presented in model (1) are from the OLS multivariate regressions of the 15 Big Five facets on the narcissism DTDD scores. Model (2) additionally conditions on measures for modesty, anger/hostility and straightforwardness/compliance. The dominance statistics are the standardised relative weights or epsilon, Johnson (2000). These determine the relative importance of each variable based its contribution to the overall fit statistic (the $R^2$). The final two columns aggregate the dominance statistics from model (1) to the Big Five Taxonomy level and compare these to those found in O Boyle et al (2015). * denotes statistically significant at the 5 percent level.

Table 3: The Multivariate Regression Results for Machiavellianism Defined using the DTDD Taxonomy.

| | | Model (1) | | | Model (2) | | | Dominance OCEAN | Psychopathy | Narcissism |
|---|---|---|---|---|---|---|---|---|---|---|
| | | Coeff | T-stat | Dominance | Coeff | T-stat | Dominance | | | |
| O1 | Is original, comes up with ideas | 0.158 | 1.58 | 10.62 | 0.144 | 1.41 | 8.66 | | | |
| O2 | Values artistic, aesthetic experiences | -0.219* | -3.30 | 9.04 | -0.198* | -2.78 | 7.47 | | | |
| O3 | Has an active imagination | 0.154 | 1.60 | 4.75 | 0.103 | 0.98 | 3.06 | | | |
| | Total Openness | | | | | | | 24.41 | 6.27 | 26.57 |
| C1 | Does a thorough job | 0.155 | 1.58 | 0.90 | 0.210* | 2.29 | 1.40 | | | |
| C2 | Tends to be lazy | 0.171* | 2.64 | 8.72 | 0.163* | 2.37 | 7.35 | | | |
| C3 | Does things efficiently | -0.004 | -0.01 | 2.83 | -0.016 | -0.18 | 2.40 | | | |
| | Total conscientiousness | | | | | | | 12.45 | 8.27 | 5.47 |
| E1 | Is talkative | -0.043 | -0.61 | 1.06 | -0.044 | -0.062 | 0.96 | | | |
| E2 | Is outgoing/sociable | 0.160* | 2.00 | 7.37 | 0.152* | 1.76 | 6.51 | | | |
| E3 | Is reserved | -0.046 | -0.69 | 2.29 | -0.049 | -0.76 | 2.04 | | | |
| | Total extraversion | | | | | | | 10.72 | 8.83 | 14.46 |
| A1 | Is sometimes rude to others | 0.100 | 1.18 | 9.00 | 0.111 | 1.24 | 8.42 | | | |
| A2 | Has a forgiving nature | -0.127* | -1.94 | 4.13 | -0.132* | -1.92 | 3.97 | | | |
| A3 | Is considerate and kind | -0.064 | -0.63 | 1.03 | -0.045 | -0.42 | 0.80 | | | |
| | Total agreeableness | | | | | | | 14.16 | 49.39 | 35.86 |
| N1 | Worries a lot | -0.018 | --0.31 | 8.58 | -0.016 | -0.29 | 7.30 | | | |
| N2 | Gets nervous easily | -0.137* | -2.22 | 15.79 | -0.089 | -1.39 | 11.72 | | | |
| N3 | Is relaxed, handles stress well | 0.073 | 1.10 | 13.89 | 0.104 | 1.56 | 13.73 | | | |
| | Total emotional stability | | | | | | | 38.26 | 27.25 | 17.61 |
| I am often angry | | | | | 0.005 | 0.05 | 0.53 | | | |
| I am sometimes violent | | | | | 0.197 | 1.22 | 4.29 | | | |
| I am good looking | | | | | 0.152 | 1.11 | 2.93 | | | |
| I am obedient | | | | | -0.222 | -1.57 | 6.46 | | | |
| Constant | | 1.248 | 1.09 | | 0.777 | 0.66 | | | | |
| $R^2$ | | | 0.34 | | | 0.37 | | | | |
| Total | | | | 100 | | | 100 | 100 | 100 | 100 |

Notes: Using 158 undergraduate students from the King's College London Business School. Students were anonymously surveyed using the Moodle online module website. Machiavellianism is defined in accordance with Jonason and Webster (2010) and the questions are identical (and appeared in the same order) to those in Jonason et al (2013). The Cronbach alpha reliability coefficient is 0.85. The results presented in model (1) are from the OLS multivariate regressions of the 15 Big Five facets on the Machiavellianism DTDD scores. Model (2) additionally conditions on measures for modesty, anger/hostility and straightforwardness/compliance. The dominance statistics are the standardised relative weights or epsilon, Johnson (2000). These determine the relative importance of each variable based on its contribution to the overall fit statistic (the $R^2$). The final three columns aggregate the dominance statistics from model (1) to the Big Five Taxonomy level and compare these to those found in Tables 1 and 2. * denotes statistically significant at the 5 percent level.

Table 4: Summary of the Psychopathy, Narcissism and Machiavellianism Predictions Using the Big Five Composite Questions.

| **The BHPS Big Five Personality Questions** | | **Psychopathy** | | **Narcissism** | | **Machiavellianism** | |
|---|---|---|---|---|---|---|---|
| | | Direction | Dominance | Direction | Dominance | Direction | Dominance |
| O1 | Is original, comes up with ideas | + | 3.32 | + | 16.55 | + | 10.62 |
| O2 | Values artistic, aesthetic experiences | - | 2.26 | - | 3.14 | - | 9.04 |
| O3 | Has an active imagination | - | 0.69 | + | 6.88 | + | 4.75 |
| C1 | Does a thorough job | + | 0.83 | + | 0.53 | + | 0.90 |
| C2 | Tends to be lazy | + | 4.80 | + | 2.09 | + | 8.72 |
| C3 | Does things efficiently | - | 2.64 | - | 2.85 | - | 2.83 |
| E1 | Is talkative | - | 6.21 | - | 1.72 | - | 1.06 |
| E2 | Is outgoing/sociable | + | 1.51 | + | 5.26 | + | 7.37 |
| E3 | Is reserved | - | 1.11 | - | 7.48 | - | 2.29 |
| A1 | Is sometimes rude to others | + | 30.44 | + | 25.00 | + | 9.00 |
| A2 | Has a forgiving nature | - | 16.95 | - | 8.59 | - | 4.13 |
| A3 | Is considerate and kind | + | 2.00 | - | 2.27 | - | 1.03 |
| N1 | Worries a lot | - | 5.85 | - | 5.48 | - | 8.58 |
| N2 | Gets nervous easily | - | 15.26 | + | 2.44 | - | 15.79 |
| N3 | Is relaxed, handles stress well | + | 6.14 | + | 9.69 | + | 13.89 |
| Total | | | 100 | | 100 | | 100 |

Notes: See Tables 1 to 3.

Table 5: Descriptive Statistics for the Dark Triad Scores.

| | Mean | | | Standard Deviation | | |
|---|---|---|---|---|---|---|
| | **2005** | **2012** | **2012-2005** | **2005** | **2012** | **2012-2005** |
| Psychopathy ($\alpha$ = 0.72) | 3.27 | 3.20 | -0.070* (0.007) | 0.6455 | 0.6587 | 0.0132* |
| Narcissism ($\alpha$ = 0.72) | 3.53 | 3.48 | -0.045* (0.006) | 0.5620 | 0.5724 | 0.0104* |
| Machiavellianism ($\alpha$ = 0.73) | 3.87 | 3.87 | 0.006 (0.007) | 0.6139 | 0.6487 | 0.0348* |

Notes: Using 10552 individuals from the 2005 BHPS and 30743 from the 2012 USS aged 20-65. Where * denote statistically significant at the 10 percent level.

Table 6: How Human Capital and Socio-Economic Characteristics Relate the Dark Triad Scores.

| | **Psychopathy Score** | | **Narcissism Score** | | **Machiavellianism Score** | |
|---|---|---|---|---|---|---|
| | Coefficient | Standard Error | Coefficient | Standard Error | Coefficient | Standard Error |
| Female | -0.093* | 0.004 | -0.022* | 0.004 | -0.081* | 0.004 |
| Age | 0.002* | 0.0002 | -0.005* | 0.0001 | 0.002* | 0.0002 |
| Postgraduate | -0.002* | 0.005 | 0.070* | 0.005 | -0.048* | 0.005 |
| College Graduate | -0.009* | 0.006 | 0.053* | 0.005 | -0.024* | 0.005 |
| Live in London | 0.029 | 0.006 | -0.001 | 0.006 | 0.007 | 0.007 |
| In Good Health | -0.043* | 0.005 | -0.022* | 0.005 | 0.171* | 0.005 |
| Employed | 0.002 | 0.004 | -0.012* | 0.006 | 0.025* | 0.004 |
| Year = 2012 | -0.048* | 0.005 | 0.026* | 0.004 | 0.045* | 0.005 |
| Narcissism score | 0.534* | 0.005 | - | - | 0.048* | 0.005 |
| Psychopathy score | - | - | 0.380* | 0.004 | 0.350* | 0.005 |
| Machiavellianism | 0.366* | 0.005 | 0.356* | 0.004 | - | - |
| Constant | -0.313* | 0.018 | 1.131* | 0.014 | 0.837* | 0.017 |

Notes: See Table 5.

Table 7: Key Marginal Effects from a Multinomial Logit for the Likelihood of Being Employed in Broad Occupations

| N= 24762 | Managers | | Professionals | | Associate Professionals | | Skilled Trades | | Process/Plant /Machine | | Administrators /Clerical | | Personal Services | | Elementary | | Sales | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Coeff | SE | Coeff | SE | Coeff | SE | Coeff | SE | Coeff | SE | Coeff | SE | Coeff | SE | Coeff | SE | Coeff | SE |
| Psychopathy | -0.004 | 0.007 | -0.008 | 0.005 | 0.0003 | 0.007 | 0.005* | 0.003 | 0.012* | 0.003 | 0.015* | 0.006 | -0.032* | 0.005 | 0.016* | 0.005 | -0.004 | 0.004 |
| Narcissism | 0.046* | 0.008 | 0.021* | 0.006 | 0.016* | 0.009 | -0.011 | 0.004 | -0.020* | 0.003 | -0.020* | 0.007 | -0.001 | 0.005 | -0.028* | 0.006 | -0.004 | 0.005 |
| Machiavellianism | 0.030* | 0.007 | -0.016* | 0.005 | 0.002 | 0.007 | 0.009 | 0.003 | 0.009* | 0.003 | -0.029* | 0.006 | 0.007 | 0.005 | -0.008 | 0.005 | -0.003 | 0.004 |
| Mean Gross Pay £ | 2934.84 | | 2807.60 | | 2180.64 | | 1861.44 | | 1757.18 | | 1411.70 | | 1069.95 | | 1042.48 | | 954.16 | |
| Standard Dev £ | 1894.91 | | 1508.64 | | 1246.40 | | 956.39 | | 832.41 | | 822.57 | | 650.05 | | 713.65 | | 673.87 | |

Notes: Using 6475 employed individuals from the 2005 BHPS and 18287 from the 2012 USS aged 20-65. Where * denotes statistically significant at the 10 percent level. Mean gross pay is measured monthly.

Table 8: Key Marginal Effects from a Multinomial Logit for the Likelihood of Being Employed in Broad Sectors

| N= 24762 | Finance | | Agriculture | | Utilities | | Construction | | Manufacturing | | Education | | Other Services | | Health | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Coeff | SE | Coeff | SE | Coeff | SE | Coeff | SE | Coeff | SE | Coeff | SE | Coeff | SE | Coeff | SE |
| Psychopathy | 0.001 | 0.003 | 0.003 | 0.002 | -0.002 | 0.002 | 0.004 | 0.002 | 0.007 | 0.005 | -0.037* | 0.005 | 0.045* | 0.008 | -0.021* | 0.006 |
| Narcissism | -0.005 | 0.004 | -0.001 | 0.003 | 0.003 | 0.002 | -0.005* | 0.003 | 0.000 | 0.006 | 0.032* | 0.006 | -0.009 | 0.010 | -0.015* | 0.007 |
| Machiavellianism | -0.001 | 0.003 | 0.002 | 0.002 | 0.001 | 0.001 | 0.001 | 0.002 | 0.004 | 0.005 | -0.014* | 0.005 | -0.013 | 0.008 | 0.019* | 0.006 |
| Mean Gross Pay £ | 2603.59 | | 2406.82 | | 2253.09 | | 2232.18 | | 2127.94 | | 1871.69 | | 1821.57 | | 1704.03 | |
| Standard Dev £ | 2260.63 | | 1682.69 | | 1169.05 | | 1274.61 | | 1204.06 | | 1249.51 | | 1427.27 | | 1166.34 | |

Notes: See Table 7.

Table 9: Gross Monthly Wage Returns to the Dark Triad Scores in 2014.

| | **No Controls** | | **Conditioning on Five Human Capital Groups and Socio-Economic Characteristics in 2014** | | **Additionally Conditioning on Cognitive Ability in 2012** | | **Additionally Conditioning Detailed Occupation and Sector in 2014** | |
|---|---|---|---|---|---|---|---|---|
| | Coefficient | SE | Coefficient | SE | Coefficient | SE | Coefficient | SE |
| Psychopathy in 2012 | 0.103* | 0.016 | 0.023* | 0.012 | 0.013 | 0.012 | 0.012 | 0.011 |
| Narcissism in 2012 | 0.088* | 0.019 | 0.002* | 0.014 | -0.001 | 0.014 | -0.013 | 0.013 |
| Machiavellianism in 2012 | 0.071* | 0.016 | 0.041* | 0.012 | 0.044* | 0.012 | 0.040* | 0.011 |
| $R^2$ | 0.04 | | 0.46 | | 0.47 | | 0.57 | |

Notes: Using 13582 individuals with non-missing earnings and cognitive ability measures from the 2012 and 2014 USS aged 20-65. Where * denote statistically significant at the 10 percent level. Human capital characteristics are measured five groups for higher degree, first degree, A-levels, GCSEs and Other qualifications (the default is no qualifications). Socio-economic characteristics are age, number of unemployment spells in the last 12 months, whether the respondent is female, lives in London, works part time and reports good health. Cognitive ability is measured using quintile variables for working memory, verbal fluency and numeric ability.

Table 10: Quantile Regressions for the Conditional Dark Triad Monthly Pay Differential, 2014.

| | **10th** | | **25th** | | **50th** | | **75th** | | **90th** | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Coefficient | SE | Coefficient | SE | Coefficient | SE | Coefficient | SE | Coefficient | SE |
| Psychopathy in 2012 | 0.012 | 0.019 | 0.008 | 0.012 | 0.002 | 0.010 | 0.009 | 0.010 | 0.006 | 0.015 |
| Narcissism in 2012 | -0.018 | 0.023 | -0.015 | 0.014 | -0.005 | 0.012 | -0.005 | 0.012 | -0.017 | 0.018 |
| Machiavellianism in 2012 | 0.014 | 0.019 | 0.035* | 0.012 | 0.040* | 0.010 | 0.031* | 0.010 | 0.058* | 0.015 |

Notes: See Table 9. Socio-economic characteristics are age, number of unemployment spells in the last 12 months, whether the respondent is female, lives in London, works part time and reports good health. Cognitive ability is measured using quintile variables for working memory, verbal fluency and numeric ability. Detailed occupation and sector controls are also included.

Table 11: Quantile Regressions for the Conditional Dark Triad Hourly Pay Differential, 2014.

| | **Mean** | | **10th** | | **25th** | | **50th** | | **75th** | | **90th** | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Coeff | SE | Coeff | SE | Coeff | SE | Coeff | SE | Coeff | SE | Coeff | SE |
| Psychopathy in 2012 | 0.011 | 0.010 | 0.0018 | 0.007 | 0.006 | 0.010 | 0.007 | 0.008 | 0.001 | 0.011 | -0.004 | 0.016 |
| Narcissism in 2012 | -0.001 | 0.012 | -0.018 | 0.016 | -0.010 | 0.012 | -0.004 | 0.010 | 0.013 | 0.005 | 0.012 | 0.019 |
| Machiavellianism in 2012 | 0.021* | 0.010 | -0.004 | 0.013 | 0.017* | 0.010 | 0.017* | 0.008 | 0.023* | 0.011 | 0.037* | 0.016 |

Notes: For 13551 individuals with non-missing hours, earnings and cognitive ability measures from the 2012 and 2014 USS aged 20-65. Socio-economic characteristics are age, number of unemployment spells in the last 12 months, whether the respondent is female, lives in London, works part time and reports good health. Cognitive ability is measured using quintile variables for working memory, verbal fluency and numeric ability. Detailed occupation and sector controls are also included.

Table 12: Mean and Quantile Regressions for the Conditional Dark Triad Hourly Pay Differential (Conditioning on Productivity), 2014.

| | **Mean** | **10th** | **25th** | **50th** | **75th** | **90th** |
|---|---|---|---|---|---|---|
| Psychopathy in 2012 | 0.011 | 0.014 | 0.008 | 0.004 | 0.001 | -0.001 |
| | (0.007) | (0.015) | (0.009) | (0.009) | (0.011) | (0.016) |
| Narcissism in 2012 | -0.002 | -0.023 | -0.013 | -0.007 | 0.014 | 0.019 |
| | (0.007) | (0.018) | (0.011) | (0.010) | (0.013) | (0.019) |
| Machiavellianism in 2012 | 0.022* | -0.002 | 0.017* | 0.022* | 0.019* | 0.038* |
| | (0.010) | (0.015) | (0.010) | (0.008) | (0.011) | (0.015) |
| Log GVA/Hour 2000-2010 | 0.131* | -0.103* | 0.097* | 0.109* | 0.138* | 0.173* |
| | (0.045) | (0.016) | (0.010) | (0.009) | (0.012) | (0.017) |

Notes: See Table 11. Standard errors in parentheses.

Table A1: Gross Monthly Wage Returns to the Dark Triad for Workers Age 31-65, 2014.

| | **No Controls** | | **Conditioning on Five Human Capital Groups and Socio-Economic Characteristics in 2014** | | **Additionally Conditioning on Cognitive Ability in 2014** | | **Additionally Conditioning on Detailed Occupation and Sector in 2014** | |
|---|---|---|---|---|---|---|---|---|
| | Coefficient | SE | Coefficient | SE | Coefficient | SE | Coefficient | SE |
| Psychopathy in 2012 | 0.101* | 0.017 | 0.020 | 0.013 | 0.010 | 0.013 | 0.011 | 0.012 |
| Narcissism in 2012 | 0.123* | 0.020 | 0.008 | 0.015 | 0.004 | 0.015 | -0.010 | 0.014 |
| Machiavellianism in 2012 | 0.069* | 0.017 | 0.048* | 0.013 | 0.051* | 0.013 | 0.044* | 0.012 |
| $R^2$ | 0.04 | | 0.47 | | 0.48 | | 0.57 | |

Notes: Using 11660 individuals with non-missing earnings and cognitive ability measures from the 2012 and 2014 USS aged 31-65. Standard errors are in parentheses. Where * (**) denote statistically significant at the 5 (10) percent level. Human capital characteristics are measured five groups for higher degree, first degree, A-levels, GCSEs and Other qualifications (the default is no qualifications). Socio-economic characteristics are age, number of unemployment spells in the last 12 months, whether the respondent is female, lives in London, works part time and reports good health. Cognitive ability is measured using quintile variables for working memory, verbal fluency and numeric ability.

[1] The DTDD questions for psychopathy are: `I tend to lack remorse', `I tend to be callous or insensitive', `I tend to be unconcerned with the morality of my actions' and `I tend to be cynical.' For narcissism they are: `I tend to want others to admire me', `I tend to want others to pay attention to me', `I tend to seek prestige or status' and I tend to expect special favours from others'. For Machiavellianism they are: `I tend to manipulate others to get my way', `I tend to exploit others to my own ends', `I have used deceit or lied to get my way' and `I have used flattery to get my way'.

[2] The cross sectional wage equations using the 2005 BHPS and the 2012 USS show similar patterns to those we present in this paper. They also show that the returns to high Dark Triad scores do not significantly change over time. Consequently, it makes sense to focus on the larger and much more informative USS data set. Results for the BHPS and USS cross sections are available from the author on request.

[3] Log of gross real value added per hours worked averaged over 2000 to 2010 is taken from the EU KLEMS data. We match KLEMS data for 32 industries into our USS dataset. We use the ISIC Revision 4 which is available to download at http://www.euklems.net/.

[4] The term `snakes is suits' is taken from the title of the book by Babiak and Hare (2007). They use this term to refer to clinical psychopaths, whereas we have used the term to refer to non-clinical Machiavellianism.

[5] The DTDD questions detailed in endnote 1 show that it is the Machiavellianism questions that capture the manipulative, exploitative and deceptive dark traits.