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The Power of Personality in the ‘New Economy’: Core Self- Evaluations and Earnings in the United Kingdom

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Introduction

The context of work has changed considerably over the last few decades. Technological and institutional change have manifested themselves in fundamental shifts in the occupational and pay structures across most developed countries, resulting in a near collapse in middle-skilled jobs (clerical, manufacturing) and a growth in high-skilled ones (analytical, managerial) (Goos et al 2014; Williams 2013). Nationally representative survey evidence for the United Kingdom reveals that, as a result of these shifts, jobs have steadily become more complex and more demanding (Green 2007; 2011) and in other developed countries (Gallie 2013). Coupled with sweeping trends in work environments, trends in pay-setting reveal a substantial increase in the incidence of performance-based pay and a near collapse in collectively set pay over the last few decades (for example, Bryson et al 2009). These trends are set to continue unabated. Research has long highlighted how certain non-cognitive capabilities (personality traits) are conducive to success in the labour market. In this report, we present suggestive evidence on how the connection between non-cognitive traits with earnings may strengthen in the United Kingdom using the concept of ‘core self-evaluations’ (CSEs) – a well-established model of personality traits in organisational psychology.

Core self-evaluations: an organisational non-cognitive trait

In the organisational psychology literature, CSEs are emerging as a powerful predictor of various work outcomes, including job satisfaction and task performance (Judge and Bono 2001; Judge et al 2009). CSE is a single broad latent construct underlying several conventionally studied non-cognitive traits: self-esteem, locus of control, generalised self-efficacy, and (low) neuroticism (Judge 2009). The concept of CSE is a reflection of an individual’s subconscious fundamental appraisal about themselves, their capabilities, and their functioning in the world. Individuals with high CSE tend to be confident in their abilities, have a positive view of themselves and believe that they can influence their environment through their actions. In contrast, individuals with a low CSE tend to have a negative self-concept, focus on their failures and shortcomings, and view themselves as susceptible to the forces of their environment.

In their seminal study, Judge and colleagues (1997) found that the combined traits of self-esteem, locus of control, generalised self-efficacy, and (low) neuroticism were better predictors of job satisfaction than when considered separately. This finding has been replicated in several other studies. While much of the research on CSE has focused on soft outcomes such as job satisfaction, research more specific to career success demonstrates that high CSEs positively predict job performance (Erez and Judge 2001; Judge 2009) as well. The accrual of almost two decades of research indicates that individuals with high CSEs are overall more successful; they are more motivated, perform better and are more satisfied with their jobs than those with low CSEs (Judge et al 2008; Judge et al 2009). As a concept originating in organisational psychology, rarely has this concept been put to the test with representative data, nor has it been investigated in relation to the changing context of work.

Core self-evaluations and earnings pathways

As a stable trait formed in the early years of life, individuals with high CSEs are more likely to receive favourable treatment from an early age and such early encouragement is likely to facilitate later economic success: Judge and colleagues (2009) found that CSEs predicted income 23 years later in

the United States. They found the predictive validity of CSEs, attractiveness and intelligence on income revealed that CSEs were a more powerful predictor than attractiveness, and almost equal to the effect of intelligence.

Research is suggestive of several possible pathways to earnings gaps between high and low CSE individuals and that this gap may widen. First, CSEs relate to earnings through motivation and performance. Research by Erez and Judge (2001) found that individuals with high CSEs were more motivated to complete challenging tasks, and the authors interpreted this finding to suggest that it was because individuals with high CSEs believed that they had the ability to control and complete the tasks, independent of their actual ability. This suggests that individuals with high CSEs are more motivated to achieve their goals, even when work is challenging.

Second, individuals with high CSEs are more sensitive to reward than those with low CSEs. Noting the concordance between the CSEs literature and approach/avoidance motivation (sensitivity to rewarding stimuli [approach] and avoidance of punishing stimuli [avoidance]), in their review article, Ferris and colleagues (Chang et al 2012; Ferris et al 2013) propose a modified conceptualisation of CSEs whereby high CSE individuals are more approach-oriented and low CSE individuals are more avoidance-oriented. In an empirical test of this conceptualisation, Ferris and colleagues (2013) found that (1) approach motivation mediated the CSE–job satisfaction relationship and (2) avoidance motivation on satisfaction was found to be stronger when success was low (vs. high).

This suggests that individuals with high CSEs are more approach-oriented than those with low CSEs and that those with low CSEs have more of an avoidance orientation and are likely to experience significantly more job dissatisfaction when they are performing poorly. Corroborating evidence was reported in a longitudinal study where individuals with high CSEs were more likely than those with low CSEs to learn from corrective feedback that was in contrast to their self-assessment of their performance (Bono and Colbert 2005). Despite receiving negative feedback about their initial attempts at goal attainment, individuals with high CSEs were undeterred. This implies there could be important motivation and performance differences depending on the type of work and payment system.

Core self-evaluations in the changing landscape of work

Research in work sociology has highlighted fundamental shifts in the structure of work and pay-setting in developed countries over the last few decades. These fundamental shifts in the structure of work organisation may be favourably biased towards high CSE individuals and biased unfavourably against low CSE individuals. Nationally representative survey evidence reveals that jobs have been steadily becoming more complex and more demanding in the United Kingdom. Moreover, trends in pay-setting reveal a substantial increase in the incidence of performance-based pay and a near collapse in collectively set pay over the last few decades.

High CSE individuals may better navigate work in the new economy than low CSE individuals because of differences in performance across work environments that are more demanding and more complex given differences in approach/avoidance propensities to different kinds of stimuli. Low CSE individuals, being less motivated by frequently challenging tasks, are likely to perform poorly in such environments relative to high CSE individuals and this will accordingly be reflected in earnings. If this is the case, smaller differences between high and low CSE individuals should be found in less challenging work environments.

With respect to pay-setting, we expect any premium/penalty associated with high/low CSEs to be muted in environments where pay is set collectively as opposed to individually, as pay in unionised

workplaces is typically set for the job and not bargained for directly by individuals, so pay is less related to individual performance. In non-union workplaces, CSE-related pay differences are likely to be accentuated as high CSE individuals are not only likely to perform better and be rewarded for it in such contexts, but are more motivated towards, and are perhaps also better able to, bargain for higher pay. Similarly, we expect pay differences in earnings between high and low CSE individuals to be greater in environments where pay is directly contingent on performance through bonuses or piece rates, because high CSE individuals, as opposed to low CSE individuals, are more incentive-oriented and less sensitive to the punishing nature and uncertainty involved in contingent pay-setting environments. Overall, investigating variation across different pay as well as task environments will provide suggestive evidence to the underlying pathways between non-cognitive traits such as CSEs and earnings.

Data and analytical strategy

Data comes from the British Household Panel Survey (BHPS) (Taylor et al 2010). The BHPS is a representative panel survey of all UK households. We use data for the period from 2002 to 2010 – since our CSEs measure was recorded in 2001 – to mitigate against reverse causality.¹ For our analyses, we select employed men and women of working age (20–60 years) with complete information. Since men and women earn differently for a given set of characteristics, and we have no prior beliefs as to why CSEs might be an exception to this, we conduct our analysis separately by gender. All estimations are corrected for sample selection bias since wages are only observed for employed individuals.² The final unbalanced sample consists of 32,732 observations coming from 5,412 respondents.

Our dependent variable is logarithm of real hourly wages, to standardise for differences in hours worked. Following Wu and Griffin (2013), who also use the BHPS, we capture CSEs using six items, proxying for the underlying traits that comprise CSEs. This construction of CSE scores has been externally validated against purpose-built measures of CSEs (Wu and Griffin 2013). Job demands, job control and task complexity are derived from the British Skills and Employment Surveys, a nationally representative series of surveys collecting information on British workers and their job characteristics (Felstead et al 2014) and imputed onto occupation codes in the BHPS. Pay-setting variables (whether pay includes a bonus or piece-rate element and whether pay is set by a union or not) are directly measured in the BHPS.

Since our focus is on the stable (time-invariant) component of a trait, we use the Hausman-Taylor Instrumental Variable (HT-IV) estimator (Hausman and Taylor 1981) which can estimate effects of time-invariant variables, correcting for endogeneity. Since the approach-avoidance framework suggests that there should be important bipolar relationships between CSEs and earnings, we categorise CSE scores into a three-factor variable indicating whether respondents are in the bottom 25% or the top 25% of the gender-specific CSE distribution, with the middle 50% as the reference category.³ This analysis should indicate whether avoidance or approach motivations dominate

¹ We investigated such issues in a set of robustness checks, including the possibility that work environments shape CSEs, using CSEs recorded in 2006 and found broadly similar results supporting the trait-like (stable) nature of CSEs (available from the first author).

² We use a Heckman selection equation to estimate period-specific inverse Mills ratios, which are included in all our second-stage wage regressions. Excluded variables are: parental occupation and number of children.

³ This is the categorisation used in previous trait-earnings research (for example, Heineck 2011; Mueller and Plug 2006). We calculate this separately for men and women as CSE distributions are not identical. We also use cross-sectional survey weights to account for survey design in calculating these.

pathways, as avoidance is delineated at the lower end of the CSE spectrum, while approach is delineated at the upper part.

Results

CSEs and earnings in the United Kingdom

Analysis on the relationship between CSEs and pay in the United Kingdom are reported in Tables 1 (male) and 2 (females). Here we examine the correlation between CSE scores and pay using random effects models (Columns 1 to 3), correcting for clustering in standard errors. These provide a baseline against the Hausman-Taylor IV approach, which makes more flexible assumptions in Column 4. In the most basic specification in Tables 1 and 2, we introduce a set of demographic factors and education, separately for men and women (Column 1).

Since the dependent variable (hourly pay) is the logarithm, coefficients may be given a percentage interpretation. Individuals with a one standard deviation above average CSE in 2001 earn on average 4% higher pay in the case of men, and 3% in the case of women across subsequent waves. Introducing various workplace and job controls in an intermediate model in Column 2 attenuates the effect of CSEs on pay somewhat, by about one-sixth for men and one-quarter for women, suggesting selection and/or sorting into different work environments. Introducing occupation and industry dummies (Column 3), thereby controlling for an even broader aspect of work environment factors which we cannot readily measure, results in almost identical associations.

In Column 4, we repeat the full model but this time using the Hausman-Taylor IV estimator, which has more flexible assumptions regarding the correlations between the independent variables and individual effects, that is, possible endogeneity of the independent variables. The coefficients are of similar magnitude to the random effects estimates, still indicating a small but significant CSE premium of a one standard deviation above average CSEs being associated with a wage premium of 2.7% for both men and women.⁴ Although these effects may appear relatively modest, they are equivalent in size to the union wage premium, for which a large literature exists, indicating they are of substantive importance. Given our theoretical expectations regarding the utility of the approach–avoidance conceptualisation to CSEs, we expect a bipolar relationship between high- and low-level CSEs and earnings, which are masked when the relationship is specified linearly.

⁴ In supplementary models, we controlled for body mass index (BMI) and scores on various cognitive ability scores. These are only available in 2011, which we do not use since it does not contain information on collective bargaining coverage or payment systems. The inclusion of these variables does not alter our substantive findings.

Table 1: Core self-evaluations and male (log) wages

	(1)	(2)	(3)	(4)
	Base	Intermedi ate	Full model	HT-IV
CSE	0.040*** (0.009)	0.034*** (0.007)	0.033*** (0.007)	0.027** (0.010)
Intercept	0.312 (0.227)	0.529** (0.199)	0.573** (0.198)	-0.516 (0.435)
Work controls	No	Yes	Yes	Yes
Individual controls	No	Yes	Yes	Yes
Industry	No	No	Yes	Yes
Occupation	No	No	Yes	Yes
Year	Yes	Yes	Yes	Yes
Region	Yes	Yes	Yes	Yes
R^2	0.301	0.494	0.509	-
R^2 (CSE excluded)	0.294	0.472	0.500	-
Respondents	2,517	2,517	2,517	2,517
Observations	15,702	15,702	15,702	15,702

Source: BHPS/Understanding Society.

Notes: Random effects estimator with standard errors clustered on respondent in Columns 1–3. Hausman-Taylor IV estimator in Column 4 with bootstrapped standard errors clustered on respondent (100 replications).

Statistical significance: * $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$.

Table 2: Core self-evaluations and female (log) wages

	(1)	(2)	(3)	(4)
	Base	Intermedi ate	Full model	HT-IV
CSE	0.030*** (0.008)	0.022*** (0.007)	0.022*** (0.007)	0.027** (0.010)
Intercept	0.968*** (0.204)	1.098*** (0.178)	1.201*** (0.174)	-0.509 (0.400)
Work controls	No	Yes	Yes	Yes
Individual controls	No	Yes	Yes	Yes
Industry	No	No	Yes	Yes
Occupation	No	No	Yes	Yes
Year	Yes	Yes	Yes	Yes
Region	Yes	Yes	Yes	Yes
R ²	0.274	0.515	0.543	-
R ² (CSE excluded)	0.270	0.498	0.542	-
Respondents	2,895	2,895	2,895	2,895
Observations	17,030	17,030	17,030	17,030

Source: BHPS/Understanding Society.

Notes: See Table 1 notes.

Statistical significance: * p<0.05; ** p<0.01; *** p<0.001.

Non-linearities in the relationship between CSEs and earnings

The findings above suggest that the higher one's CSE, the higher is one's pay, replicating US research for the United Kingdom. In Table 3, we use the CSEs three-factor variable indicating whether avoidance or approach motivations dominate pathways. The results reveal that having a very low CSE (stronger avoidance motivation) is associated with lower average pay relative to those with moderate CSE levels. When CSEs are considered in this non-linear specification, there appears to be no premium for having a very high CSE (stronger approach motivation) for both men and women. The coefficients for high CSEs are in the expected direction (positive) but fail to reach conventional levels of statistical significance. Although CSEs are associated with a pay premium when considered linearly, being at the avoidant end of the spectrum is in fact associated with a pay penalty, with no additional premium for very high CSEs.

Even though the negative effects of very low CSEs may appear modest, in terms of average lifetime earnings, the 5.8% penalty for low CSE men and the 3.6% penalty for low CSE women would translate into roughly the equivalent of two years of 'lost' earnings for a low CSE man compared with a man with moderate CSE, and about a year and half for women (assuming a constant effect over a 40-year career). The findings in Table 3 suggest, then, when it comes to earnings, the avoidant pathways associated with low CSEs seem to play an important part in the pay determination process. Given the theoretical distinction between approaching and avoidant traits, for the remainder of the report, we adopt this categorical approach to defining CSEs.⁵

⁵ Our qualitative findings are similar when we use the categorical approach or entering squared and cubed CSEs terms. We prefer the categorical measure as it has a simpler interpretation and is less subject to error.

Table 3: Non-linearities in the relationship between core self-evaluations and (log) wages

CSEs	Males		Females	
	(1) RE	(2) HT-IV	(2) RE	(4) HT-IV
Bottom 25%	-0.057*** (0.016)	-0.058* (0.023)	-0.036* (0.015)	-0.036* (0.017)
Top 25%	0.006 (0.022)	0.022 (0.030)	0.027 (0.020)	0.024 (0.030)
Controls	X	X	X	X
Year	X	X	X	X
Region	X	X	X	X
Industry	X	X	X	X
Occupation	X	X	X	X
R ²	0.508	–	0.543	–
Respondents	2,517	2,517	2,895	2,895
Observations	15,702	15,702	17,030	17,030

Source: BHPS/Understanding Society.

Notes: See Table 1 notes.

Statistical significance: * p<0.05; ** p<0.01; *** p<0.001.

CSEs and earnings under different task and pay-setting environments

Turning to the connections between CSEs and pay under different task and pay-setting environments, in Tables 4 (tasks) and 5 (pay-setting) we compare the non-linear effects of CSEs on wages for various meaningful subsamples of workers.⁶ Here, we select individuals who are observed under one type of task or pay-setting environment for all the waves in which they appear and examine the differences in pay across high and low levels of CSEs (with moderate levels as the reference). This allows us to examine the effects of CSEs on pay for sets of workers within comparable work environments and allows for a comparison in pay across theoretically meaningful but stable work environments representing ‘the new economy’. In the analyses of the effect of CSEs under different pay-setting environments, we substitute log hourly wages as the dependent variable with annual log pay since some performance-based payments such as bonuses are low frequency and might not show up clearly in hourly pay.⁷

In Table 4, we find that individuals with low CSEs earn systematically lower wages across the different kinds of *most* challenging task environments, that is, in the most demanding jobs and those with the most complex tasks. The effects are particularly large – around twice as large in some cases – than the differences reported across all job types in Table 3. Interestingly, in task environments with very low demands and those with simple tasks, we find little evidence of systematic differences in pay according to CSEs. Thus, Table 4 provides support for having low CSEs (avoidant-type) being particularly punishing in the most challenging of task environments, but virtually absent in the least challenging.

Regarding the connection between CSEs and earnings under different pay-setting environments, in Table 5 we find that low CSEs are associated with a stronger pay penalty across types of contingent

⁶ We include inverse Mills ratios in each of these models in a two-stage procedure as before, conditioning on probability of receiving each of the model-specific work environments.

⁷ Results based on hourly wages reach the same conclusions, albeit effect sizes are smaller.

pay for men, but slightly more mixed for women. This suggests that low CSE (avoidance motivation) is particularly punishing in environments where pay is closely connected to performance, especially for men. This is especially true for workers with an element of their pay based on a bonus, in which, compared with piece-rates, a more sustained effort and focus is required because of the typically longer time-horizon (for example, annual) than with piece-rates (for example, daily or weekly).

Table 4: Non-linearities in the relationship between core self-evaluations and (log) pay under different task environments

Task environment	CSEs	Males		Females	
		(1) RE	(2) HT-IV	(3) RE	(4) HT-IV
Low demands job	Bottom 25%	-0.076 (0.041)	-0.051 (0.034)	-0.061 (0.037)	-0.049 (0.030)
	Top 25%	0.002 (0.051)	0.024 (0.048)	0.012 (0.055)	0.011 (0.048)
High demands job	Bottom 25%	- 0.117***	- 0.085***	-0.080* (0.032)	-0.052* (0.026)
	Top 25%	-0.010 (0.035)	-0.017 (0.029)	0.012 (0.055)	0.011 (0.048)
Simple tasks	Bottom 25%	-0.040 (0.027)	-0.040 (0.026)	-0.012 (0.033)	-0.022 (0.032)
	Top 25%	0.069* (0.034)	0.049 (0.033)	0.055 (0.039)	0.031 (0.035)
Complex tasks	Bottom 25%	-0.086* (0.040)	-0.065* (0.032)	-0.121* (0.047)	-0.093** (0.034)
	Top 25%	0.032 (0.051)	0.024 (0.044)	-0.049 (0.068)	-0.072 (0.048)

Source: BHPS/Understanding Society.

Notes: See Table 1 notes. Controls omitted to save space.

Statistical significance: * p<0.05; ** p<0.01; *** p<0.001.

Table 5: Non-linearities in the relationship between core self-evaluations and (log) pay under different pay-setting environments

Pay environment	CSEs	Males		Females	
		(1) RE	(2) HT-IV	(3) RE	(4) HT-IV
Non-contingent pay	Bottom 25%	-0.068*** (0.024)	-0.064*** (0.022)	-0.060* (0.029)	-0.061* (0.025)
	Top 25%	0.000 (0.029)	0.009 (0.028)	0.071 (0.040)	0.035 (0.043)
Bonus	Bottom 25%	-0.081** (0.026)	-0.077** (0.024)	-0.061* (0.030)	-0.056* (0.027)
	Top 25%	0.010 (0.030)	0.004 (0.030)	0.068 (0.041)	0.031 (0.045)
Piece rate	Bottom 25%	-0.106*** (0.021)	-0.071*** (0.019)	-0.064** (0.023)	-0.036* (0.018)
	Top 25%	0.023 (0.024)	0.018 (0.022)	0.052 (0.029)	0.034 (0.022)
Individual bargaining	Bottom 25%	-0.099*** (0.029)	-0.066** (0.024)	-0.086* (0.036)	-0.063* (0.030)
	Top 25%	0.055 (0.031)	0.034 (0.026)	0.077 (0.046)	0.016 (0.041)
Collective bargaining	Bottom 25%	-0.078*** (0.023)	-0.061** (0.023)	-0.051* (0.026)	-0.025 (0.023)
	Top 25%	0.004 (0.030)	-0.005 (0.030)	0.030 (0.033)	0.031 (0.031)

Source: BHPS/Understanding Society.

Notes: See Table 1 notes.

Statistical significance: * p<0.05; ** p<0.01; *** p<0.001.

Examining the relationship between CSE and earnings for two further subsamples of workers, those whose pay is set on an individual basis and those whose pay is set on a collective basis, we too find negative effects for low CSEs, but the magnitudes vary across these two kinds of pay-setting environments for both men and women. The negative effect of low CSEs is stronger in non-union jobs, where the penalty for avoidant personality is larger. Indeed, in the case of women, a low CSE has no statistically significant association with pay in unionised workplaces. Taken together, Table 5 suggests that the effects of low CSEs are very slightly stronger in work environments where pay is more tightly linked to performance and individual bargaining ability in pay-setting plays a greater role, and weaker in environments where pay is likely to be linked to individual performance and bargaining. However, overall, stronger differences are found across task than pay environments.

Conclusions

We demonstrate that the non-cognitive construct of CSEs is strongly correlated with earnings in the United Kingdom. Consistent with the approach–avoidance framework, we find a pay penalty for very low CSEs. However, we find little extra benefit for high CSEs. Our findings highlight how low CSE individuals, having lower earnings overall, have even lower earnings in the more challenging and incentive-based work environments that are characteristic of the ‘new economy’. As jobs continue to become more demanding and complex, and as pay-setting continues to become more performance-based and individualised, our findings provide *prima facie* evidence that non-cognitive traits are set to become a stronger predictor of labour market success over the coming decades.

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