



# The effects of personality traits on adult labor market outcomes: Evidence from siblings<sup>☆</sup>



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## ABSTRACT

While large literatures have shown that cognitive ability and schooling increases employment and wages, an emerging literature examines the importance of so-called “non-cognitive skills” in producing labor market outcomes. However, this smaller literature has not typically used causal methods in estimating the results. One source of heterogeneity that may play an important role in producing both personality and other non-cognitive skills and labor market outcomes is family background, including genetic endowments. This paper is the first to use sibling differences to estimate the associations between personality on employment and wages and is also able to control for many other sources of heterogeneity, including attractiveness, cognitive ability, schooling, occupation, and other factors. Overall, the findings suggest that personality measures have important associations with labor market outcomes in adulthood and that the results vary considerably by demographic group. The findings also highlight the potential role of extraversion in being associated with favorable labor market outcomes, which has not been documented in many other studies.

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## 1. Introduction

The associations between cognitive ability and labor market outcomes and other measures of economic success have been documented in multiple social science fields for several decades, with a long history in economics (Becker, 1964; Griliches, 1977). While psychologists and sociologists, among others, have also focused on the importance of so called “non cognitive skills”, economists have only recently pursued this research (see Bowles et al., 2001; Almlund et al., 2011 for reviews). This imbalance between research with a focus on cognitive skills relative to non-cognitive skills also stands in contrast to findings from several “gold standard” interventions, where non-cognitive skills have seemed to play a substantial role in benefits from programs. For example, the Perry Preschool Program, which was a randomized, expensive enrichment intervention for disadvantaged young children, has been shown to have major effects on life outcomes, measured through age 40, by fostering non-cognitive skills such as the ability to plan and self-control, rather than measures of IQ (Heckman et al., 2010b).

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Similarly, the long term follow up of Project STAR, a class size reduction program in Tennessee, indicates that, while test score increases were not maintained after the completion of the program, the long term impacts on outcomes could have been caused by the fostering of non-cognitive skills (Dee and West, 2008; Chetty et al., 2010). Thus, increasing understanding of the associations, and robustness of associations, between specific measures of non-cognitive skills on later outcomes is an important area of inquiry.

There has been recent growth in the economic analysis of non-cognitive skills and economic success, and much of the research has focused on personality traits, as they seem to be linked to important adult socioeconomic measures. Typically, measures of conscientiousness have been found to be positively related to earnings, and measures of neuroticism are often negatively associated with labor market outcomes. However, the methods used to empirically link these personality measures are still advancing and the literature is not yet as mature as the research examining causal effects of cognitive skills. Indeed, little research to date has been able to control for family factors and genetic backgrounds that could affect both non-cognitive skill development and future life outcomes.

This paper uses a national sample, with a large subsample of siblings and twins, to examine whether measures of personality are associated with labor market success as an adult. In particular, sibling fixed effects models will be used to understand the relationship between within-family differences in personality and within family variation in earnings and other labor market outcomes. Unlike much of the literature, findings suggest relatively large relationships between measures of extraversion that are comparable to the effects of skills or attractiveness. On the other hand, the associations between labor market outcomes and conscientiousness are less robust to controls for family factors. This finding of the fragility of the association is contrary to much of the earlier research in this area. The results also suggest important heterogeneity in some relationships by gender, childhood socioeconomic status, and race. Specifications that control for occupational sorting as well as educational attainment are often similar.

## 2. Background literature

While the literature linking cognitive skills to economic success is a substantial area of economics research, as well as research in other social sciences, the effects of non-cognitive skills have only recently been examined by economists. Generally, an additional year of schooling has been shown to increase wages by 8–10% per year (Card, 1999). Likewise, IQ has been shown to increase labor market success (Mueller and Plug, 2006).

There is also evidence from the economics literature that non-cognitive skills, including measures of personality, are associated with human capital outcomes. Specifically, Cunha et al., 2010 show that 12% of the variance in educational attainment is explained by personality measures (compared to 16% accounted for by cognitive ability measures). Almlund et al. (2011) survey the emerging literature and suggest that conscientiousness is the most predictive personality trait for educational attainment and achievement. Additionally, Goldberg et al. (1998) and van Eijck and de Graaf (2004) show negative correlations between neuroticism, extraversion, and agreeableness and educational attainment.

There is also a small but growing economics literature that ties measures of personality with labor market outcomes. Bowles et al. (2001) outline a conceptual framework linking wage premia with personality traits and suggest the sources could include the degree of future orientation (in setting incentive schedules), personal efficacy, and reduced disutility of effort. Almlund et al. (2011) summarize the growing empirical literature by noting important roles for two personality measures, conscientiousness and neuroticism. For example, Nyhus and Pons (2005), Salgado (1997), and Hogan and Holland (2003) have each found important associations between conscientiousness and wages and job performance. Uysal and Pohlmeier (2011) find associations between unemployment duration and conscientiousness and neuroticism.

Although there are growing literatures that examine associations between personality measures and human capital and labor market outcomes, there is still much unknown about how to define and measure personality so that it can be reasonably included in economic models. While there is a large literature in psychology and other disciplines that has sought to understand and categorize personality, Almlund et al. (2011) propose the interpretation that personality is a strategy function for responding to life situations, where personality traits and other influences are mapped into measured personality through the function. This conceptualization could make sense if personality was exogenous and stable. Indeed, a major theme from research in psychology is the stability of personality traits beginning in young adulthood (Mischel and Shoda, 2008), and for some traits, like cognitive ability, that evolve early in life. For example, Roberts (2009) defines personality traits as “the relatively enduring patterns of thoughts, feelings, and behaviors that reflect the tendency to respond in certain ways under certain circumstances.” Recently, economists have shown incredibly high stability in personality traits for working age individuals over a four year period (Cobb-Clark and Schurer, 2011).

With some documentation of the stability of personality outlined, the next question is how to measure personality. While there has been a long and overlapping history between measuring cognitive skills and personality (see Almlund et al., 2011 for details), in the 1970s psychologists coalesced around a widely shared list of key traits, the

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