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ABSTRACT

Demand for Personality Traits, Tasks, and Sorting*

In job ads, employers express demand for personality traits when seeking workers to perform tasks that can be completed with different behaviors (e.g., communication, problem-solving) but not when seeking workers to perform tasks involving narrowly prescribed sets of behaviors such as routine and mathematics tasks. For many tasks, employers appear to demand narrower personality traits than those measured at the Big Five factor level. The job ads also exhibit substantial heterogeneity within occupations in the tasks mentioned. Workers may thus sort based on personality-derived comparative advantages in tasks into jobs rather than occupations. In the National Longitudinal Survey of Youth 1997, we confirm that personality sorting based on tasks occurs at both the occupation and job levels. In this sample, however, there is little evidence of task-specific wage returns to personality traits, which would influence the supply of traits to jobs with particular tasks. This may explain why personality sorting based on tasks in the sample is very limited in spite of the correlations between tasks and employers' demands for traits.

JEL Classification: D22, J23, J24, J33, M51

Keywords: personality, tasks, sorting, job ads, employer demand

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1. INTRODUCTION

Personality consists of the "patterns of thoughts, feelings and behaviors that reflect the tendency to respond in certain ways to circumstances" (Roberts, 2009). Job tasks shape the circumstances of work, and thus personality ought to influence how workers perform some tasks. Consistent with this view, personality traits have been shown to influence job performance for jobs requiring particular tasks (e.g., Mount et al., 1998; Judge and Zapata, 2015). In this paper, we ask two related questions. First, do employers demand workers with particular traits for work involving certain tasks? Second, do workers with particular traits match to jobs and occupations based on the required tasks? We investigate whether this personality sorting based on tasks occurs for a larger set of tasks and traits than previous studies, whether it occurs at both the job and occupation levels, and whether it is driven by task-specific wage returns to traits.[1]

To address the first question, we analyze the text of job ads posted to Monster.com over a two-week period in 2006 and report the correlations between employers' demands for personality traits and the general, routine, manual, and mathematics tasks mentioned in the ads. The general tasks are tasks required to different degrees in most jobs that can be completed with different behaviors.[2] The strong situation hypothesis (Cooper and Withey, 2009) posits that personality matters less in situations in which most individuals agree on what represents an appropriate behavioral response. Many general tasks can be performed with different behaviors (e.g., different styles of communication), and personality traits—individual tendencies—may influence the behaviors workers choose to complete these tasks. By contrast, workers performing routine (i.e., repetitive), manual, or knowledge-domain specific tasks like mathematics may find that there are fewer behaviors for completing these tasks. Thus we expect the demands for traits to be correlated with general tasks but not with routine, manual, and mathematics tasks.[3]

To identify employers' personality trait demands, we follow the approach outlined in Brenčič and McGee (2023) wherein we identify words in ads associated with the Big Five personality traits using trait dictionaries from Goldberg (1981) and John (1990) while also removing "false positives." We extend the approach to consider employers' demands for more specific traits. Psychologists have demonstrated the importance of more narrowly defined traits known as facets for individual behaviors (Hough, 1992; Paunonen and Ashton, 2001). While there is broad agreement on the five-factor structure of personality, there remains debate surrounding the number and organization of the facet structure of personality (e.g., Hofstee et al., 1992; Roberts et al., 2005). DeYoung et al. (2007) demonstrated that the facets of each Big Five trait from two major personality inventories load primarily on two latent factors, which they refer to as the *aspects* of each Big Five trait. For extroversion, they label the aspects as enthusiasm and assertiveness; for conscientiousness industriousness and orderliness; for openness-to-experience intellect and openness (A); for agreeableness compassion and politeness; and for emotional stability non-volatility and non-withdrawal.[4] We measure the aspects by assigning the words in each trait's dictionary to aspect-specific dictionaries.

We present three main findings from the job ads. First, employers' demands for the Big Five traits are correlated with general task requirements in manners consistent with the evidence of links between traits and performance on jobs with specific tasks reviewed in the next section. For instance, ads mentioning communication were 3.1, 2.0 and 1.7 percentage points more likely than other ads to indicate demand for extroversion, agreeableness, and emotional stability, respectively, even after controlling for other required tasks, the occupation, the education and experience requirements, and the length of the ad. By contrast, employers' demands for every trait except conscientiousness are mostly negatively correlated or uncorrelated with routine,

manual, and mathematics task requirements. This latter finding adds to the evidence in Brenčič and McGee (2023) that employers' personality demands are uncorrelated with knowledge domain-specific skills such as finance and software skills in the same data.

Second, employers demand more specific traits than those measured at the Big Five factor level. In particular, the measured demands for extroversion and agreeableness mask heterogeneity in what employers are actually asking for. For the aspects of extroversion, nearly four times more ads express demand for assertiveness than for enthusiasm. For the aspects of agreeableness, nearly two times more ads express demand for politeness than express demand for compassion. Likewise certain tasks are closely associated with demand for one aspect of a trait but not the other. Communication tasks, for instance, are positively correlated with assertiveness and politeness but only weakly correlated or uncorrelated with enthusiasm and compassion.

Third, the twelve measured task requirements explain similar amounts of the variation in personality demands as the 249 occupations. Despite clear relationships to tasks and occupations, however, employers' personality demands remain largely unexplained. Occupations account for no more than 4.3% of the variation in employers' demands for any trait in the ad sample. A possible explanation for the heterogeneity in occupational trait demands is that occupations explain only between 1 and 12% of the variance in the general tasks mentioned—the very tasks for which employers demand personality traits in our sample. If occupations are heterogeneous in the general tasks required on any job, the matching of workers to tasks based on personality traits may occur more at the job level than at the occupation level.

With this in mind, we turn to the second question. Specifically, we examine the extent of personality sorting by tasks and occupations among respondents in the National Longitudinal Survey of Youth 1997 (NLSY97), a longitudinal survey of individuals who were between 12 and

16 at the end of 1996 whose entry into the labor market roughly coincides with our measurement of employers' demands for traits in 2006. To measure the Big Five traits, we use responses to the Ten Item Personality Inventory (Gosling et al., 2003). To measure task requirements at the occupation level, we use measures from the Occupational Information Network (O*NET) for the same set of tasks measured in the ad sample. To measure task requirements at the job level, we exploit the fact that in 2017 and 2019 the NLSY97 asked respondents about specific tasks on their jobs. We then document the correlations between respondents' personality traits and the task requirements of their jobs measured at the occupation and job levels.

We present four main findings from the NLSY97 sample. First, personality traits are correlated with general tasks measured at the occupation level but not with routine, manual, or mathematics tasks—suggesting that personality sorting into occupations on the basis of tasks occurs. That said, each personality trait is correlated with fewer general task requirements than in the job ad sample. While the job ads suggest that employers demand personality traits broadly for workers performing many general tasks, workers may gravitate toward occupations with particular tasks requiring their traits based on their preferences over tasks or the returns to tasks.

Second, neither the tasks measured at the occupation level nor occupations themselves explain a large share of the variation in respondents' traits, which is consistent with our finding from the job ads. The occupation-specific tasks explain at most 1.8 percent of the variation in respondents' emotional stability, while occupations explain at most 8 percent of the variation in extroversion. Third, job-specific tasks are correlated with personality traits even after controlling for occupations and explain nearly the same share of the variation in personality traits as the tasks measured at the occupation-level. This finding confirms that personality sorting on the basis of tasks occurs within as well as between occupations.

Fourth, we find little evidence from log-wage regressions of task-specific wage returns to the Big Five traits. Extroverts earn more when employed in occupations requiring more teamwork, while more open individuals earn more when employed in occupations requiring more communication. More agreeable individuals earn more when employed in occupations requiring caring and service tasks, which could explain why agreeable individuals match to jobs involving caring and service tasks. In general, however, the absence of task-specific wage returns to traits implies that workers do not have compelling pecuniary incentives to match to jobs with particular tasks even when employers demand their traits for these tasks, which could explain why we find that tasks and occupations explain so little of the variation in personality traits in the NLSY97 sample.

Our findings contribute to the literatures on personality and job tasks in several ways. First, the evidence on how the demands for personality traits relate to required job tasks sheds light on when these traits matter for employment from the perspective of employers. By contrast, studies relating traits to performance on jobs with specific tasks observe only the performance of workers who match to these jobs. Their findings reflect both the demand and supply of personality traits to jobs with particular tasks. For example, Judge and Zapata (2015) hypothesized that conscientiousness would be positively related to performance on jobs requiring attention-to-detail, but their findings based on observed job performance do not support this hypothesis. By contrast, we find a significant positive correlation between employers' demand for conscientiousness and work requiring attention-to-detail. Our findings underscore the endogenous matching of workers to jobs insofar as we find that the demands for personality traits are correlated with most general tasks but workers' personality traits tend to be correlated with at most one task required on their jobs.

Second, our findings highlight the need to investigate the role of narrower traits than those measured at the Big Five level in the labor market. If employers seek and workers match to jobs on the basis of narrower personality traits, research on the role of personality traits in labor markets using measures at the Big Five factor level—most of the economics literature on personality—may suffer from substantial measurement error if the relevant underlying personality construct is a narrower trait.

Third, we contribute to growing evidence from job ads that jobs in even narrowly defined occupations are very heterogeneous. Deming and Kahn (2018) show that skill requirements vary considerably within occupations in job ads, while Marinescu and Wolfhoff (2020) use information from job titles to show that jobs in the same occupation vary in terms of their specialization and positioning in firm hierarchies. We find that job ads in occupations differ considerably both in terms of the tasks required and the personality traits demanded. Furthermore, we find that personality sorting into jobs occurs in part based on tasks that vary within occupations. This adds to evidence of the importance of within-occupation task variance in Autor and Handel (2013) and Cassidy (2017), who demonstrate that job-specific tasks varying within occupations have explanatory power in wage regressions.

Finally, our findings offer useful perspective on the literature relating personality to occupational attainment. Psychologists have long associated personality with vocational choice (e.g., Holland, 1966), and Filer (1986), Cobb-Clark and Tan (2011), John and Thomsen (2014), and Wells et al. (2016) document the marginal effects of personality traits on occupational attainment in the United States, Australia and Germany. In the NLSY97, however, we show that the distributions of worker personality traits across occupations are similar for every occupation

and every trait. While there is evidence that workers sort into occupations partly on the basis of personalities, this sorting is remarkably limited.

2. RELATED LITERATURE

2.1 Personality traits and tasks: A conceptual framework

The Big Five personality traits consist of extroversion, conscientiousness, openness-to-experience, agreeableness, and emotional stability. According to McCrae and John (1992), extroverts tend to be more energetic, ambitious, outgoing, and assertive. Conscientious individuals tend to be diligent, well-organized, and neat. Individuals high in openness/intellect have greater need for varied and novel experiences, aesthetic sensitivity, and curiosity. Agreeable individuals tend to be more trusting, compliant, and modest. Emotionally stable individuals tend to be even-tempered and calm.

Almlund et al. (2011) model personality as a response function mapping personality traits into context-specific actions when performing tasks. If tasks can be completed with different actions, personality influences the actions individuals take. Thus personality is more likely to matter when tasks can be completed with different behaviors. Their model formalizes insights from psychology that strong situations—situations that provide clear guidance about expected behavior through rules, structures and cues—constrain the influence of personality because most individuals will agree on the appropriate behavior in the situation (Mischel, 1977; Cooper and Withey, 2009). Consistent with this hypothesis, Judge and Zapata (2015) find that the Big Five personality traits are better predictors of job performance when occupations feature unstructured work, the freedom to make decisions, and a variety of tasks as measured in O*NET.

Applying Almlund et al. (2011) to our setting, we argue that routine tasks often involve performing the same action repeatedly, and manual tasks are often well-defined (e.g., lifting) or

require adherence to procedure (e.g., performing car maintenance). Likewise there may be only one method for completing domain-specific tasks such as engineering calculations or writing mortgage agreements. As a consequence, we do not expect to observe relationships between routine, manual, and knowledge-domain specific task requirements and personality demands. By contrast, there is often no single approach to completing general tasks such as communicating, decision-making and problem-solving, and thus personality may influence how workers carry out these tasks.[5] We provide indirect evidence consistent with our hypothesis insofar as personality trait demands are broadly positively correlated with general tasks while being mostly negatively correlated or uncorrelated with routine and knowledge-domain specific tasks (proxied for using mathematics tasks). The demand for conscientiousness, however, is positively related to most tasks—including routine and manual tasks. Conscientious workers may supply more effort, which could be important on jobs when effort is difficult for employers to monitor.

2.2. Personality traits, job performance, and employer demand

Barrick and Mount (1991) and Tett et al. (1991) documented links between personality and job performance, but the power of personality to predict job performance in these studies was relatively low (Barrick et al., 2001). With this in mind, Judge and Zapata (2015) investigated whether the relationships between traits and performance depend on job tasks by linking the occupations examined in other studies to O*NET variables. Judge and Zapata hypothesized that conscientiousness would be positively related to performance in occupations requiring independence and attention-to-detail; extroversion, agreeableness and emotional stability to performance in occupations requiring social skills and dealing frequently with unpleasant or angry people; and openness to performance in occupations requiring independence and

innovation.[6] Their findings support all of these hypotheses except for the hypothesized positive relationship between conscientiousness and performance on jobs requiring attention-to-detail.

This evidence of relationships between personality and performance on jobs with specific tasks begets the question of whether employers seek out workers with particular traits for jobs with particular tasks. Dunn et al. (1995) and Moy and Lam (2004) asked hiring managers to evaluate hypothetical applicants in select occupations. While both studies found that conscientiousness had the largest effect on these hypothetical hiring decisions, neither study examined the moderating effects of tasks on the role of traits in the hiring process.

Closely related to our study, Wehner et al. (2022) used a discrete choice experiment among recruiters in Germany hiring vocational school graduates to investigate the effects of the Big Five traits on hypothetical hiring decisions for jobs with different task intensities. For analytical tasks, they found that recruiters preferred applicants high in conscientiousness and openness-to-experience. For interactive tasks, recruiters preferred applicants high in extroversion, agreeableness and openness-to-experience. Recruiters did not exhibit preferences for particular traits for non-routine and routine tasks.[7] The latter finding is similar to our finding that routine tasks mentioned in ads are mostly negatively correlated with trait demands.

Our findings complement those of Wehner et al. (2022) in at least three ways. First, we examine expressed employer demands for traits and their relationships to required tasks at the outset of the process of filling vacancies rather than later in the process. Wehner et al. examine the effect of traits on hiring decisions after candidates have been selected from an applicant pool, interviewed, and had a trial workday. Applicants, however, may be screened on personality traits earlier in the process—especially given the use of personality testing in screening. As such,

recruiters' preferences at a particular stage in the hiring process may not reflect employer demand for traits as well as their expressed demands at the outset of the process.

Second, we exploit the rich text data to consider the relationships between a wider set of tasks and personality traits and their aspects. Our findings are consistent with those of Wehner et al. in that extroversion, agreeableness, and openness are positively correlated with interactive tasks (i.e., communication, building and maintaining interpersonal relationships, teamwork, and caring and service tasks) and conscientiousness and openness are positively correlated with analytical tasks (i.e., decision-making and problem-solving). That said, we also document correlations between trait demands and tasks that Wehner et al. do not consider. For instance, manual tasks are positively correlated with the demands for conscientiousness and emotional stability but negatively correlated with the demand for openness.

Finally, Wehner et al. and many studies of job tasks utilize a small number of broad task categories such as abstract, analytical, routine, interactive, or manual tasks (e.g., Autor et al., 2003; Autor and Handel, 2013). Estimates of correlations between trait demands and tasks may be biased toward zero if the tasks are defined too broadly. Furthermore, we use measures of many but narrower tasks to examine the extent to which tasks can explain employer demands for traits and personality sorting. On this front, we demonstrate that though the job tasks referenced in ads are related to demand for personality, they explain relatively little of this demand.

2.3 The roles of personality traits and tasks in the matching of workers to jobs

While many studies have examined the relationship between personality and occupational attainment, less evidence exists on the extent to which workers with different personality traits sort into jobs requiring different tasks. Within the psychology literature, Sutin and Costa (2010) find that more extraverted, conscientious, open and emotionally stable individuals sort into jobs

involving more decision-making, while less agreeable individuals sort into jobs with manual tasks (i.e., physically demanding jobs). Viinikainen et al. (2020) investigate how components of Type A behavior related to facets of extroversion and agreeableness influence how workers sort into jobs with non-routine abstract, non-routine service and routine tasks.

In contrast to our study examining the relationships between the Big Five traits and their aspects and a wide range of tasks, the economics studies in this area mostly focus on the sorting of workers with a particular trait into jobs requiring a particular task. Krueger and Schkade (2008) document that gregarious individuals work in occupations requiring interactions with others. Borghans et al. (2008) examine how workers sort into occupations based on their sociability and occupational requirements for direct and caring tasks. Deming (2017) investigates whether individuals with more social skill—proxied for by measures of sociability and extroversion—sort into jobs requiring communication and interpersonal interactions.

Considering a small set of broad tasks and all of the Big Five traits, Rohrbach-Schmidt et al. (2023) find that workers who are more open, extraverted, and emotionally stable and less conscientious are more likely to work in jobs in which interactive or analytical tasks are the main activity than in jobs with routine manual main tasks. Differences between the task measures and empirical approaches make comparing the findings challenging, but similarities between our findings exist. For instance, we find that communication tasks at the occupation level are positively correlated with workers' extroversion but negatively correlated with their conscientiousness. Perhaps most similar to our study, Rohrbach-Schmidt et al. find that their estimates of the relationships between traits and tasks—which they measure at the job level—are largely unaffected by the inclusion of occupation controls. That is, they too find that much personality sorting to tasks occurs at the job rather than the occupation level. Our study,

however, demonstrates that neither the variation in tasks at the occupation level nor the within-occupation task variation explain a great deal of the variation in personality in our sample.

3. DATA

*3.1 Measuring task requirements using O*NET*

Administered by the U.S. Department of Labor, the Occupational Information Network (O*NET) surveys workers in each occupation about the abilities, skills, and knowledge required on the job as well as the activities and contexts of their work. To identify important general tasks, we relied on a recent survey of employers reporting the top capabilities in performing general tasks they look for when filling vacancies (Capranos and Magda, 2023). We require the task requirements to be measurable at both the occupation-level using O*NET and at the job-level in job ads. We thus exclude tasks that could not be easily identified in job ads even though measures in O*NET exist (e.g., time management) and tasks for which appropriate measures in O*NET do not exist even while they can be identified in ads (e.g., multi-tasking). In the end, we focus on twelve task requirements satisfying these requirements: communications, interpersonal interactions, working in teams, leadership and decision-making, problem-solving, caring and service tasks, independent work, creative tasks, tasks requiring attention-to-detail, routine tasks, manual tasks and mathematics tasks. Table 1 reports the O*NET variables used to create the twelve task requirement measures at the occupation-level.[8]

Merging O*NET variables to other data sets requires mapping O*NET occupations into the occupation categories used in these data sets. O*NET collected these data for 974 occupations using the Standard Occupational Classification (SOC) system.[9] To facilitate the merge to the 2000 U.S. Census, NLSY97 and job ad data, we map the SOC occupations into Dorn's (2009) balanced panel of Census occupation categories. To construct the task

requirement measures, we first take the average of each O*NET variable over all SOC occupations mapping into a single Dorn occupation code. We then merge the occupation-consolidated O*NET data to the 5% sample of the 2000 U.S. Census using the Dorn occupation codes and appropriate cross-walks. We standardize the measures of each O*NET variable in this employment-weighted sample. Finally, we take the average of the employment-weighted standardized variables listed in Table 1 for each task requirement measure before re-standardizing the resulting measures to have mean zero and standard deviation one in the Census sample.[10] These O*NET task measures are merged to the job ad and NLSY97 samples.

3.2 Measuring task requirements in job ads

The job ad sample consists of 142,618 job ads posted to Monster.com from June 26, 2006, to July 8, 2006.[11] Of the 140,193 job ads with text, we restrict the sample to 112,884 ads (84%) for which the occupation could be identified.[12] According to the Bureau of Labor Statistics (2006), there were 3.8 million job openings in July 2006—some of which were existing vacancies (i.e., the stock rather than the flow of new job postings). Given that we observe less than half of the month, our sample accounts for perhaps 10 percent of new job postings in the United States in this period. Using a two-week flow of new vacancies reduces the likelihood that the ads are phantom vacancies, ads for positions that have already been filled or which firms have no intention of filling (Cheron and Decreuse, 2017). Likewise using ads from a single job board means that an ad cannot be scraped more than once from different sites.

The primary advantage of the Monster.com sample is that we have the full-text of the job ads, whereas many studies of job ads rely on keyword-based variables generated by the proprietary algorithms of third-party data providers.[13] Having the full text allows us to identify personality trait descriptive terms and phrases in the ads associated with tasks and review the

contexts in which these terms and phrases appear to eliminate "false positives." The Monster.com sample also has limitations. First, the dataset is much smaller than those in studies using, for instance, Burning Glass datasets. At the same time, the small size is what allows us to review every instance of trait-descriptive terms and phrases associated with tasks to achieve a degree of accuracy where false positives are concerned that may not be possible in larger samples. Second, the occupational distribution of the sample differs from that of the labor force in May 2006—similar to other studies of online job ads (e.g., Rothwell, 2014; Hershbein and Kahn, 2018). Our sample over-represents managers, business operations and financial specialists, engineers, and media and communications occupations, while it under-represents teachers, food preparation and service occupations, office and administrative support occupations, and janitorial occupations. See Brenčič and McGee (2023) for more details. Finally, the job ads are from 2006. This has the advantage of corresponding to the entry of the NLSY97 cohort into the labor market, but employers' demands for personality traits may have changed since. Brenčič and McGee (2023), however, demonstrate that the trait demand measured by occupation continue to predict the personality traits of workers in the NLSY97 in those occupations even ten years after measurement between 2015 and 2019.

To measure task requirements in ads at the job-level, we searched for phrases associated with these tasks. To build dictionaries of phrases associated with tasks, we drew on the definitions of the corresponding O*NET constructs provided in Table 1. In addition, the O*NET questionnaires asking about the level of the construct required on a job give examples of these levels to respondents, and we drew on these examples to identify phrases associated with tasks. Finally, we identified the most common phrases in the job ads and assigned them to the task requirement dictionaries if they were clearly related to one of the tasks in order to minimize the

number of "false negatives" in our measures. We focus primarily on phrases rather than keywords as in Deming and Kahn (2018) because Brenčič and McGee (2023) highlight the preponderance of "false positives" when keywords are used to construct measures from text. We refined our dictionaries by inspecting the phrases appearing in the ads with high frequency to identify false positives that could be replaced by more detailed phrases or removed entirely. The complete list of phrases for each task requirement dictionary is provided in Appendix Table 1.[14]

In addition to the task measures for each ad, we control in the analysis of the next section for the length of the ad in characters, education and experience requirements (if any), the job's location, and the occupation.[15] Similar to the job ads analyzed in Hershbein and Kahn (2018), only 54 percent of job ads included education requirements and 30 percent experience requirements. A total of 249 occupations are represented in the sample.[16]

3.3 Measuring personality requirements in job ads

Our approach to measuring employers' personality trait demands in jobs ads builds on the lexical hypothesis of personality psychology (Allport and Odbert, 1936) which posits that the individual differences that are most significant in daily interactions eventually become encoded in language. Research on the lexical hypothesis ultimately produced lists of trait-descriptive adjectives associated with each of the Big Five personality traits.

Using the lists of over 1,700 trait descriptive adjectives in Goldberg (1981) and John (1990), we identified all instances of these terms in the Monster.com job ads in which the term described the desired worker, the firm itself and its environment, or its current employees. In counting instances wherein the firm describes itself or its current employees, we assume that the firm is attempting to attract similar workers. We further required that the term be used as an adjective rather than another part of speech and that the term be used in a sense relevant to

personality.[17] The latter requirement reflects the fact that some adjectives have meanings unrelated to personality.[18] Every single instance of a trait-descriptive term in the ads was reviewed to ensure that it satisfied these criteria to eliminate false positives.

To measure more narrowly defined personality trait demands, we could assign the adjectives to facet-specific dictionaries. Doing so, however, would raise two issues. First, there remains considerable debate about the number of facets, their definitions, and their relationships to broader traits. Second, assigning adjectives to facets would likely result in significant measurement error because classification errors are more likely with more narrowly defined traits. DeYoung et al. (2007), however, find that the correlations among 15 facet scales from two important Big Five inventories for each trait can be well explained with a two-factor solution. As such, their widely cited study proposes an intermediate level of personality structure between facets and factors consisting of two distinct but correlated "aspects" for each Big Five trait.

Table 2 lists the DeYoung et al. aspects along with the facet scales for each Big 5 trait from the Revised NEO Personality Inventory (Costa and McCrae, 1992) and the Abridged Big Five Circumplex scales from the International Personality Item Pool (Goldberg, 1999) that loaded more highly onto each aspect in their study. While the labels assigned by DeYoung et al. to the aspects are just labels, they were chosen to be adequately descriptive of the latent factor. After reviewing the facet scales involved, we independently assigned each trait descriptive term for each trait to one of its two aspects. Assigning the terms to the coarser aspects rather than facets minimized the risk of classification errors, but grey areas between the aspects exist. In the initial classification, we agreed on the classification of 72 percent of the trait-descriptive terms. We then discussed the disagreements and agreed on a final classification.[19]

3.4 Personality and tasks in the NLSY97

Respondents in the NLSY97 were interviewed annually between 1997 and 2011 and biannually thereafter until 2019, the latest interview round available to researchers. In addition to information about schooling and labor market history, respondents in 2008 completed the Ten Item Personality Inventory (Gosling et al., 2003) on which they rated how well paired traits described them using a 7-point Likert scale. Two responses are then used to create a measure of each Big Five trait, but the brevity of the measure precludes attempting to measure traits at a narrower level. We standardize the Big Five trait measures within the NLSY97 sample to have mean zero and standard deviation one.

We employ two sets of task measures. First, we merge the O*NET variables described above to the NLSY97 data to measure tasks at the occupation level. Second, respondents in 2017 and 2019 described their tasks at work. From their responses, we create indicators for whether their jobs involved "a lot" of face-to-face contact with people other than co-workers or supervisors, supervising or managing others with at least half of their time, solving problems with advanced mathematics at least once a month, daily (non-math) problem-solving, short and repetitive tasks or physical tasks for more than half of their time, and reading documents more than 6 pages long.[20]

We make use of four NLSY97 samples. To examine personality sorting by occupation and occupation-level tasks, our first sample (N = 6,419) includes one observation from each respondent not serving in the military with an observed occupation when interviewed between ages 32 and 34 given that the youngest respondents would have been 34 at the oldest in 2019. To examine personality sorting by job-specific tasks, our second sample includes the first observation from each respondent not serving in the military with an observed occupation from

the 2017 and 2019 interviews (N = 4,941). To examine the wage returns to personality when respondents transition to occupations with particular tasks, our third sample uses all person-year observations in which respondents were older than 18, not enrolled in school nor serving in the military, had non-zero hourly wages and had an observed occupation (N = 59,802). Finally, to examine the wage returns to personality when respondents work in jobs with particular tasks, our fourth sample uses all person-year observations from the 2017 and 2019 interviews in which respondents were older than 18, not enrolled in school nor serving in the military, had non-zero hourly wages and had an observed occupation (N = 7,811). Summary statistics for all of the samples are provided in Appendix Table 3.

4. TASK REQUIREMENTS AND PERSONALITY TRAIT DEMANDS IN JOB ADS

4.1 Descriptive statistics

Column (1) of Table 3 reports the fraction of job ads referencing each task. Communication (39% of ads) was the most common task requirement followed by caring/service tasks (25%), leadership and decision-making (24%) and teamwork (21%). Column (2) reports the mean level of the O*NET measure for the same task using the occupation associated with each job ad. Given how we standardize the O*NET measures, positive values indicate that the jobs in our ad sample are above average in the employment-weighted distribution of occupations in the extent to which they require a task. The jobs in our sample require more problem-solving (0.8), communications (0.76), creative tasks (0.77), and mathematics (0.77) than jobs in most occupations, which reflects the over-representation of white-collar, high-skilled occupations (e.g., managers, accountants, engineers) in our sample of job ads.

Column (3) reports the correlations between the task measures from job ads in Column (1) and the O*NET measures in Column (2). All of the correlations are positive and statistically

significant at the 1 percent level as one would expect if they captured similar constructs. At the same time, the correlations are small—particularly for caring/service tasks (0.01) and independent work (0.01). This reflects measurement error in the ad task measures, within-occupation heterogeneity in job tasks and heterogeneity among employers in their prioritization of the tasks to mention in ads.[21] Column (4) reports the fraction of the variance in the task measures in Column (1) explained by occupations.[22] Occupations explain between 1.1 percent (independent work) and 11.7 percent (caring/service) of the variances of the general tasks—suggesting considerable within-occupation task heterogeneity.[23] In this regard, our findings are similar to Deming and Kahn (2018) who find that occupations explain between 2 and 8 percent of the variances for broadly defined skill requirements but up to 20 percent of the variances for narrowly defined skills closely connected to occupations such as software and finance skills.[24]

Table 4 reports the fraction of ads referencing each personality trait and aspect. Extroversion (23% of ads) and conscientiousness (22%) were the traits most demanded by employers, but the trait means mask differences in employer demands by aspect. For the aspects of extroversion, the number of ads referencing assertiveness is nearly four times the number of ads referencing enthusiasm.[25] For openness, five times as many ads reference intellect as reference the aspect openness (A), while for agreeableness twice as many ads reference politeness relative to compassion. For emotional stability, essentially all references are to non-volatility—primarily because employers seek "stable" workers—and none to non-withdrawal.

Finally, Table 5 reports the fraction of ads referencing personality traits and tasks for ten broad occupational categories like managers, engineers, teachers, etc. Ads for restaurant staff, sales occupations, teachers and managers were the most likely to seek extroverts, but the mixes of assertiveness and enthusiasm (i.e., the aspects of extroversion) are quite different within these

occupations. Nearly four times as many ads for managers reference assertiveness than reference enthusiasm, but the same ratio is only two-to-one for restaurant staff. Conscientiousness is broadly demanded across occupations with most occupations being more likely to reference industriousness than orderliness—except for ads for accountants which reference industriousness and orderliness in equal measure. For most occupations, ads reference politeness twice as frequently as compassion except for ads for medical professionals and teachers that require compassion more frequently and ads for lawyers that almost never require compassion.

In terms of tasks, ads for managers were the most likely to reference communication, interpersonal tasks, and leadership and decision-making. Ads for accountants were the most likely to reference problem-solving, attention-to-detail, independent work, and routine tasks. Ads for medical professionals (i.e., doctors, nurses, dentists, pharmacists) were the most likely to reference working in teams. Ads for sales occupations and restaurant and bar staffs were the most likely to require caring/service tasks. Ads for workers in the construction trades and mechanics and repairers were the most likely to require manual tasks.

Overall, three things are evident in Table 5. First, the personality demand and task measures produce intuitively plausible profiles of occupational categories. Second, employers demand more narrowly defined personality traits for some occupations. Finally, the shares of ads requiring a task and the shares requiring a personality trait are never greater than 0.5 for any task or trait in any occupational category. This suggests substantial heterogeneity in the task content of occupations and employers' desired personalities for workers within occupations.

4.2 Relating personality demands to task requirements

Correlations between employers' trait demands and a task may reflect correlations among tasks.[26] With this in mind, we estimate partial correlations between trait demands and task

requirements by regressing trait demand indicators on the indicators for the task requirements, occupation fixed effects, education and experience requirements, location, and the length of the ad. We incorporate the occupation fixed effects to account for occupation-specific tasks not accounted for in our task measures.

Table 6 reports the estimated partial correlations. The tasks with the largest positive correlations with demand for extroversion are unsurprising: communications, interpersonal interaction, teamwork, caring and service, and creative tasks. The correlations between leadership and decision-making and problem-solving and extroversion are smaller but still positive. The demand for conscientiousness is positively correlated with most general tasks, but especially so for jobs requiring detailed tasks, caring and service tasks, and independent work. Conscientiousness is also highly correlated with manual tasks. These tasks may be difficult for employers to monitor, and thus conscientious workers who supply effort regardless of monitoring may be particularly desirable (Bowles et al., 2001). The demand for openness is most highly correlated with problem-solving and creative tasks.[27] The demand for agreeableness is most highly correlated with teamwork and caring and service tasks. The demand for emotional stability is most highly correlated with independent work—although the correlations between the demand for emotional stability and the tasks are lower than for other traits.

Notably, ads mentioning routine tasks were less likely than similar ads to demand extroversion, conscientiousness, and openness. Likewise, mathematics tasks are negatively correlated with the demands for all personality traits except conscientiousness. Brenčič and McGee (2023) similarly found that employers' demands for the Big Five traits were uncorrelated with software and finance skill requirements. This is consistent with our hypothesis that

personality traits matter less (more) for routine and domain-specific (general) tasks because workers have less (more) discretion in how they complete these tasks.[28]

Table 7 reports partial correlations from regressions using indicators for the personality aspect demands as the dependent variables to examine whether focusing on the Big Five traits obscures important distinctions in the traits that employers seek. Ads requiring manual tasks, for instance, were negatively correlated with assertiveness but positively correlated with enthusiasm. Ads requiring communication were 3.1 percentage points and 1.7 percentage points more likely to require assertiveness and politeness, respectively, but not substantially more likely to require enthusiasm or compassion than similar ads. Assertiveness and politeness may facilitate effective communication. Other tasks such as interpersonal interactions (i.e., relationship building) and teamwork are positively correlated with all four aspects of extroversion and agreeableness—perhaps because these tasks require effective communication but also cooperation. Ads requiring leadership and decision-making tasks are positively correlated with the demand for assertiveness but not enthusiasm while being positively correlated with both politeness and compassion.[29] At the other extreme, the demand for compassion is most highly correlated with ads requiring caring and service tasks—though such tasks are similarly correlated with the demand for politeness.

Overall, our findings are consistent with Borghans et al.'s (2008) conjecture that workers match to interactive jobs requiring different mixes of "direct" and "caring" tasks based on their personalities as firms seek workers with different mixes of assertiveness, politeness and compassion for different tasks. The assignment model in Borghans et al., however, assumes that workers produce output through a combination of tasks where the mix of tasks is defined by their occupation. Workers match to occupations on the basis of task-based comparative advantages

derived from their personalities. As we noted in Table 3, however, occupations explain relatively little of the variance in task requirements in the job ads.

Along these lines, the last two rows of Tables 6 and 7 report the shares of the variance in personality trait and aspect demands explained by the task requirements and by occupations.[30] Occupations with 248 parameters explain no more than 4.3 percent of the variance in any trait or aspect demand measure. By contrast, a vector of just 12 job-specific task requirements can explain as much 3.8 percent of the variation in these measures. In some instances, the job-specific task requirements explain more of the variation in personality demands than occupations—although admittedly neither occupations nor tasks explain much of this variation. If comparative advantages on tasks are job- rather than occupation-specific, it is unclear how important personality sorting into occupations will be in practice.

5. PERSONALITY SORTING IN THE NLSY97

5.1 Personality sorting into occupations

We use the NLSY97 cohort to examine the extent to which workers with different personalities sort into occupations with different tasks. Among respondents interviewed between the ages of 32 and 34 with an observed occupation who were not serving in the military, we examine the extent to which their occupation's O*NET task requirements and the occupations themselves explain the variation in the respondents' traits.[31,32] Table 8 reports coefficient estimates from regressions of the standardized Big Five trait measures on the standardized measures of occupational task requirements from O*NET, age-at-interview indicators, and the complete set of race-gender interactions to account for well-documented race and gender differences in personality measures (Hough et al., 2001; Foldes et al., 2008). We control for all of the task measures simultaneously to account for the correlations among task requirements and

the fact that workers may choose occupations on the basis of their comparative advantage in particular tasks. The estimates indicate that individual traits are correlated with relatively few task requirements measured at the occupation level—a stark contrast to the estimates in Table 6 suggesting that employers' demands for personality traits were broadly correlated with general task requirements measured at the job level.

The estimates in Column (1) indicate that a one standard deviation increase in the level of leadership and decision-making required in an occupation is associated with a 0.170 standard deviation increase in the extroversion of individuals employed on these jobs.[33] The estimates for the remaining tasks, however, are either statistically insignificant or negative in the case of interpersonal interactions. The O*NET task requirements account for only 1.2 percent of the variance in respondents' extroversion. In similar regressions replacing the task requirements with occupation indicators, occupations account for only 8.5 percent of the variance in extroversion.[34]

Similar patterns exist for all of the remaining Big Five traits with only one or two task requirements being correlated with a trait to a significant extent. Conscientiousness is positively correlated with problem-solving (0.221) and negatively correlated with communication (-0.147). Openness is negatively correlated with problem-solving (-0.123) but positively correlated with creative tasks (0.157). Agreeableness is positively correlated with caring and service tasks (0.062) and problem-solving (0.077) but negatively correlated with teamwork (-0.050). Emotional stability is positively correlated with problem-solving (0.099) and caring and service tasks (0.038).[35] For these traits, occupations explain between 6.4 and 7.9 percent of the variance in the traits, while the occupational task requirements explain no more than 1.8 percent of the trait variance. The evidence from the job ads in Table 6 indicates that employers were less likely to express demand for personality traits when the jobs involved routine and mathematics tasks.

Consistent with this lack of employer demand, respondents' personality traits are uncorrelated with routine and mathematics task requirements.

5.2 Personality sorting into job-specific tasks

The estimates from job ads suggest that employers seek out workers with particular personality traits to perform general tasks, but the NLSY97 estimates indicate that—while sorting does occur—it is limited in its extent and relates primarily to a few tasks. The task requirements in ads, however, are measured at the job-level, while the task requirements in Table 8 capture the average level of a task required in an occupation. Workers with particular traits may sort into particular jobs based on the general tasks required on the job. To investigate within-occupation personality sorting based on job-specific tasks, we make use of the fact that in the 2017 and 2019 waves of the NLSY97 respondents indicated whether a limited set of tasks were required on their jobs: frequent interactions with non-coworkers, managing others, problem-solving, reading long documents, repetitive tasks, physical tasks, and math problem-solving. Using one observation per respondent from the 2017 and 2019 waves, we regress the Big Five trait measures on the job-specific task indicators, age and year indicators, the complete set of race-gender interactions, and occupation indicators.

Table 9 reports the coefficient estimates for the job task indicators in these regressions. Respondents who reported engaging in frequent interactions with individuals other than their co-workers and supervisors or spending more than half of their day managing others were more than a tenth of a standard deviation more extroverted than respondents in the same occupations not performing these tasks, but these are the largest partial correlations between the traits and the general job tasks. Respondents who managed others were more conscientious and open than

other respondents in the same occupation. Respondents who engaged in problem-solving were more open. Respondents who interacted frequently with others were more agreeable.

By contrast, engaging in repetitive tasks (i.e., routine tasks) is negatively correlated with all of the Big Five traits and significantly so for conscientiousness, agreeableness, and emotional stability. The negative correlation between emotional stability and repetitive tasks is intriguing because this is the only trait demand positively correlated with routine tasks in the job ads—suggesting that for these jobs employers seek what they tend not to find. Likewise solving math problems is not significantly correlated with respondents' traits, which is consistent with the evidence from job ads that employers do not prioritize personality for these tasks.

The last two rows of Table 9 again report the shares of the variances in traits for which the job-specific tasks and occupations account. Within-occupations, job-specific tasks account for between 0.3 and 1.3 percent of the variance in the traits, while occupations account for six to seven percent of the variance in personality traits. We note that the fractions of the trait variances explained by job-specific tasks are comparable to the fractions explained by the occupational task requirement measures (0.4 to 1.8 percent) in Table 8. Moreover, the regressions in Table 9 control for only seven tasks—of which only three or four are general tasks. Thus the evidence in Table 9 suggests that personality sorting on job-specific tasks occurs even if it may be limited.

5.3 Task-specific wage returns to personality traits

If employers seek workers with particular traits because such workers are more productive in some tasks and if these rents are split with workers, then the wage returns to traits may be task-specific as in Gathmann and Schönberg (2010).[36] These task-specific returns to traits would in turn influence the supply of traits to jobs requiring particular tasks and contribute

to the sorting patterns observed in Tables 8 and 9. With this in mind, we estimate log-wage regressions of the form

$$\ln(w_{it}) = \beta_1 T_{o,i,t} * Ex_i + \beta_2 T_{o,i,t} * C_i + \beta_3 T_{o,i,t} * O_i + \beta_4 T_{o,i,t} * A_i + \beta_5 T_{o,i,t} * Em_i + \Gamma' X_{it} + \mu_i + \nu_o + \varepsilon_{it}$$

where $\ln(w_{it})$ is respondent i's log-hourly wage in year t, $T_{o,i,t}$ is the vector of standardized task importance measures in respondent i's occupation o in year t, Ex_i, C_i, O_i, A_i, and Em_i are respondent i's standardized extroversion, conscientiousness, openness, agreeableness and emotional stability measures, X_{it} is a vector of time-varying individual characteristics and the terms μ_i, ν_o and ε_{it} represent respondent fixed effects, occupation fixed effects, and the econometric error term, respectively. We cluster the standard errors at the respondent level. The vectors β_1 through β_5 represent the trait-specific returns to tasks, which are identified by respondents who change occupations.

Panel A of Table 10 reports the task-trait coefficient estimates using the O*NET measures of task-importance. The last row of the panel reports p-values for the tests of the joint significance of task-trait interactions for the trait given in the column. For every Big Five trait, we fail to reject the hypotheses that these task-trait coefficients are jointly equal to zero. The estimates suggest a few modest task-specific returns to traits. In particular, a one-standard deviation increase in extroversion is associated with an estimated 1.2 percent wage increase in occupations that are one-standard deviation above average in the extent to which they require teamwork, which is consistent with Deming's (2017) finding in the NLSY97 that the wage returns to social skills are increasing in the social skill intensity of their occupation.[37] Likewise, a one-standard deviation increase in openness is associated with an estimated 2.3 percent wage

increase in occupations that are one-standard deviation above average in the extent to which they require communication.

Though not statistically significant at conventional levels ($p = 0.104$), a one-standard deviation increase in agreeableness is associated with an estimated 0.9 percent wage increase in occupations that are one-standard deviation above average in the extent to which they require caring and service tasks, which is consistent with the matching between agreeable individuals and occupations requiring caring and service tasks that we observe in Table 8. Overall, however, the task-specific returns to traits do not appear to offer compelling pecuniary incentives for individuals to match to occupations requiring particular tasks based on their personalities.

One possibility is that measuring task importance at the occupation level introduces substantial measurement error when the relevant construct is task importance on the job in light of within-occupation task heterogeneity. With this in mind, Panel B of Table 10 reports estimates of the task-trait interactions replacing the measures of task importance from O*NET at the occupation level with the job-specific task measures collected in 2017 and 2019. While the sample is much smaller than in Panel A, the estimates in Panel B do not rely on occupation changes for identification but rather changes in a worker's tasks between interviews. None of the coefficient estimates in Panel B, however, are statistically significant, and we fail to reject the joint insignificance of the task-trait interactions for all of the Big Five traits. Once again, the task-specific returns to traits do not appear to offer a compelling explanation for why workers' traits are correlated with tasks measured at both the occupation and job level.

Our estimates of the task-specific wage returns to traits differ considerably from those reported in Rohrbach-Schmidt et al. (2023), the only other study to our knowledge that estimates task-specific wage returns to the Big Five traits.[38] Rohrbach-Schmidt et al. find evidence of

significant interactions between extroversion, agreeableness, and emotional stability and measures of routine manual, non-routine manual, interactive, and analytical tasks.[39] We note, however, that Rohrbach-Schmidt et al. use very broad task measures relative to ours. Workers undoubtedly match to tasks on the basis of comparative advantages derived from individual characteristics. When the tasks are very broad, there are likely to be many such characteristics (e.g., other traits, preferences, task-specific experience) influencing this matching. Rohrbach-Schmidt et al. use a cross-sectional data set and are thus unable to incorporate individual fixed effects to account for this unobserved heterogeneity among individuals. Our findings suggest both that this individual heterogeneity is important when estimating the task-specific wage returns to traits and that the task-specific wage returns to traits do not offer compelling reasons for workers to sort into jobs with different tasks.

5.4 Occupational personality distributions

If workers do not have strong pecuniary incentives to sort on the basis of their personalities into jobs with particular tasks, personality sorting may be very limited as the shares of the variance of personality traits explained by tasks reported in Tables 8 and 9 suggest. While the share of the variance in traits explained by tasks is a useful benchmark for the extent of personality sorting, perhaps a more illustrative approach is to examine the distributions of workers' personality traits in different occupations. Table 11 reports the means and standard deviations for each of the Big Five traits among NLSY97 respondents in 21 broad occupational categories.[40] Across occupations and traits, the mean scores are almost never more than three-tenths of a standard deviation different from the sample mean. In the context of raw scores ranging between 2 and 14 derived from summing responses on two 7-point Likert scales, this corresponds to no more than a 0.7 to 0.9 point difference in raw scores depending on the trait.

Furthermore, the standard deviations for every single trait in every occupation remain very close to one. If personality sorting into occupations were substantial, one might expect these distributions to be both displaced from the sample mean and compressed relative to the full sample distribution, but this is not the case. In every occupation for every trait, the occupation-specific personality distributions resemble the full sample distribution.

6. CONCLUSION

We document how employers' expressed demands for personality traits relate to the task requirements of jobs in a sample of job ads posted to Monster.com. Personality trait demands are positively correlated with general task requirements but mostly negatively correlated with routine and mathematics task requirements. We additionally find that employers seek narrower traits for certain tasks. In particular, interactive tasks—communication, interpersonal relationships, teamwork, caring and service, and leadership and decision-making—vary in the mixes of the aspects of extroversion and agreeableness that employers require.

The correlations between trait demands and task requirements, however, come with a significant caveat: neither the task requirements nor the occupations associated with the ads explain a substantial fraction of the variance in personality trait demands. Likewise, occupations explain only small fractions of the variances in task requirements. If jobs in occupations are heterogeneous both in their task composition and their demand for personality traits, it is unclear how much workers would match to occupations on the basis of personality-derived comparative advantages in tasks. Personality sorting would occur at the job rather than the occupation level.

With this in mind, we investigate personality sorting on tasks and occupations in the NLSY97. Occupations explain no more than 7 to 8 percent of the variation in traits among NLSY97 respondents, while tasks measured at the occupation-level in O*NET and job-specific

tasks explain at most 1 to 2 percent of the variation in respondents' personality traits. Thus we find evidence of personality sorting at both the occupation and job-level, but this sorting is very limited. This may reflect the fact that workers do not appear to have compelling pecuniary incentives to match to occupations and tasks on the basis of personality traits insofar as there are very few task-specific wage returns to traits.

Our finding in this respect offers perspective on the marginal effects of personality on occupational choice. While it is true that the mean worker in sales occupations, for example, is more extroverted than in the population as a whole, this difference is small, and many less extroverted individuals can be found in these occupations. Moreover, the same goes for any trait in any occupation in the NLSY97 sample. In our view, this reflects the fact that sorting on personality-derived comparative advantages occurs at the margin. To the extent that occupations involve multiple tasks and heterogeneity within occupations in these tasks, a comparative advantage in a particular task derived from a trait is just one of many factors influencing occupational choices and thus likely to exert a small marginal effect on the choice of occupation.

We conclude, however, by commenting on alternative explanations for our findings that deserve additional investigation. First, employers may not so much seek out workers with particular personality traits as attempt to weed out applicants with undesirable traits. Hoffman et al. (2017) study the use of job testing in which a screening algorithm produced a simple "green-yellow-red" score advising hiring managers whether to consider the applicant, where "red" applicants were not to be considered. Screening to eliminate only applicants with undesirable personality traits would likely produce the very modest effects on occupational means and standard deviations that we observe, but more research on how employers use personality screening and the heterogeneity among firms in its use is needed.

Second and closely related, applicants' personalities may be difficult for employers to observe. In addition to the complexities of personality measurement discussed in Almlund et al. (2011), job applicants have incentives to misrepresent themselves to appear more desirable to potential employers, a dynamic that can introduce significant noise into personality measures (McGee and McGee, 2022). Limited personality sorting may in part reflect the difficulty employers face in screening for personality traits. The extent to which employers can learn about personalities both in hiring and over the career remains an open question.

Finally, the limited personality sorting observed in the NLSY97 may reflect where personality falls in a hierarchy of job requirements. It is unclear from the ads how important personality requirements are to employers. Finding workers with particular personality traits may be a low-priority for employers relative to other requirements when filling vacancies. We note that the difficulty of measuring the importance of employer requirements in job ads is not specific to personality. At present, job ad data lag substantially behind alternative data sources such as O*NET in assessing the importance of skill and task requirements. Advances in machine learning and natural language processing are making classifying job ads along different dimensions easier. Unlocking the full potential of job ad text data to supply rich information on job requirements and employment conditions at the firm-level, however, will require developing techniques to assess the importance of worker and task requirements. Leveraging the structure of job ads and the placements of requirements within text to measure the importance of job requirements represents an important avenue for future research using job ads.

[1] Prior studies such as Borghans et al. (2008), Kreuger and Schkade (2008), and Deming (2017) document that extroverted workers sort into occupations with interactive tasks.
[2] In our data, these general tasks include communication, interpersonal interactions, teamwork, leadership and decision-making, caring and service tasks, problem-solving, creative tasks, work requiring attention-to-detail, and independent work.
[3] We acknowledge that many routine and manual tasks are general in the sense that they may be performed in many occupations, but we distinguish between these tasks that can be completed with a narrow set of behaviors and general tasks that can be completed with many behaviors.
[4] To distinguish between the trait openness-to-experience and its aspect openness, we write "openness (A)" when referring to the aspect. DeYoung et al. (2007) describe the aspects of neuroticism as volatility and non-volatility. We measure emotional stability rather than neuroticism and refer to its aspects as non-volatility and non-withdrawal.
[5] Gathmann and Schönberg (2015) develop a model of task-specific human capital in order to explain patterns of occupational mobility. In their model, workers both acquire through experience and are endowed with human capital that enhances their productivity when performing specific tasks. Personality traits could be interpreted as a form of time-invariant, task-specific human capital if they influence productivity on some but not all tasks.
[6] The O*NET measure of "social skills" used by Judge and Zapata is "the degree to which an occupation frequently involves working with, communicating with, and teaching people."
[7] Non-routine tasks in Wehner et al.'s experiment referred to reacting to and solving problems, which suggests that it may be most similar to our problem-solving task measures. The authors speculated that their non-routine task priming was too broadly defined given the heterogeneity in occupations in their sample.
[8] For most O*NET constructs, respondents indicated both the importance of the construct and the level required in their occupation using ordinal scales. We follow Deming (2017) in using the level-required variables when both are available. We note that our O*NET measures for routine tasks and mathematical tasks are the same as those in Deming (2017) (who referred to our mathematics measure as a measure of "non-routine analytical" tasks) who used them as proxies for the absence of social skill requirements and for cognitive-intensive occupations.
[9] We use O*NET Version 18.0 from 2013 to construct our task requirement measures because it lies in the middle of the period covered by our NLSY97 panel data. O*NET updates its measures for only about 10% of occupations annually, so this version would not be wholly different from either the 2006 version (when the job ads were collected) or the 2019 version (the last wave of the NLSY97 used in the analysis)
[10] Constructing employment-weighted standardized scores helps to address the concern that these ordinal scales have no natural unit of measure.
[11] Pre-eminent among employment websites operating in the US in 2006, Monster.com ranked first in the share of visitors and the number of resumes hosted and second in the share of page views among 350 employment websites in the online recruiting industry at the time (Weddle, 2009).
[12] Ads without text result from scraping errors.
[13] See Kureková et al. (2015) for an extensive discussion of the advantages and disadvantages more generally of using online job ads to characterize employers' demand.
[14] When selecting phrases associated with tasks, we excluded phrases—even common ones—including adjectives in the personality dictionaries to avoid mechanical correlations between tasks and personality requirements. Thus, for example, the adjective "creative" is not in the creative task dictionary.
[15] The 262 location codes in the Monster data roughly correspond to the U.S. Census Bureau's public use microdata area (PUMA) codes subdividing the United States into areas containing no fewer than 100,000 people each.
[16] We use the Dorn (2009) occupation codes that aggregate U.S. Census occupation codes to a balanced panel of occupations for the 1980, 1990, and 2000 Census and the 2005-2008 American Community Surveys. To identify the occupation, we first attempt to match the text following the string "Job Title:" in the ad to strings associated with each occupation code. For example, for the "Special Education Teachers" category, we searched for the strings "special education teacher*", "spec-ed teacher*" and "special needs teacher*". Not all ads, however, contain the "Job Title:" string. For the remaining ads, we count the number of times strings associated with each Dorn occupation code appear in the ad. We then identify the occupation mentioned most often in the ad giving priority to specific occupations over "not elsewhere categorized" occupations (e.g., "electrical engineer" instead of "engineer, n.e.c." even if strings associated with the latter appear more often). Monster had an occupation field, but it was relatively coarse with only nine categories (i.e., business and management professions, engineering and computer science professions, education-related professions, medical professions, administrative, clerical, or legal professions, mechanics or laborers, service industry professions, research, science or technical professions, or other professions).

[17] A small number of nouns appear in the lists of Goldberg (1981) and John (1990), and these we count even when they appear as nouns.
[18] Brenčič and McGee (2023) note the prominence of two adjectives, verbal and analytical, that appear frequently in ads but which may not refer to workers' personalities. Given the presence of these adjectives in some of the task requirement phrases that we use, we exclude them from the personality dictionaries throughout the current study. Brenčič and McGee (2023), however, noted that their findings were not sensitive to the inclusion of these adjectives in the personality dictionaries—though their exclusion does affect the fraction of ads demanding particular traits.
[19] In practice, most of the disagreements stemmed from the presence of uncommon adjectives in the trait dictionaries that do not appear with great frequency (if at all) in the job ads, and all of the results of the next section are robust to excluding terms on which the authors disagreed. The aspect dictionaries are listed in Appendix Table 2.
[20] The job task questions are the same as those used by Autor and Handel (2013) in the Princeton Data Improvement Initiative (PDII) survey to examine the importance of task variance within occupations.
[21] For comparison, Autor and Handel (2013) report correlations between measures of abstract, routine and manual tasks at the job-level in the PDII survey and corresponding O*NET measures ranging between 0.33 for routine tasks and 0.5 for manual tasks. The PDII respondents, however, were specifically asked about each task. Moreover, we measure narrower but general tasks in the job ads that might vary more within occupations.
[22] Following Deming and Kahn (2018), we regress the task indicators on occupation indicators, the ad length in characters, the education and experience requirements (if any) in the ad, and location indicators. We then divide variance of the fitted values in this regression using only the occupation coefficients by the variance of the task measure to calculate the variance explained by occupation.
[23] Occupations explain 36 percent of the variance in routine task requirements in job ads. Together with the correlation between the ad and O*NET measures in Column (3) (0.34), this suggests that routine tasks are readily identifiable in job ads and concentrated in particular occupations.
[24] Reproducing Deming and Kahn's (2018) skill measures in our sample, occupations similarly explain between 3 and 12 percent of the variation in the skill requirement measures except for software skills (15%), customer service skills (20%), and financial skills (24%). We do not include firm effects when calculating the share of explained variance as Deming and Kahn (2018) do, which likely accounts for the higher share of explained variance in customer service skills by occupation in our sample. Overall, occupations explain comparable fractions of the variance in tasks in job ads as they do for most skill requirements.
[25] Employers' expressed demand for assertiveness is consistent with the positive association between the extroversion facet of activity, which loads more heavily on the assertiveness aspect, and lifetime income in a sample of twins documented in Maczulskij and Viinikainen (2018).
[26] Appendix Table 4 reports the correlations between the task indicators in the job ads. Communication, interpersonal interactions, teamwork, leadership and decision-making, and problem-solving tasks have correlations ranging between 0.15 and 0.24. The correlations between the routine, manual and mathematics tasks and the general tasks, by contrast, range between -0.04 and 0.09. Appendix Table 5 reports the correlations between the corresponding O*NET measures. While the correlations in Appendix Table 4 are smaller in magnitude than those in Appendix Table 5, the correlations in the tables mostly exhibit similar relationships.
[27] Openness, however, has been shown to be correlated with cognitive ability measures (e.g., Ackerman and Heggestad, 1997; Aitken Harris, 2004), and thus the expressed demand for openness may reflect employers' demand for cognitive ability.
[28] The regressions reported in Tables 6 and 7 include occupation fixed effects to account for occupation-specific tasks not otherwise controlled for, but as a consequence the estimates rely on within-occupation variation. Appendix Tables 6 and 7 report the partial correlations without occupation fixed effects, and the estimates are similar to those in Tables 6 and 7. This suggests that personality demands are relatively uncorrelated with occupation-specific tasks.
[29] The correlations between assertiveness and tasks are also consistent with those in Viinikainen et al. (2020), who find Type-A behaviors involving facets of extroversion are positively correlated with employment in occupations with abstract and service tasks but negatively correlated with routine tasks in Finnish data.
[30] To calculate the share of the variance in trait demands explained by occupation (task requirements), we calculate the ratio of the variance of the fitted values based only on the occupation indicators (task requirements) to the variance in the trait demand.
[31] We use one interview per respondent between the ages of 32 and 34 given that the dependent variable is a time-invariant personality trait measure. Furthermore, sorting requires time as workers move between and learn about jobs, and thus occupational choices early in the career may reflect this learning process rather than the sorting that ultimately occurs. We consider the period between ages 32 and 34 because the youngest respondents in the NLSY97

would have been approximately 34 in the 2019 interviews, and thus this age window gives us two opportunities to observe their occupational choices.

[32] In 2008 when the personality traits were measured, respondents were between 23 and 27 and at the beginning of their careers. While reverse causality between personality measures and occupations and tasks is a concern, Cobb-Clark and Schurer (2008) document that the Big Five traits are relatively stable throughout one's adulthood.

[33] Judge et al. (2002) find in a meta-analysis a robust correlation between extroversion and leadership as assessed by others as well as a correlation between extroversion and student leadership. To the extent that extroversion and leadership are closely related, our finding that extroverts sort into jobs requiring leadership and decision-making is consistent with findings in Kuhn and Weinberger (2005) that student leaders are employed in managerial occupations and in Weinberger (2014) that student leaders sort into occupations requiring responsibility for direction, control and planning.

[34] To calculate the share of the variance in a trait explained by either tasks or occupations, we again created fitted values based on either the task variables or occupation indicators and take the ratio of the variance of these fitted values to the variance of the trait measure.

[35] We control for race and gender in the sorting regressions to account for occupational segregation by race and gender that may have nothing to do with personality, but the race and gender controls do not appreciably influence our findings. To demonstrate, Appendix Tables 8 and 9 report the personality sorting regressions separately for men and women excluding the race indicators. While there are gender differences in the magnitudes of some task coefficients, the signs of these coefficients differ in very few instances, and we fail to reject the equality of the task coefficients for men and women for the vast majority of tasks. Most importantly, the tasks that are most correlated with traits in Table 8 are also the tasks that are most correlated with these traits in the samples of men and women.

[36] A number of studies estimate the wage returns to personality (e.g., Mueller and Plug, 2005; Nyhus and Pons, 2006; Heineck and Anger, 2010; Heineck, 2011; Fletcher, 2013) with mixed findings. A key challenge in this area is the lack of plausibly exogenous variation in traits. Personality traits are likely correlated with unobserved dimensions of human capital given their correlations with observed measures of human capital (e.g., Gensowski, 2018) and family background (e.g., Fletcher, 2013) that may influence wages. Likewise estimates of the wage premiums associated with tasks are potentially biased given the correlations among tasks—not all of which are observed—and the reliance on data from endogenous worker-job matchings (Autor and Handel, 2013). We include respondent and occupation fixed effects in our log-wage regressions to address these concerns.

[37] Deming (2017) measures social skills using the TIPI extroversion scores in the NLSY97, while his measure of social skill task intensity overlaps with our measure of teamwork importance.

[38] John and Thomsen (2014) find evidence of occupation-specific wage returns to personality using broad occupation categories, but they do not investigate the role of tasks.

[39] Rohrbach-Schmidt et al. (2023) also report gender differences in the task-specific wage returns to traits. In estimates available from the authors, we fail to reject the joint insignificance of the task-trait interactions for all of the Big Five traits for both genders. Moreover, we observe fewer statistically significant gender differences than one would expect to observe by chance given that there are 60 task-trait interactions being tested. Perhaps the most interesting and statistically significant finding from these estimates is that conscientious women would earn less in occupations involving leadership and decision-making tasks.

[40] We exclude eight occupation categories in which we observe fewer than 50 respondents and military occupations.

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Table 1. O*NET variables used to measure task requirements

Task requirement	O*NET Constructs
Communication	*Interpreting the Meaning of Information for Others*: Translating or explaining what information means and how it can be used. (Activities 25) *Communicating with Supervisors, Peers, or Subordinates*: Providing information to supervisors, coworkers, and subordinates by telephone, in written form, e-mail, or in person. (Activities 26) *Communicating with People Outside the Organization*: Communicating with people outside the organization, representing the organization to customers, the public, government, and other external sources. (Activities 27) *Active Listening*: Giving full attention to what other people are saying, taking time to understand the points being made, asking questions as appropriate, and not interrupting at inappropriate times. (Skills 2) *Writing*: Communicating effectively in writing as appropriate for the needs of the audience. (Skills 3) *Speaking*: Talking to others to convey information effectively. (Skills 4) *Persuasion*: Persuading others to change their minds or behavior. (Skills 13) *Negotiation*: Bringing others together and trying to reconcile differences. (Skills 14) *Instructing*: Teaching others how to do something. (Skills 15)
Interpersonal	*Establishing and Maintaining Interpersonal Relationships*: Developing constructive and cooperative working relationships with others and maintaining them over time. (Activities 28) *Social Perceptiveness*: Being aware of others' reactions and understanding why they react as they do. (Skills 11)
Teamwork	How important are interactions that require you to work with or contribute to a work group or team to perform your current job? (Context 7) *Cooperation*: Job requires being pleasant with others on the job and displaying a good-natured, cooperative attitude. (Styles 5) *Coordination*: Adjusting actions in relation to others' actions. (Skills 12)
Caring	*Concern for Others*: Job requires being sensitive to others' needs and feelings, and being understanding and helpful to others on the job. (Style 6) *Service Orientation*: Actively looking for ways to help people. (Skills 16) *Assisting and Caring for Others*: Providing personal assistance, medical attention, emotional support, or other personal care to others such as coworkers, customers, or patients. (Activities 29)
Leadership & decision-making	*Leadership*: Job requires a willingness to lead, take charge, and offer opinions and direction. (Styles 4) In your current job, how important are interactions that require you to coordinate or lead others in accomplishing work activities (not as a supervisor or team leader)? (Context 9)

	Judgment and Decision Making: Considering the relative costs and benefits of potential actions to choose the most appropriate one. (Skills 31) *Management of Personnel Resources*: Motivating, developing, and directing people as they work, identifying the best people for the job. (Skills 35) *Making Decisions and Solving Problems*: Analyzing information and evaluating results to choose the best solution and solve problems. (Activities 10) *Coordinating the Work and Activities of Others*: Getting members of a group to work together to accomplish tasks. (Activities 33) *Developing and Building Teams*: Encouraging and building mutual trust, respect, and cooperation among team members. (Activities 34) *Guiding, Directing, and Motivating Subordinates*: Providing guidance and direction to subordinates, including setting performance standards and monitoring performance. (Activities 36)
Problem-solving	*Deductive Reasoning*: The ability to apply general rules to specific problems to produce answers that make sense. (Abilities 8) *Inductive Reasoning*: The ability to combine pieces of information to form general rules or conclusions (includes finding a relationship among seemingly unrelated events). (Abilities 9) *Analytical Thinking*: Job requires analyzing information and using logic to address work-related issues and problems. (Styles 16) *Critical Thinking*: Using logic and reasoning to identify the strengths and weaknesses of alternative solutions, conclusions, or approaches to problems. (Skills 7) *Complex Problem Solving*: Identifying complex problems and reviewing related information to develop and evaluate options and implement solutions. (Skills 17)
Creative tasks	*Thinking Creatively*: Developing, designing, or creating new applications, ideas, relationships, systems, or products, including artistic contributions. (Activities 11) *Fluency of Ideas*: The ability to come up with a number of ideas about a topic (the number of ideas is important not their quality, correctness, or creativity). (Abilities 5) *Originality*: The ability to come up with unusual or clever ideas about a given topic or situation, or to develop creative ways to solve a problem. (Abilities 6) *Innovation*: Job requires creativity and alternative thinking to develop new ideas for and answers to work-related problems. (Styles 15)
Attention-to-detail	*Attention to Detail*: Job requires being careful about details and thorough in completing tasks. (Styles 12)
Independent work	*Independence*: Job requires developing one's own ways of doing things, guiding oneself with little or no supervision, and depending on oneself to get things done. (Styles 14)
Routine	How automated is your current job? (Context 49)

	How important to your current job are continuous, repetitious physical activities (like key entry) or mental activities (like checking entries in a ledger)? (Context 51)
Manual	*Operating Vehicles, Mechanized Devices, or Equipment*: Running, maneuvering, navigating, or driving vehicles or mechanized equipment, such as forklifts, passenger vehicles, aircraft, or water craft. (Activities 20) How much time in your current job do you spend using your hands to handle, control, or feel objects, tools, or controls? (Context 40) *Manual dexterity*: The ability to quickly move your hand, your hand together with your arm, or your two hands to grasp, manipulate, or assemble objects. (Abilities 23) *Static strength*: The ability to exert maximum muscle force to lift, push, pull, or carry objects. (Abilities 32) *Dynamic strength*: The ability to exert muscle force repeatedly or continuously over time. This involves muscular endurance and resistance to muscle fatigue. (Abilities 34) *Extent flexibility*: The ability to bend, stretch, twist, or reach with your body, arms, and/or legs. (Abilities 37)
Mathematics	*Mathematics*: Using mathematics to solve problems. (Skills 5) *Mathematics*: Knowledge of arithmetic, algebra, geometry, calculus, statistics, and their applications. (Knowledge 14) *Mathematical Reasoning*: The ability to choose the right mathematical methods or formulas to solve a problem. (Abilities 12)

Notes: In parentheses, we provide the identification of the O*NET variable by module and item. The description following the variable is the definition of the construct provided in O*NET.

Table 2. Mapping personality facets to aspects

Big Five domain	Aspect	Facets loading more heavily on each aspect	
Extraversion	Enthusiasm	Friendliness (AB5C)	Positive emotions (NEO)
		Warmth (NEO)	Self-disclosure (AB5C)
		Poise (AB5C)	Sociability (AB5C)
		Gregariousness (NEO)	
	Assertiveness	Leadership (AB5C)	Activity (NEO)
		Assertiveness (AB5C)	Talkativeness (AB5C)
		Assertiveness (NEO)	Excitement seeking (NEO)
		Provocativeness (AB5C)	
Conscientiousness	Industriousness	Purposefulness (AB5C)	Achievement striving
		Efficiency (AB5C)	(NEO)
		Self-discipline (NEO)	Dutifulness (NEO)
		Competence (NEO)	Deliberation (NEO)
		Organization (AB5C)	Dutifulness (AB5C)
	Orderliness	Orderliness (AB5C)	Perfectionism (AB5C)
		Conscientiousness	Rationality (AB5C)
		(AB5C)	Cautiousness (AB5C)
		Order (NEO)	
Openness-to-experience	Intellect	Quickness (AB5C)	Ingenuity (AB5C)
		Creativity (AB5C)	Competence (AB5C)
		Intellect (AB5C)	Depth (AB5C)
		Ideas (NEO)	Introspection (AB5C)
	Openness (A)	Aesthetics (NEO)	Feelings (NEO)
		Imagination (AB5C)	Actions (NEO)
		Reflection (AB5C)	Values (NEO)
		Fantasy (NEO)	
Agreeableness	Compassion	Warmth (AB5C)	Altruism (NEO)
		Sympathy (AB5C)	Tenderness (AB5C)
		Understanding (AB5C)	Tender-mindedness (NEO)
		Empathy (AB5C)	Trust (NEO)
	Politeness	Nurturance (AB5C)	Morality (AB5C)
		Cooperation (AB5C)	Straightforwardness (NEO)
		Pleasantness (AB5C)	Modesty (NEO)
		Compliance (NEO)	
Emotional stability (neuroticism)	Non-volatility	Stability (AB5C)	Moderation (AB5C)
		Calmness (AB5C)	Impulsiveness (NEO)
		Angry hostility (NEO)	Imperturbability (AB5C)
		Tranquility (AB5C)	Cool-headedness (AB5C)
		Impulse control (AB5C)	
	Non-withdrawal	Happiness (AB5C)	Anxiety (NEO)
		Depression (NEO)	Toughness (AB5C)
		Vulnerability (NEO)	Self-consciousness (NEO)

Notes: The label in parentheses indicates from which personality measure the facet scale is drawn. The mapping of facets to aspects is from DeYoung et al. (2007).

Table 3. Summary statistics for the task requirements in ads

Task requirement	% of ads mentioning task (1)	O*NET mean (2)	Correlation between ad and O*Net measure (3)	% variance in ad tasks explained by occupation (4)
Communication	0.39	0.76	0.09	0.035
Interpersonal	0.19	0.13	0.02	0.025
Teamwork	0.21	0.43	0.08	0.065
Caring/service	0.25	-0.01	0.01	0.117
Leadership & decision-making	0.24	0.71	0.16	0.042
Problem-solving	0.14	0.80	0.07	0.017
Creative tasks	0.05	0.77	0.08	0.012
Attention-to-detail	0.15	0.41	0.05	0.034
Independent work	0.08	0.28	0.01	0.011
Routine	0.08	0.13	0.34	0.360
Manual	0.03	-0.61	0.17	0.099
Mathematics	0.04	0.77	0.07	0.024

Notes: Column (1) reports the fraction of ads in the Monster.com sample (N = 112,807) referencing each task requirement. Column (2) reports the mean O*NET score for the occupations associated with the ads. Column (3) reports the correlations between the indicators for whether an ad references a task requirement and the O*NET score for the task requirement. All of the correlations in Column (3) are significant at the 1% level except for the Independent work correlation, which is significant at the 5% level. Column (4) reports the percentage of the variation in the task indicators explained by occupations.

Table 4. Summary statistics for the personality demands in ads

Trait/Aspect	Fraction of ads referencing Big 5 factor (1)
Extroversion	0.23
Assertiveness	0.20
Enthusiasm	0.06
Conscientiousness	0.22
Industriousness	0.15
Orderliness	0.10
Openness	0.17
Intellect	0.15
Openness (A)	0.03
Agreeableness	0.13
Politeness	0.09
Compassion	0.05
Emotional Stability	0.08
Non-volatility	0.08
Non-withdrawal	0.00
Number of ads	112,807

Notes: Column (1) reports the fraction of ads containing trait-descriptive terms associated with each Big Five trait or aspect.

Table 5. Personality demands and tasks by occupation

Trait/aspect:	Managers (1)	Accountants (2)	Engineers (3)	Medical professionals (4)	Teachers (5)	Lawyers (6)	Sales (7)	Restaurant & bar staff (8)	Mechanics & repairers (9)	Construction trades (10)
Extroversion	0.29	0.18	0.16	0.09	0.34	0.14	0.39	0.45	0.14	0.13
Assertiveness	0.26	0.17	0.15	0.07	0.28	0.13	0.33	0.33	0.13	0.13
Enthusiasm	0.07	0.03	0.02	0.03	0.09	0.02	0.11	0.15	0.02	0.04
Conscientiousness	0.26	0.21	0.16	0.11	0.22	0.14	0.22	0.18	0.16	0.12
Industriousness	0.18	0.12	0.11	0.08	0.13	0.10	0.17	0.14	0.13	0.10
Orderliness	0.12	0.11	0.06	0.03	0.11	0.06	0.08	0.08	0.05	0.04
Openness	0.21	0.13	0.16	0.07	0.14	0.22	0.21	0.17	0.08	0.04
Intellect	0.19	0.12	0.15	0.06	0.13	0.21	0.19	0.15	0.07	0.03
Openness (A)	0.04	0.03	0.02	0.01	0.02	0.02	0.03	0.02	0.01	0.02
Agreeableness	0.15	0.10	0.07	0.09	0.16	0.12	0.18	0.17	0.09	0.07
Politeness	0.11	0.08	0.05	0.04	0.10	0.12	0.12	0.13	0.07	0.07
Compassionate	0.06	0.04	0.02	0.06	0.08	0.01	0.08	0.09	0.02	0.01
Emotional stability	0.07	0.10	0.05	0.05	0.03	0.04	0.08	0.12	0.06	0.01
Non-volatility	0.07	0.11	0.05	0.05	0.03	0.04	0.07	0.07	0.06	0.01
Non-withdrawal	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.05	0.00	0.00
<u>Task:</u>										
Communication	0.49	0.40	0.39	0.15	0.35	0.37	0.45	0.18	0.26	0.12
Interpersonal	0.26	0.20	0.18	0.09	0.17	0.22	0.22	0.17	0.10	0.05
Teamwork	0.22	0.19	0.23	0.45	0.13	0.21	0.17	0.26	0.12	0.11
Caring	0.29	0.08	0.11	0.14	0.24	0.12	0.40	0.33	0.09	0.16
Leadership	0.36	0.22	0.25	0.10	0.13	0.23	0.25	0.20	0.15	0.10
Problem-solving	0.18	0.18	0.17	0.04	0.11	0.10	0.13	0.04	0.09	0.07
Creative	0.06	0.02	0.06	0.01	0.03	0.03	0.07	0.02	0.01	0.02
Attention-to-detail	0.18	0.19	0.14	0.05	0.09	0.13	0.09	0.09	0.08	0.09
Independent work	0.09	0.10	0.07	0.03	0.05	0.06	0.08	0.02	0.07	0.03
Routine	0.03	0.09	0.05	0.01	0.01	0.04	0.06	0.08	0.04	0.02
Manual	0.02	0.01	0.02	0.01	0.02	0.01	0.04	0.07	0.23	0.13
Mathematics	0.05	0.07	0.07	0.01	0.02	0.03	0.02	0.02	0.02	0.03
N	34,548	5,340	10,278	6,324	596	1,142	10,400	368	710	549

Notes: Each column reports the fraction of ads in the broad occupation category indicated in the column referencing each personality trait or aspect and task category.

Table 6. Partial correlations between trait demands and tasks in ads

Task requirement	Extroversion (1)	Conscientiousness (2)	Openness (3)	Agreeableness (4)	Emotional stability (5)
Communication	0.031***	0.034***	0.035***	0.020***	0.016***
	(0.003)	(0.003)	(0.003)	(0.002)	(0.002)
Interpersonal	0.048***	0.011***	0.006*	0.031***	-0.004**
	(0.004)	(0.004)	(0.003)	(0.003)	(0.002)
Teamwork	0.056***	0.011***	0.027***	0.045***	-0.003
	(0.003)	(0.003)	(0.003)	(0.003)	(0.002)
Caring	0.051***	0.049***	-0.016***	0.047***	0.003
	(0.003)	(0.003)	(0.003)	(0.003)	(0.002)
Leadership & decision-making	0.019***	0.026***	0.051***	0.008***	0.005**
	(0.003)	(0.003)	(0.003)	(0.003)	(0.002)
Problem-solving	0.012***	0.035***	0.079***	0.026***	-0.003
	(0.004)	(0.004)	(0.004)	(0.003)	(0.002)
Creative	0.065***	0.000	0.140***	0.011**	0.008**
	(0.007)	(0.006)	(0.007)	(0.005)	(0.004)
Attention-to-detail	0.009**	0.100***	0.035***	0.015***	0.018***
	(0.004)	(0.004)	(0.003)	(0.003)	(0.003)
Independent work	0.005	0.049***	0.020***	0.012***	0.029***
	(0.005)	(0.005)	(0.005)	(0.004)	(0.003)
Routine	-0.040***	-0.017***	-0.028***	0.002	0.012***
	(0.005)	(0.006)	(0.005)	(0.005)	(0.004)
Manual	-0.009	0.084***	-0.027***	-0.003	0.011**
	(0.007)	(0.008)	(0.006)	(0.006)	(0.005)
Mathematics	-0.088***	0.032***	-0.048***	-0.053***	-0.025***
	(0.006)	(0.007)	(0.006)	(0.005)	(0.004)
% variance from tasks	0.018	0.025	0.031	0.016	0.004
% variance from occupation	0.043	0.020	0.019	0.024	0.020

Notes: Each column reports the coefficient estimates from a regression of the trait requirement indicated in the column on the task requirements in the ads, experience and education requirements, region indicators, the length of the ads in characters, and occupation indicators. Heteroskedasticity-robust standard errors are reported in parentheses. Significance levels: *** p<0.01, ** p<0.05, * p<0.10.

Table 7. Partial correlations between aspect demands and tasks in ads

	Assertiveness	Enthusiasm	Industriousness	Orderliness	Intellect
Task requirement	(1)	(2)	(3)	(4)	(5)
Communication	0.031***	0.006***	0.008***	0.041***	0.033***
	(0.003)	(0.002)	(0.002)	(0.002)	(0.002)
Interpersonal	0.038***	0.023***	-0.003	0.007***	0.009***
	(0.003)	(0.002)	(0.003)	(0.003)	(0.003)
Teamwork	0.050***	0.023***	0.000	0.022***	0.022***
	(0.003)	(0.002)	(0.003)	(0.003)	(0.003)
Caring	0.036***	0.017***	0.035***	0.005**	-0.024***
	(0.003)	(0.002)	(0.003)	(0.003)	(0.003)
Leadership & decision-making	0.019***	0.001	0.022***	0.014***	0.049***
	(0.003)	(0.002)	(0.003)	(0.002)	(0.003)
Problem-solving	0.024***	-0.019***	0.038***	0.024***	0.083***
	(0.004)	(0.002)	(0.004)	(0.003)	(0.004)
Creative	0.076***	-0.006*	0.002	-0.007	0.118***
	(0.007)	(0.003)	(0.006)	(0.005)	(0.006)
Attention-to-detail	-0.002	0.010***	0.037***	0.108***	0.032***
	(0.004)	(0.002)	(0.003)	(0.003)	(0.003)
Independent work	0.001	-0.004	0.035***	0.022***	0.027***
	(0.005)	(0.003)	(0.005)	(0.004)	(0.005)
Routine	-0.036***	-0.012***	-0.035***	0.016***	-0.028***
	(0.005)	(0.003)	(0.005)	(0.005)	(0.004)
Manual	-0.045***	0.026***	0.017**	0.080***	-0.024***
	(0.007)	(0.005)	(0.007)	(0.006)	(0.006)
Mathematics	-0.082***	-0.022***	0.028***	0.014***	-0.043***
	(0.006)	(0.003)	(0.006)	(0.005)	(0.006)
% variance from tasks	0.017	0.007	0.010	0.038	0.031
% variance from occupation	0.035	0.029	0.022	0.015	0.019

Notes: Each column reports the coefficient estimates from a regression of the aspect requirement indicated in the column on the task requirements in the ads, experience and education requirements, region indicators, the length of the ads in characters, and occupation indicators. Heteroskedasticity-robust standard errors are reported in parentheses. Significance levels: *** p<0.01, ** p<0.05, * p<0.10.

Table 7. Partial correlations between aspect demands and tasks in ads

	Openness (A)	Politeness	Compassion	Non-volatility	Non-withdrawal
Task requirement	(6)	(7)	(8)	(9)	(10)
Communication	0.003***	0.017***	-0.002	0.015***	0.003***
	(0.001)	(0.002)	(0.002)	(0.002)	(0.000)
Interpersonal	0.006***	0.022***	0.025***	-0.004*	-0.002***
	(0.001)	(0.003)	(0.002)	(0.002)	(0.001)
Teamwork	0.015***	0.034***	0.013***	-0.003	0.000
	(0.001)	(0.002)	(0.002)	(0.002)	(0.001)
Caring	0.001	0.028***	0.033***	0.003	-0.003***
	(0.001)	(0.002)	(0.002)	(0.002)	(0.000)
Leadership & decision-making	0.002	0.006***	0.008***	0.007***	0.002***
	(0.001)	(0.002)	(0.002)	(0.002)	(0.001)
Problem-solving	0.001	0.042***	-0.023***	-0.004*	-0.002***
	(0.002)	(0.003)	(0.002)	(0.002)	(0.001)
Creative	0.027***	0.025***	-0.019***	0.006	0.001
	(0.003)	(0.005)	(0.003)	(0.004)	(0.001)
Attention-to-detail	0.004**	0.008***	0.003	0.017***	0.002***
	(0.002)	(0.003)	(0.002)	(0.003)	(0.001)
Independent work	0.003	0.010***	-0.003	0.026***	0.001
	(0.002)	(0.004)	(0.003)	(0.003)	(0.001)
Routine	-0.007***	0.009**	0.019***	0.010**	0.002**
	(0.002)	(0.004)	(0.003)	(0.004)	(0.001)
Manual	-0.013***	-0.005	-0.002	0.010**	-0.002**
	(0.002)	(0.006)	(0.004)	(0.005)	(0.001)
Mathematics	-0.011***	-0.043***	-0.020***	-0.025***	-0.001
	(0.002)	(0.004)	(0.003)	(0.004)	(0.001)
% variance from tasks	0.005	0.015	0.009	0.003	0.002
% variance from occupation	0.008	0.020	0.027	0.021	0.029

Notes: Each column reports the coefficient estimates from a regression of the aspect requirement indicated in the column on the task requirements in the ads, experience and education requirements, region indicators, the length of the ads in characters, and occupation indicators. Heteroskedasticity-robust standard errors are reported in parentheses. Significance levels: *** $p<0.01$, ** $p<0.05$, * $p<0.10$.

Table 8. Partial correlations between traits & O*NET tasks in the NLSY97

	Extroversion	Conscientiousness	Openness	Agreeableness	Emotional stability
Task requirement	(1)	(2)	(3)	(4)	(5)
Communication	0.070	-0.147***	0.046	-0.060	-0.012
	(0.054)	(0.053)	(0.053)	(0.052)	(0.052)
Interpersonal	-0.056**	0.030	0.003	-0.012	-0.037
	(0.027)	(0.027)	(0.026)	(0.026)	(0.026)
Teamwork	-0.029	0.029	0.001	-0.050**	-0.034
	(0.025)	(0.025)	(0.025)	(0.024)	(0.024)
Caring	0.009	-0.032	0.017	0.062***	0.038*
	(0.022)	(0.022)	(0.022)	(0.021)	(0.021)
Leadership & decision-making	0.170***	0.003	-0.043	-0.005	0.034
	(0.043)	(0.043)	(0.044)	(0.042)	(0.042)
Problem-solving	-0.035	0.221***	-0.123***	0.077*	0.099**
	(0.045)	(0.043)	(0.042)	(0.043)	(0.043)
Creative	-0.050	-0.054	0.157***	0.034	-0.011
	(0.039)	(0.038)	(0.037)	(0.037)	(0.036)
Attention-to-detail	0.015	-0.018	0.007	-0.004	-0.006
	(0.020)	(0.020)	(0.019)	(0.019)	(0.019)
Independent work	-0.016	0.034*	-0.036*	0.000	0.029
	(0.019)	(0.019)	(0.019)	(0.019)	(0.019)
Routine	-0.022	0.012	-0.001	-0.010	-0.013
	(0.019)	(0.020)	(0.020)	(0.019)	(0.019)
Manual	-0.026	0.012	-0.025	-0.014	-0.011
	(0.024)	(0.024)	(0.024)	(0.023)	(0.023)
Mathematics	-0.027	0.029	0.011	-0.013	0.027
	(0.025)	(0.023)	(0.024)	(0.024)	(0.024)
% variance from tasks	0.012	0.011	0.007	0.004	0.018
% variance from occupation	0.085	0.074	0.068	0.064	0.079

Notes: Each column reports coefficient estimates from regressions of the Big 5 trait indicated in the column on occupation-level task requirements from O*NET, age-at-interview indicators, year indicators, and the complete set race-gender interactions using a single observation for each respondent between ages 32 and 34 (N=6,419). The fraction of the variance from tasks refers to the ratio of the variance of the fitted values using only the task coefficients to the variance of the traits in the column. The fraction of the variance from occupations refers to the ratio of the variance of fitted values from occupation indicators to the variance of the trait from a separate regression with the same additional controls. Heteroskedasticity robust standard errors are reported in parentheses. Significance levels: *** p<0.01, ** p<0.05, * p<0.10.

Table 9. Partial correlations between traits & job tasks in the NLSY97

Job Characteristic	Extroversion (1)	Conscientiousness (2)	Openness (3)	Agreeableness (4)	Emotional stability (5)
Frequent interaction	0.132***	0.036	0.042	0.060*	0.041
	(0.033)	(0.033)	(0.034)	(0.033)	(0.033)
Managing others	0.107***	0.058*	0.081**	-0.008	-0.028
	(0.035)	(0.035)	(0.036)	(0.035)	(0.034)
Problem-solving	0.043	0.003	0.065**	0.016	-0.036
	(0.032)	(0.032)	(0.032)	(0.032)	(0.031)
Reading long documents	0.082**	0.052	0.005	-0.010	0.044
	(0.035)	(0.034)	(0.035)	(0.034)	(0.033)
Repetitive tasks	-0.045	-0.060*	-0.017	-0.071**	-0.126***
	(0.032)	(0.032)	(0.032)	(0.032)	(0.032)
Physical tasks	-0.058	0.032	0.052	-0.033	-0.093**
	(0.037)	(0.038)	(0.036)	(0.038)	(0.037)
Math problems	0.022	0.046	-0.010	-0.051	0.033
	(0.031)	(0.031)	(0.032)	(0.032)	(0.030)
% variance from tasks	0.013	0.004	0.004	0.003	0.010
% variance from occupation	0.073	0.069	0.063	0.057	0.070

Notes: Each column reports coefficient estimates from regressions of the Big 5 trait indicated in the column on tasks, occupation indicators, age-at-interview indicators, year indicators, and the complete set race-gender interactions using a sample of observations from the 2017 and 2019 waves when respondents were asked about their job tasks for individuals who were employed and not serving in the military (N=4,941). Heteroskedasticity robust standard errors are reported in parentheses. Significance levels: *** p<0.01, ** p<0.05, * p<0.10.

Table 10. Task-specific wage returns to personality traits in the NLSY97

Task	Ext. (1)	Con. (2)	Ope. (3)	Agr. (4)	Emo. Stab. (5)
		A. O*NET task-trait interactions (N=59,802)			
Communication	0.005	0.000	0.023*	0.003	-0.005
	(0.013)	(0.013)	(0.013)	(0.013)	(0.014)
Interpersonal	-0.008	-0.001	-0.004	0.004	-0.008
	(0.006)	(0.007)	(0.007)	(0.007)	(0.007)
Teamwork	0.012*	0.002	-0.003	-0.002	-0.002
	(0.007)	(0.007)	(0.007)	(0.007)	(0.008)
Caring/service	0.003	-0.001	0.003	0.009	-0.003
	(0.005)	(0.005)	(0.005)	(0.005)	(0.006)
Leadership	-0.011	-0.012	-0.008	-0.005	0.005
& decision-making	(0.011)	(0.012)	(0.012)	(0.012)	(0.012)
Problem-solving	-0.013	0.013	0.000	-0.003	0.005
	(0.012)	(0.012)	(0.013)	(0.012)	(0.014)
Creative	0.015	0.001	-0.002	-0.012	0.007
	(0.010)	(0.010)	(0.010)	(0.010)	(0.011)
Attention-to-detail	-0.004	-0.007	-0.001	0.002	0.000
	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)
Independent work	0.003	0.004	-0.003	-0.000	-0.001
	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)
Routine	-0.003	-0.001	-0.002	-0.002	-0.001
	(0.004)	(0.005)	(0.005)	(0.005)	(0.005)
Manual	-0.001	0.002	0.003	0.008	-0.006
	(0.006)	(0.006)	(0.006)	(0.006)	(0.006)
Mathematics	-0.001	0.002	-0.003	0.009	0.000
	(0.006)	(0.007)	(0.007)	(0.007)	(0.007)
Joint significance of task-trait interactions:					
p-values	0.347	0.987	0.830	0.360	0.601

Table 10 continued. Task-specific wage returns to personality traits in the NLSY97

		B. Job-specific task-trait interactions (N=7,811)			
Frequent interaction	0.019	0.014	-0.001	0.029	-0.020
	(0.032)	(0.028)	(0.030)	(0.033)	(0.029)
Managing others	-0.005	-0.008	-0.006	0.001	-0.013
	(0.030)	(0.030)	(0.033)	(0.030)	(0.032)
Problem-solving	0.034	-0.005	-0.012	-0.021	0.034
	(0.027)	(0.029)	(0.028)	(0.026)	(0.029)
Reading long	0.017	0.024	-0.011	0.004	-0.024
documents	(0.026)	(0.027)	(0.028)	(0.025)	(0.029)
Repetitive tasks	0.013	-0.026	0.000	0.012	-0.004
	(0.025)	(0.033)	(0.028)	(0.031)	(0.028)
Physical tasks	-0.004	-0.054	0.014	0.009	-0.009
	(0.032)	(0.043)	(0.042)	(0.034)	(0.037)
Math problems	0.005	-0.021	0.011	0.007	0.003
	(0.027)	(0.034)	(0.029)	(0.031)	(0.032)
Joint significance of task-trait interactions:					
p-values	0.876	0.664	0.999	0.969	0.778

Notes: Each row reports coefficient estimates for the interactions between the task in the row and the trait in the column from a single regression in each panel of log-wages on these interactions with respondent and occupation fixed effects controlling for year, age, region, and urbanicity. Panel A reports the coefficient estimates for the task-trait interactions using the O*NET task measures in the full NLSY panel sample (N = 59,802) of person-year observations for employed individuals not serving in the military with observed occupations and observed values of the controls. Panel B reports the coefficient estimates for the task-trait interactions using job-specific task measures using all observations from 2017 and 2019 (N=7,811). The last row of each panel reports p-values for tests of the joint significance of the trait-task interactions for the trait given in the column. Standard errors clustered at the respondent level are given in parentheses. Significance levels: *** p<0.01, ** p<0.05, * p<0.10.

Table 11. Big Five trait distributions by occupation in the NLSY97

Occupation	N	Extroversion (1) $\bar{X}$	S.D.	Conscientious (2) $\bar{X}$	S.D.	Openness (3) $\bar{X}$	S.D.	Agreeableness (4) $\bar{X}$	S.D.	Emotional stability (5) $\bar{X}$	S.D.
Executive, Administrative & Managerial	626	0.22	(0.99)	0.05	(0.92)	0.03	(0.97)	0.00	(0.98)	0.15	(0.97)
Management Related	318	0.24	(0.99)	0.20	(0.86)	-0.08	(0.94)	0.10	(1.01)	0.22	(0.90)
Mathematical & Computer Scientists	153	-0.21	(1.01)	-0.07	(0.88)	0.05	(0.91)	-0.12	(1.01)	0.22	(0.84)
Engineers, Architects, Surveyors, & Related	78	0.19	(1.02)	-0.06	(0.97)	0.23	(0.76)	-0.22	(0.91)	0.28	(0.93)
Counselors, Social & Religious Workers	137	0.07	(1.00)	-0.04	(0.88)	-0.14	(1.01)	0.21	(0.90)	-0.09	(0.96)
Lawyers, Judges & Legal Support Workers	62	0.31	(1.01)	0.24	(0.91)	0.12	(0.75)	0.08	(0.87)	0.14	(0.80)
Teachers	336	0.13	(1.00)	0.09	(0.94)	0.02	(0.93)	0.19	(0.99)	0.16	(0.94)
Entertainers, Performers, Sports & Related	87	0.20	(1.06)	0.06	(1.03)	0.41	(0.80)	0.14	(0.97)	0.11	(1.08)
Media & Communications Workers	70	0.11	(1.18)	-0.20	(1.00)	0.22	(0.93)	0.23	(1.10)	-0.03	(0.96)
Health Diagnosing and Treating Practitioners	219	0.09	(0.97)	0.18	(0.97)	0.03	(0.88)	0.43	(0.97)	0.13	(0.92)
Health Care Technical & Support	351	0.10	(0.94)	0.10	(0.97)	-0.02	(1.04)	0.11	(0.95)	-0.10	(0.98)
Protective Service	175	-0.00	(0.86)	0.05	(0.88)	-0.14	(1.05)	-0.04	(0.91)	0.19	(0.85)
Food Preparation and Serving Related	363	-0.03	(1.04)	-0.15	(1.10)	0.17	(0.98)	0.06	(1.02)	-0.16	(1.05)
Cleaning & Building Service	220	-0.26	(1.02)	0.04	(1.10)	-0.14	(1.18)	-0.07	(1.04)	-0.20	(1.07)
Personal Care & Service Workers	220	0.05	(1.08)	0.07	(0.99)	0.09	(1.04)	0.12	(1.06)	0.01	(0.97)
Sales & Related Workers	589	0.18	(0.93)	-0.05	(1.01)	0.13	(0.92)	-0.01	(0.97)	0.11	(0.96)
Office & Administrative Support Workers	902	-0.03	(0.97)	0.05	(0.94)	-0.05	(0.94)	0.05	(0.94)	-0.04	(0.97)
Construction Trade & Extraction Workers	350	-0.10	(0.98)	-0.12	(1.00)	-0.00	(1.06)	-0.19	(0.87)	0.03	(1.00)
Installation, Maintenance & Repair Workers	224	-0.15	(0.89)	-0.19	(0.90)	-0.03	(0.97)	-0.11	(1.04)	0.21	(0.93)
Production & Operating Workers	97	-0.30	(0.88)	-0.01	(1.04)	0.04	(0.95)	-0.34	(0.87)	-0.16	(0.90)
Setters, Operators and Tenders	236	-0.15	(0.94)	-0.00	(0.99)	-0.01	(0.97)	-0.05	(0.96)	-0.02	(0.90)
Transportation & Material Moving Workers	418	-0.11	(0.94)	-0.04	(1.01)	-0.09	(0.99)	-0.24	(0.96)	0.02	(1.00)

Notes: The table reports the mean and standard deviation for each Big 5 personality trait for workers in broad occupational categories for occupations in which more than 50 respondents were observed using one observation per respondent between the ages of 32 and 34 (N=6,419) for individuals who were employed and not serving in the military.

Appendix Table 1. Task dictionaries

Task requirement	Phrases searched for in ads
Communication	"ability to communicate" "able to communicate" "ask* questions" "bargain* for" "bargain* on behalf" "bargain* with" "bargaining" "barter* a trade" "barter* an exchange" "barter* with" "bring* around to" "change* the opinion" "charm* buyer*" "charm* client*" "charm* potential" "charm* seller*" "coaxing" "cold call*" "communicat* to" "communicat* with" "communication* skill*" "compromise* with" "excellent communication" "excellent verbal" "excellent written" "explain* information" "explain* to" "explain* to colleagues" "explain* to coworkers" "explain* to peers" "gain* cooperation from" "hash* out" "horse trad*" "inform* coworkers" "inform* manager" "inform* subordinates" "inform* supervisor" "interpret* for" "interpret* how" "mediate* disputes" "negotiate with" "negotiates with" "pay* full attention" "persuad*" "persuasion" "persuasive" "persuasively" "persuasiveness" "present* abilit*" "present* information" "present* skill*" "present* to coworker*" "present* to peer*" "present* to supervisor*" "present* justification" "prove* to customer*" "provid* assurance" "provid* feedback" "provid* information to" "renegotiate*" "resolv* conflict*" "resolv* dispute*" "rope* in" "settl* dispute*" "speak* to other*" "strong communication" "strong verbal" "sway*" "sweet-talk*" "talk* to" "talk* into" "talk* terms" "translat* for" "understand* point* being made" "verbal abilit*" "verbal and written communication" "verbal skill*" "win* over" "written and oral"
Interpersonal	"aware of feelings" "aware of customers* feelings" "aware of others* feelings" "build* relation*" "constructive working" "cooperative working" "deal* with other*" "deal* with other*" "deal* with people" "develop* relation*" "develop* working relationship*" "establish* interpersonal" "establish* personal" "excellent interpersonal" "face to face" "form* working relationship*" "help* colleague*" "help* coworker*" "help* to coworker*" "inter* with coworker*" "inter* with subordin*" "interac* with other*" "interact* social*" "interact* with " "interpersonal relation*" "interpersonal skill*" "keep* in touch" "maintain* good *** relation*" "maintain* relation*" "maintain* working relationship*" "sensitive to customer* feeling*" "social interact*" "social* perceptiv" "social* aware*" "socially astute" "strong interpersonal" "understanding of coworkers" "understanding of others" "understanding others" "work* closely with"
Teamwork	"consult* with other" "contribu* to a group" "contribu* to a team" "contribu* to coworker*" "contribu* to other*" "contribut* to a team" "contribut* to the team" "contribute as a team" "contribute to a team"

	“contribute to team” “contribute to the team” “cooperat* among team*” “cooperat* with” “coordinat* activit*” “coordinat* effort*” “coordinat* work” “coordinate* with” “deal* with coworker*” “discussion with team” “discussion* with coworkers” “discussion* with peers” “group work” “groupwork” “instruct* coworkers” “liais* with” “member of a team” “member of team” “member of the team” “part of a team” “part of team” “provid* advice to” “teach* coworker*” “team contribution” “team driven” “team dynamic*” “team environment” “team focus” “team member” “team oriented” “team player” “team production” “team spirit*” “team work” “team-center*” “team-centric” “team-driven” “teamwork” “work* as part of a team” “work* in a group” “work* in a group” “work* in a team” “work* in a team” “work* in group*” “work* with colleague*” “work* with fellow” “work* with other*” “work* with peers” “work* with team*”
Caring/service	“ask* customer*” “assist* others” “care for “ “cared for” “caregiver*” “cares for” “caring for” “concern for coworkers” “concern for customer*” “concern for others” “concern for patient* “ “concern for student*” “customer service*” “customer support” “emotional support” “emotional well-being” “giv* care to” “help* customer*” “help* patient*” “help* people” “help* to customer*” “help* to others” “help* to patient*” “look* to help” “nurtur* child*” “nurtur* patient*” “nurtur* student*” “personal assistance to” “personal care for” “personal care to “ “provid* assistance” “provid* care to” “provid* personal assistance” “provid* service* to” “sensitive to feelings” “sensitive to needs” “sensitive to other* feeling*” “sensitive to the needs of” “support* of child*” “support* of patient*” “support* patient*” “understanding of patient*”
Leadership & decision-making	“ability to lead” “ability to manage” “able to lead” “able to manage” “assess* performance*” “build* team*” “coordinat* the work” “coordinate* among” “deal* with subordin*” “decid* on” “decid* to” “decision maker” “decision making” “determin* the agenda*” “determin* the best course” “develop* people” “develop* staff” “develop* team*” “develop* team*” “direct* employees” “direct* other “ “direct* staff” “direct* team*” “direct* the acti*” “encourag* cooperat*” “experience leading” “guid* direct report*” “guid* junior” “guid* staff” “guid* subordinate*” “guid* team*” “lead* a” “lead* direct report*” “lead* group*” “lead* people “ “lead* staff” “lead* subordinates” “lead* team*” “lead* the” “lead* your subordinates” “leadership ability” “mak* a decision” “mak* choice*” “mak* decision*” “mak* the decision” “mak* the determination” “manage* multiple*” “managerial ability” “monitor* performance” “motivat* direct report*” “motivat* staff” “motivat* subordinate*” “motivat* team*” “organiz* the work” “organizational abilit*” “organizational skill*” “oversee* “ “proven leader*” “set* goals” “set* priorities” “set* standards”

	“set* tasks” “set* the agenda*” “supervis* a” “supervis* acti*” “supervis* staff” “supervis* team” “supervis* the” “tak* action” “tak* corrective action” “tak* decision” “tak* decisive” “team build*”
Problem-solving	“analytical abil*” “analytical skill*” “apply* rule*” “combin* information” “complex reasoning” “deductive reasoning” “deductive skill*” “determin* the” “diagnose* problem*” “diagnose* the” “excellent analytical” “inductive* reasoning” “inductive* skill*” “problem solv*” “solv* problems” “strong analytical” “systematic think*” “thoughtful analysis” “us* principle*”
Creative	“alternative thinking” “brainstorm*” “com* up with new “ “create* new” “design* innovative” “design* new” “develop* innovative” “develop* new” “fresh ideas” “generat* idea*” “generat* new “ “innovate* “ “invent* a” “invents new” “new ideas” “original think*” “originality “ “outside of the box” “outside the box” “think* creatively” “up with novel idea*”
Attention-to-detail	“accurately” “assur* quality” “attention to detail*” “attention to quality” “commit* to quality” “deliver high quality” “demonstrat* accuracy” “detail orient*” “ensur* quality” “get* the details right” “insur* quality” “maintain* quality” “precisely” “quality assur*” “quality control” “quality orient*” “quality standards” “who is accurate” “with great care” “with precision”
Independent work	“act* independent*” “autonomy” “demonstrat* independence” “function* independent*” “ha* freedom to” “independent action” “independent product*” “independent work” “operat* independent*” “own boss” “own hours” “produc* independent” “show* independence” “think* independent*” “under minimal supervision” “with minimal supervision” “without supervision” “work* independent*” “work* well independent*”
Routine	“automated” “check* all” “check* the “ “computer-controlled environment” “constant, repeated” “constant, repeated” “continuous attention” “continuous basis” “continuous bending” “continuous effort” “continuous heavy” “continuous lifting” “continuous line” “continuous monitoring” “continuous operating” “continuous operation” “continuous operations “ “continuous physical” “continuous production” “continuous run” “continuous sitting” “continuous standing” “continuous stooping” “continuous use” “data entering” “data entry” “key entering” “key entry” “mechanized process” “mechanized production” “monotonous” “repeat*” “repetitious” “repetitive*” “robotic* process” “robotic* production” “unchanging” “unvaried” “without stopping”
Manual	“ability to bend” “ability to lift” “ability to pull, pack” “ability to push” “able to bend” “able to lift” “able to push” “able to stretch” “arm strength” “assembl*, disassembl*” “assembl* electronic*” “assemble*, install*” “assemble*, store*” assemble*, test*” “assemble* and check*” “assemble*

	and disassemble*” “assemble* and install*” “assemble* and move*” “assemble* and operate*” “assemble* and package*” “assemble* and rebuild*” “assemble* and test*” “assemble* and wire*” “assemble* component*” “assemble* container*” “assemble* electronic*” “assemble* furniture” “assemble* gas” “assemble* machine*” “assemble* mechanical*” “assemble* motor*” “assemble* parts” “assemble* product*” “assemble* prototype” “assemble* unit” “bends” “be able to carry” “body flexibility” “carry* heavy” “climb* a” “climb* up” “cuts” “drills” “driv* vehicle” “exert* force” “flexible body” “grasping” “handl* object*” “handl* tool*” “hand tools” “heavy equipment” “heavy lift*” “lift* heavy” “maneuver* vehicle” “manual dexterity” “manual labor” “manual strength” “manual work” “operat* craft” “operat* forklift*” “operat* machin*” “operat* motor” “operat* vehicle” “operate* aircraft” “operates equipment” “operate equipment” “pack* up” “perform assembly” “physical endurance” “physical labor” “physical stamina” “physical strength” “plac* in package*” “pull* heavy” “pull, lace and stitch” “push*, pull*” “push* and pull*” “run* equipment” “run* machin*” “screw* on” “push* heavy” “screwdriver*” “shovel*” “static strength” “to grasp, lift” “to grasp, place” “to grasp, stoop” “to grasp and lift” “to grasp and move” “to grasp and use” “upper body strength” “us* arms” “us* legs” “us* body” “us* your body” “use* tools, drills” “use* tools and checking equipment” “Use* tools and equipment” “use* tools and instruments” “use*tools and test equipment” “use* tools such as hammers” “use* tools such as measuring” “use* tools such as screwdrivers” “wrench” “use* tools, climb”
Mathematics	“add* numbers” “algebra” “analyz* data” “arithmetic” “calculat*” “calculus” “count* change” “count* the amount” “deriv* a complex” “deriv* complex” “develop* a math* model*” “develop* math* model*” “geometry” “math* model*” “math* reasoning” “math* required” “math*ability” “mathematic* method*” “solv* math* problem*” “statistics” “to calculate” “use math*” “using math*”

Appendix Table 2. Aspect dictionaries

Compassionate: affectionate altruistic amiable amicable angelic appreciative beneficent benevolent bighearted charitable cherubic compassionate considerate consolatory empathic intimate feminine folksy forgiving friendly generous genial gentle gentle-hearted giving good-hearted great-hearted gullible helpful homespun intimate kind kind-hearted lenient long-suffering loving magnanimous merciful ministrative mushy humanitarian neighborly open-hearted overcaring overcharitable overindulgent overpatient passionate praising selfless self-sacrificing sensitive sentimental soft-hearted solicitous sugary sunny sympathetic tender-hearted tender thoughtful trustful trusting ultrasentimental understanding undespairing unhardened unimpatient unmalicious unsuspicious warm warm-hearted
Politeness: acceptant accessible accommodating adaptable adaptive agreeableness agreeable approachable broad-minded cheerful chivalrous civil complaisant compliant comradely conciliatory congenial conscientious constant constructive cooperative cordial courteous democratic diplomatic earnest earthy easy-going faithful equalitarian ethical fair-minded fair-natured flexible gentlemanlike good-humored good-natured good-tempered honest hospitable humane humble inaggressive informal ingratiating ingratiatory inirritable jovial loyal mannerly mild-hearted modest moral naive natural nonbelligerent noncoercive nonhostile noninterfering nonrigid obliging open-minded optimistic pacifistic patient peaceful peacemaking pleasant polite prejudiceless principled quiet-spoken reasonable relaxed religious respectful responsive reverent simple sincere soft-spoken sportsmanlike statesmanlike suggestible tactful tolerant truthful ultrademocratic unargumentative unassuming unbelligerent unbiased unbigoted uncomplaining uncritical undemanding undiscourageable undogmatic unembittered unenvious unexacting ungrudging unmeddling unmercenary unmoralizing unpartisan unrevengeful unselfish unvindictive unwarlike well-mannered
Industriousness: abstinent aimful ambitious anticipative businesslike calculable concise controlled crusading decisive dedicated deliberate dependable designful devout diligent doctrinaire dogged dutiful economical efficient evangelistic farseeing forbearing foresighted forethoughtful forward-looking frugal hard-working indivertible industrious mature other-worldly overambitious overdiligent overearnest persevering persistent pious plain-dealing planful practical prayerful preachy premeditative productive prompt purposeful purposive reliable responsible self-consistent self-denying self-disciplined self-restrained serious-minded single-minded spiritual steady tenacious thrifty traditional ultrareligious unadulterous unextravagant unfailing unfaltering unforgetful unprogressive unresting unswerving untemptable unvarying unwavering unworldly worshipful
Orderliness: accurate alert analytical careful cautious changeless clairvoyant clear-sighted conscientiousness conscientious conservative consistent conventional cultured dignified discreet eagle-eyed exacting exact exhaustive fastidious firm formal god-fearing heedful high-

minded high-principled incorrupt incorruptible invariable just law-abiding logical mannerly methodical meticulous moralistic moralizing nonvariant objective orderly organized overcareful overcautious overconscientious overfastidious overlogical overparticular overrighteous overrigorous overscrupulous overzealous painstaking particular perfectionistic poised precise predictable principled proper prophetic prudent punctual puritanical rational refined rigorous ritualistic saintly sophisticated strait-laced strict systematic thorough thoroughgoing tidy ultraconservative ultrafastidious unchangeable unchanging undeviating unerring unspontaneous wise

Non-volatility:
arbitrative astute autonomous calm casual certain clear-headed cool-headed deliberative discerning down-to-earth earthy easy-going emotional_equilibrium emotional_stability free-minded free-thinking fretless imperturbable incoercible independent inexcitable informal judicious level-headed nonchalant nonirritable patient penetrative pensive poised realistic reflective relaxed self-controlled self-possessed serene stable unassuming unblushing undeceivable undefeatable undisturbable unemotional unexcitable unflinching unimpassionate unshakable unstormy weariless

Non-withdrawal:
brave contented courageous durable_role hard-headed indestructible individualistic indomitable invincible inward masculine observant passionless self-assured self-confident self-examining self-reliant self-sufficient thick-skinned tough-minded undemanding wide-awake worriless

Intellect:
accomplished articulate autonomous blasé bookish brainy bright cavalier clever complex complicated contemplative creative deep diplomatic distrustful earthly-wise educable educated eloquent foresighted high-faluting independent individualistic informed ingenious innovative inquiring_minds inquisitive insightful instructible intellectual intelligent intense intricate introspective intuitive inventive knowledgeable literate many-sided meditative nimble-witted original overstudious oversubtle perceptive philosophical philosophizing profound questioning quick-witted resourceful scholarly self-critical sharp-witted shrewd smart sophisticated studious tenacious ultraintellectual versatile well-read wise witty

Openness (A):
abstract animated aristocratic artistic candid ceremonious cosmopolitan courtly cultured curious dapper debonair elegant empathetic enlightened ethical flaunty genteel graceful gracious haughty idealistic imaginative jaunty nonconforming openness open-to-experience* open_to_new_experience* poetic polished progressive refined scrupulous sensual suave subjective tasteful ultrarefined unconventional unimpressible unpredictable unprovincial wide-interests worldly worldly-wise

Enthusiasm:
amorous boisterous bubbly buoyant carefree chatty cheerful chitchatty clownish coherent companionable disguiseless effervescent enthusiastic flirtatious friendly frisky gallant gregarious gushy happy-go-lucky hearty high-spirited humorous hypersensual jocular jovial

lion-hearted lively merry mirthful optimistic out-going overmerry participative peppy perky playful rambunctious rollicking self-expressive self-revealing self-satisfied sensuous sexy sociable social sparkling spontaneous stalwart sultry ultrasensual unchaste unconcealing uncontriving undevious undisguised unguarded vivacious voluptuous well-spoken witty

Assertiveness:
active adventurous affirmative aggressive ambitious assertive assured audacious aweless bigheaded big-mouthed bold bossy brash brave brazen brisk broad-spoken brusque clear-cut cocky communicative competitive competitory confident conversational courageous daring dauntless definite demonstrative devil-may-care direct expansive explicit forward dominant dynamic eager emphatic energetic enterprising exhibitionistic expressive fatigueless fearless fervent flamboyant forceful forthright frank gutsy hasty headlong heroic immodest impetuous imprudent incautious indefatigable indeliberate inexhaustible informative injudicious intrusive loose-tongued loud-mouthed magnetic militant mischievous nervy noisy opportunistic out-spoken overbold overbrave overconfident overdaring overemphatic overhasty overintense overrash overtalkative overvaliant persistent persuasive plain-spoken plucky pretenseless proud rivalrous self-assertive self-centered self-important self-respecting short-spoken show-off smooth-spoken spirited sprightly spunky steadfast stout-hearted straight-forward swellheaded talkative terse tireless uncautious uninhibited unreserved unrestrained unselfconscious unshrinking untiring valorous venturesome venturous verbal verbose vibrant vigorous vocal wordy zealous zestful

Notes: False positives were eliminated using an extensive exclusion list, which is available from the authors.

Appendix Table 3. NLSY97 Summary Statistics

	Sorting on O*NET task sample	Sorting on job task sample	Personality-O*NET interactions sample	Personality-job task interactions sample
	(1)	(2)	(3)	(4)
Extraversion	9.42	9.44	9.38	9.46
	(2.65)	(2.67)	(2.67)	(2.68)
Conscientiousness	11.40	11.41	11.38	11.42
	(2.19)	(2.19)	(2.21)	(2.16)
Openness	10.97	10.99	10.95	10.98
	(2.13)	(2.13)	(2.15)	(2.10)
Agreeableness	9.96	9.98	9.93	9.99
	(2.17)	(2.20)	(2.20)	(2.20)
Emotional stability	10.04	10.06	9.94	10.11
	(2.59)	(2.57)	(2.61)	(2.54)
Ln(wage)	2.63	2.76	2.45	2.79
	(0.65)	(0.66)	(0.57)	(0.61)
Black	0.25	0.26	0.26	0.25
	(0.44)	(0.44)	(0.44)	(0.43)
Hispanic	0.21	0.21	0.21	0.20
	(0.40)	(0.40)	(0.41)	(0.40)
Female	0.50	0.50	0.49	0.50
	(0.50)	(0.50)	(0.50)	(0.50)
Age at interview	33.01	35.43	27.27	35.98
	(0.78)	(1.64)	(5.22)	(1.71)
Highest grade completed	14.05	14.29	13.24	14.34
	(2.99)	(3.01)	(2.68)	(3.00)
Experience	13.19	15.21	8.61	16.00
	(3.61)	(4.09)	(5.04)	(4.05)
N	6,419	4,941	59,802	7,811

Notes: Standard deviations in parentheses. The raw Big 5 scores are reported to aid in the interpretation of the distributions by occupation in Table 10, which uses the scores standardized to have mean zero and standard deviation one in the full respondent sample.

Appendix Table 4. Correlations between task requirements in the ads

Task requirement	Communication	Interpersonal	Teamwork	Caring	Leadership	Problem-solving	Creative	Attention-to-detail	Independent work	Routine	Manual
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
Communication	1.00										
Interpersonal	.21	1.00									
Teamwork	.15	.13	1.00								
Caring	.12	.06	.03	1.00							
Leadership	.22	.15	.09	.04	1.00						
Problem-solving	.24	.15	.12	.05	.20	1.00					
Creative	.10	.08	.05	.01	.05	.05	1.00				
Attention-to-detail	.16	.10	.09	.06	.13	.15	.01	1.00			
Independent work	.13	.11	.10	.04	.08	.10	.02	.08	1.00		
Routine	-.02	-.02	-.02	.09	-.04	-.01	-.02	.09	.01	1.00	
Manual	.03	-.01	.02	.06	*-.01*	.01	*.00*	.03	.02	.02	
Mathematics	.04	.06	.05	-.03	.03	.07	.02	.05	.08	*.01*	.02

Notes: Each cell reports the Pearson correlation coefficient between the task requirement measures indicated in the row and column in the job ad sample (N = 140,193). All of the correlations are significant at the 1% level except for those in italics that are not significant.

Appendix Table 5. Correlations between the O*NET task measures

Task requirement	Communication	Interpersonal	Teamwork	Caring	Leadership	Problem-solving	Creative	Attention-to-detail	Independent work	Routine	Manual
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
Communication	1.00										
Interpersonal	.45	1.00									
Teamwork	.68	.28	1.00								
Caring	.51	.58	.57	1.00							
Leadership	.89	.49	.78	.58	1.00						
Problem-solving	.92	.38	.58	.42	.82	1.00					
Creative	.87	.42	.57	.38	.84	.87	1.00				
Attention-to-detail	.43	*.13*	.35	.26	.37	.49	.43	1.00			
Independent work	.38	*.05*	.31	.33	.36	.40	.41	.40	1.00		
Routine	*.03*	-.20	*.05*	*-.06*	*-.08*	*-.00*	-.16	.32	*.01*	1.00	
Manual	-.47	.35	-.32	*-.02*	*-.32*	-.49	*-.34*	-.24	-.34	-.22	1.00
Mathematics	.75	.20	.39	.15	.62	.80	.73	.40	.18	*.14*	-.41

Notes: Each cell reports the Pearson correlation coefficient between the O*NET task requirement measures indicated in the row and column in the O*NET database of occupations (N = 325). All of the correlations are significant at the 1% level except for those in italics that are not significant.

Appendix Table 6. Partial correlations between Big 5 traits and task requirements in ads without occupation controls

	Extroversion	Conscientiousness	Openness	Agreeableness	Emotional stability
Task requirement	(1)	(2)	(3)	(4)	(5)
Communication	0.048***	0.039***	0.042***	0.025***	0.018***
	(0.003)	(0.003)	(0.003)	(0.002)	(0.002)
Interpersonal	0.062***	0.019***	0.014***	0.038***	-0.005**
	(0.004)	(0.003)	(0.003)	(0.003)	(0.002)
Teamwork	0.042***	0.009***	0.027***	0.047***	-0.006***
	(0.003)	(0.003)	(0.003)	(0.003)	(0.002)
Caring/service	0.089***	0.062***	-0.006**	0.066***	0.013***
	(0.003)	(0.003)	(0.003)	(0.003)	(0.002)
Leadership & decision-making	0.029***	0.030***	0.055***	0.015***	0.006***
	(0.003)	(0.003)	(0.003)	(0.003)	(0.002)
Problem-solving	0.008**	0.031***	0.074***	0.022***	-0.003
	(0.004)	(0.004)	(0.004)	(0.003)	(0.002)
Creative	0.083***	0.001	0.150***	0.011**	0.005
	(0.007)	(0.006)	(0.007)	(0.005)	(0.004)
Attention-to-detail	0.007*	0.106***	0.032***	0.016***	0.022***
	(0.004)	(0.004)	(0.003)	(0.003)	(0.003)
Independent work	0.007	0.053***	0.023***	0.011***	0.031***
	(0.005)	(0.005)	(0.005)	(0.004)	(0.003)
Routine	-0.031***	0.018***	-0.043***	0.010***	0.056***
	(0.004)	(0.005)	(0.003)	(0.004)	(0.004)
Manual	-0.034***	0.072***	-0.036***	-0.008	0.000
	(0.007)	(0.008)	(0.006)	(0.006)	(0.004)
Mathematics	-0.088***	0.034***	-0.048***	-0.052***	-0.025***
	(0.006)	(0.007)	(0.006)	(0.005)	(0.003)

Notes: Each column reports the coefficient estimates from a regression of the trait requirement indicated in the column on the task requirements in the ads, experience and education requirements, region indicators, and the length of the ads in characters. Heteroskedasticity-robust standard errors are reported in parentheses. Significance levels: *** p<0.01, ** p<0.05, * p<0.10. Significance levels: *** p<0.01, ** p<0.05, * p<0.10.

Appendix Table 7. Partial correlations between aspects and task requirements in ads without occupation controls

	Assertiveness	Enthusiasm	Industriousness	Orderliness	Intellect
Task requirement	(1)	(2)	(3)	(4)	(5)
Communication	0.046***	0.010***	0.012***	0.043***	0.039***
	(0.003)	(0.002)	(0.002)	(0.002)	(0.002)
Interpersonal	0.051***	0.027***	0.006*	0.008***	0.016***
	(0.003)	(0.002)	(0.003)	(0.003)	(0.003)
Teamwork	0.037***	0.018***	0.001	0.019***	0.023***
	(0.003)	(0.002)	(0.003)	(0.002)	(0.003)
Caring/service	0.064***	0.036***	0.046***	0.012***	-0.016***
	(0.003)	(0.002)	(0.003)	(0.002)	(0.003)
Leadership & decision-making	0.027***	0.004**	0.025***	0.015***	0.053***
	(0.003)	(0.002)	(0.003)	(0.002)	(0.003)
Problem-solving	0.021***	-0.020***	0.035***	0.023***	0.079***
	(0.004)	(0.002)	(0.004)	(0.003)	(0.004)
Creative	0.093***	-0.003	0.006	-0.010**	0.127***
	(0.007)	(0.003)	(0.006)	(0.005)	(0.006)
Attention-to-detail	-0.003	0.011***	0.038***	0.114***	0.028***
	(0.004)	(0.002)	(0.003)	(0.003)	(0.003)
Independent work	0.003	-0.005*	0.037***	0.024***	0.029***
	(0.005)	(0.003)	(0.005)	(0.004)	(0.005)
Routine	-0.034***	-0.004	-0.028***	0.054***	-0.040***
	(0.004)	(0.003)	(0.004)	(0.004)	(0.003)
Manual	-0.061***	0.011**	0.010	0.072***	-0.030***
	(0.006)	(0.004)	(0.007)	(0.006)	(0.005)
Mathematics	-0.081***	-0.023***	0.029***	0.016***	-0.042***
	(0.005)	(0.003)	(0.006)	(0.005)	(0.005)

Notes: Each column reports the coefficient estimates from a regression of the aspect requirement indicated in the column on the task requirements in the ads, experience and education requirements, region indicators, and the length of the ads in characters. Heteroskedasticity-robust standard errors are reported in parentheses. Significance levels: *** p<0.01, ** p<0.05, * p<0.10.

Appendix Table 7 continued. Partial correlations between aspects and task requirements in ads without occupation controls

	Openness	Politeness	Compassion	Non-volatility	Non-withdrawal
Task requirement	(6)	(7)	(8)	(9)	(10)
Communication	0.006***	0.020***	-0.002	0.017***	0.003***
	(0.001)	(0.002)	(0.002)	(0.002)	(0.000)
Interpersonal	0.007***	0.027***	0.029***	-0.005**	-0.002***
	(0.001)	(0.003)	(0.002)	(0.002)	(0.000)
Teamwork	0.014***	0.035***	0.017***	-0.006***	0.000
	(0.001)	(0.002)	(0.002)	(0.002)	(0.000)
Caring/service	0.004***	0.040***	0.041***	0.013***	-0.002***
	(0.001)	(0.002)	(0.002)	(0.002)	(0.000)
Leadership & decision-making	0.002*	0.011***	0.013***	0.008***	0.002***
	(0.001)	(0.002)	(0.002)	(0.002)	(0.001)
Problem-solving	0.000	0.039***	-0.025***	-0.004	-0.002***
	(0.002)	(0.003)	(0.002)	(0.002)	(0.001)
Creative	0.029***	0.023***	-0.021***	0.003	0.002
	(0.003)	(0.005)	(0.003)	(0.004)	(0.001)
Attention-to-detail	0.005***	0.010***	0.002	0.022***	0.002***
	(0.002)	(0.003)	(0.002)	(0.002)	(0.001)
Independent work	0.005**	0.011***	-0.005*	0.028***	0.001
	(0.002)	(0.004)	(0.003)	(0.003)	(0.001)
Routine	-0.006***	0.016***	0.015***	0.055***	0.002**
	(0.002)	(0.003)	(0.003)	(0.004)	(0.001)
Manual	-0.017***	-0.004	-0.007*	-0.000	-0.003***
	(0.002)	(0.005)	(0.004)	(0.004)	(0.001)
Mathematics	-0.009***	-0.042***	-0.021***	-0.024***	-0.001
	(0.002)	(0.004)	(0.003)	(0.003)	(0.001)

Notes: Each column reports the coefficient estimates from a regression of the aspect requirement indicated in the column on the task requirements in the ads, experience and education requirements, region indicators, and the length of the ads in characters. Heteroskedasticity-robust standard errors are reported in parentheses. Significance levels: *** p<0.01, ** p<0.05, * p<0.10.

Appendix Table 8. Partial correlations between traits & O*NET tasks among men in the NLSY97

	Extroversion	Conscientiousness	Openness	Agreeableness	Emotional stability
Task requirement	(1)	(2)	(3)	(4)	(5)
Communication	0.134*	-0.149**	-0.031	-0.082	-0.049
	(0.072)	(0.072)	(0.071)	(0.074)	(0.069)
Interpersonal	-0.060*	0.039	0.027	-0.014	-0.010
	(0.036)	(0.037)	(0.035)	(0.034)	(0.033)
Teamwork	-0.072**	0.020	0.018	-0.041	-0.011
	(0.034)	(0.034)	(0.035)	(0.035)	(0.033)
Caring	-0.016	-0.058**	0.019	0.047*	0.018
	(0.028)	(0.029)	(0.029)	(0.028)	(0.026)
Leadership & decision-making	0.226***	0.045	-0.075	0.066	0.045
	(0.061)	(0.061)	(0.061)	(0.061)	(0.057)
Problem-solving	-0.077	0.154**	-0.148**	0.045	0.143**
	(0.064)	(0.064)	(0.061)	(0.063)	(0.059)
Creative	-0.099*	0.019	0.230***	0.049	-0.017
	(0.055)	(0.055)	(0.053)	(0.052)	(0.049)
Attention-to-detail	0.059**	-0.042	-0.024	-0.018	-0.025
	(0.027)	(0.027)	(0.026)	(0.027)	(0.025)
Independent work	-0.009	0.050*	-0.023	-0.016	0.048*
	(0.027)	(0.026)	(0.026)	(0.028)	(0.026)
Routine	-0.029	0.035	0.011	-0.016	0.004
	(0.026)	(0.028)	(0.027)	(0.028)	(0.025)
Manual	-0.019	0.009	-0.079**	-0.020	0.012
	(0.034)	(0.035)	(0.036)	(0.034)	(0.032)
Mathematics	-0.011	-0.022	0.002	-0.019	-0.002
	(0.034)	(0.032)	(0.034)	(0.034)	(0.031)

Notes: Each column reports coefficient estimates from regressions of the Big 5 trait indicated in the column on occupation-level task requirements from O*NET and age-at-interview indicators using a single observation for each man between ages 32 and 34 (N=3,220). Heteroskedasticity robust standard errors are reported in parentheses. Significance levels: *** p<0.01, ** p<0.05, * p<0.10.

Appendix Table 9. Partial correlations between traits & O*NET tasks among women in the NLSY97

	Extroversion	Conscientiousness	Openness	Agreeableness	Emotional stability
Task requirement	(1)	(2)	(3)	(4)	(5)
Communication	0.044	-0.175**	0.153*	-0.045	0.022
	(0.084)	(0.080)	(0.082)	(0.078)	(0.080)
Interpersonal	-0.076*	0.005	-0.011	-0.035	-0.110**
	(0.044)	(0.044)	(0.042)	(0.041)	(0.043)
Teamwork	-0.005	0.038	-0.023	-0.087**	-0.040
	(0.039)	(0.038)	(0.040)	(0.038)	(0.039)
Caring	0.034	0.019	0.023	0.100***	0.100***
	(0.037)	(0.036)	(0.036)	(0.035)	(0.038)
Leadership & decision-making	0.132**	-0.073	-0.041	-0.069	-0.029
	(0.065)	(0.064)	(0.066)	(0.062)	(0.066)
Problem-solving	0.008	0.282***	-0.143**	0.126**	0.090
	(0.065)	(0.061)	(0.062)	(0.062)	(0.064)
Creative tasks	-0.015	-0.062	0.102*	0.049	0.040
	(0.057)	(0.055)	(0.054)	(0.055)	(0.056)
Attention-to-detail	-0.017	-0.009	0.035	0.014	-0.003
	(0.030)	(0.029)	(0.029)	(0.028)	(0.030)
Independent work	-0.028	0.012	-0.055*	0.002	0.002
	(0.028)	(0.027)	(0.029)	(0.027)	(0.028)
Routine	-0.021	-0.003	-0.017	-0.026	-0.024
	(0.029)	(0.029)	(0.029)	(0.028)	(0.029)
Manual	-0.031	0.009	0.030	-0.013	-0.021
	(0.036)	(0.034)	(0.034)	(0.033)	(0.035)
Mathematics	-0.026	0.065*	0.016	-0.002	0.054
	(0.039)	(0.035)	(0.036)	(0.036)	(0.038)

Notes: Each column reports coefficient estimates from regressions of the Big 5 trait indicated in the column on occupation-level task requirements from O*NET and age-at-interview indicators using a single observation for each woman between ages 32 and 34 (N=3,199). Heteroskedasticity robust standard errors are reported in parentheses. Significance levels: *** p<0.01, ** p<0.05, * p<0.10.