

Personality Psychology

Occupational Prestige: The Status Component of Socioeconomic Status

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Keywords: occupational prestige, socioeconomic status, status, O*NET, occupations, work

<https://doi.org/10.1525/collabra.92882>

Collabra: Psychology

Vol. 10, Issue 1, 2024

The relationship between life outcomes and an individual's standing in the social and economic hierarchy of society is an important topic across the social sciences. Foundational to this work is assessing an individual's standing in this hierarchy, often referred to as socioeconomic status (SES). One component of an individual's SES, often overlooked in the psychological literature, is occupational prestige – the amount of status accorded to them based on their occupational role. In this research, we collected and validated a new index of occupational prestige for 1029 specific occupations, including all jobs in the US Department of Labor's O*NET database, and 22 broader occupational families. In Study 1, we collected a comprehensive set of occupational prestige ratings from an online convenience sample, and demonstrated their high reliability. In Study 2, we developed a crosswalk between the ratings collected in Study 1 and prior ratings of occupations listed in the US Census and show convergent validity with previous indices. In Studies 3 and 4 we used additional data to evaluate the construct validity of occupational prestige more broadly. In Study 3, we established convergent and discriminant validity with other indicators of SES: income and educational attainment. In Study 4, we use the O*NET database to identify the characteristics of occupations most strongly associated with prestige. These results support the validity of the index and suggest occupations with high prestige require skills traditionally emphasized in liberal arts education (e.g., critical thinking, reading comprehension).

It is hard to overstate the importance of an individual's standing in the social and economic hierarchy of society, or their socioeconomic status (SES), to their experience of daily life and important life outcomes. For example, studies have shown that SES influences development (Evans & English, 2002; Judd et al., 2020; Luby et al., 2013; Moriguchi & Shinohara, 2019), health (Adler et al., 1994; Lago et al., 2018), and well-being (Tan et al., 2020), and can also impact cognition (Mani et al., 2013; Migeot et al., 2022). Measuring where an individual stands in the socioeconomic hierarchy is not straightforward, and the consistency with which SES impacts life outcomes is matched by the inconsistency with which it is measured. Recent research in psychology has measured SES in many ways, ranging from assessments based on only one indicator – income (e.g., Goudeau & Croizet, 2017), educational attainment (e.g., Warlaumont et al., 2014), and (rarely) occupational prestige (e.g., Garrison & Rodgers, 2019) – to proxy

variables for those indicators, such as parental income (e.g., Drew et al., 2011), parental education (e.g., Davis-Kean et al., 2021), or much more narrow ad hoc measures, such as the number of bedrooms in one's home (Chan et al., 2016), eligibility for free school lunches (Harwell & LeBeau, 2010), and even the number of missing teeth (Nutsford et al., 2016).

The large number of measurement approaches highlights the inconsistencies in the definition and operationalization of SES in psychological research. The use of such disparate measures of SES can lead to numerous problems. The most prominent stem from the frequent practice of treating any single indicator of SES as an operationalization of the broader, multifaceted domain of SES (Antonoplis, 2022; Braveman et al., 2005). Furthermore, when indirect or ad hoc variables are used without prior evaluation of the relationship between the outcome of interest and the specific indicator, misleading and/or attenuated effects may

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be produced (Antonoplis, 2022; J. R. Edwards & Bagozzi, 2000). To address these concerns, several research teams have recommended the assessment of SES with a combination of indicators (Diemer et al., 2013; Krieger et al., 1997; Oakes & Rossi, 2003; Pollak & Wolfe, 2020), emphasizing variables that capture the primary sources of variation in SES, access to resources, and social status (Diemer et al., 2013), or more broadly, material, and social resources. Specifically, these recommendations are often to measure what we call the *three pillars of SES*: household income and educational attainment as indicators of access to resources and occupational prestige as an indicator of the social status given to individuals based on their societal role (i.e., occupation).

Despite these recommendations, and the importance of status as a fundamental psychological construct (Cheng et al., 2013; Fiske et al., 2002), researchers across subfields of psychology often neglect measuring occupational prestige. This neglect is somewhat surprising given the potential of occupational prestige to help understand the associations between SES and psychological functioning. A recent review of 152 articles on the effects of SES showed that only 16% measured an occupation variable (Antonoplis, 2022). Our own review of articles in two preeminent journals in psychology, the *Journal of Personality and Social Psychology* and *Psychological Science*, reached a similar conclusion. We used the internal search engine for each journal to identify the 10 most recent articles that included an objective measure of SES; all of these were published between 2010 and 2020 (review conducted in 2020). Only two of the 20 articles reported on all three pillars, and only five of the 20 assessed occupational prestige. Further, three of the articles reporting occupational prestige relied on coarse and antiquated ratings (e.g., Garrison & Rodgers, 2019; Pekrun et al., 2019; Turkheimer et al., 2003). Garrison and Rodgers (2019), for example, used an occupational rating system developed by Myrianthopoulos and French (1968) that groups all occupations into nine categories according to the average levels of education and income.

The continued use of a 50-year-old index of occupational prestige ratings (Myrianthopoulos & French, 1968) provides some insight as to why researchers do not often measure occupational prestige – it is a complex construct to measure. The other pillars of SES, income and educational attainment, can also be difficult to measure. Self-reported income is often misreported or not reported creating missing data issues (Epstein, 2006), and measuring education relies on researchers to determine the categories and ranking of a large number of possible degrees or certificates. However, in practice both are often measured with single self-report items, making them easy to incorporate into a study. In contrast, people are willing to accurately report their occupation (Hauser & Warren, 1997), but in order to assess occupational prestige this information needs to be converted into a score.

Measuring occupational prestige requires deciding on both an occupational taxonomy (e.g., US Census or O*NET) and an index of occupational stratification (e.g., Duncan, 1961; Myrianthopoulos & French, 1968; North & Hatt,

1947). The present work aims to make these decisions for researchers easier and to increase the study of the status component of SES by providing a precise, well-validated, and easy-to-use taxonomy of occupational prestige ratings of the largest institutional taxonomy of current occupations in the US. This new index includes prestige ratings based on the occupation titles and job families included in the Occupational Information Network (O*NET), a modern and comprehensive database of current occupations sponsored by the US Department of Labor. Using these ratings, we demonstrate that prestige provides psychological information that is distinct from income and educational attainment and we validate these ratings by characterizing the features of occupations with the highest and lowest ratings of prestige. Before describing the development of this taxonomy, we begin by defining occupational prestige, reviewing older measures, and summarizing the existing evidence of its construct validity.

What is Occupational Prestige?

For most people, occupations are central to daily life (Brown, 1996). They take up a considerable amount of time, and often both daily life and yearly calendars are organized around work schedules and fulfilling the obligations of a job. Whether it be washing dishes, performing open heart surgery, or running a hedge fund, work is how many spend a large portion of their waking hours. An individual's occupation also sits at the center of a person's SES – it requires a certain amount of education, dictates the range of one's income, and confers the social benefits of respect and admiration. Indeed, the primacy of occupation in determining SES has long led sociologists to place occupation at the center of understanding an individual's place in society's socioeconomic hierarchy (Duncan, 1961; Ganzeboom et al., 1992; Hollingshead, 1975; Hout et al., 2016; Myrianthopoulos & French, 1968; Nakao & Treas, 1992).

Occupational prestige is the social status allocated to an individual based on their occupation (Fujishiro et al., 2010). In turn, social status – alternatively called prestige (Cheng et al., 2013) or sociometric status (Anderson et al., 2012) – is the respect, admiration, and voluntary deference accorded to others based on their perceived instrumental social value (Anderson et al., 2015), an interpersonal judgment about the ability of others to help advance one's own goals (Leary et al., 2014). Previous work about occupational prestige has also operationalized it as a function of status (Hauser & Warren, 1997; Nakao & Treas, 1994; Nam & Boyd, 2004) or status adjacent constructs like desirability (Goldthorpe & Hope, 1972) or power (Treiman, 1976). To provide conceptual clarity and connect occupational prestige to the broader status literature, we define occupational prestige in these same terms: it is the respect, admiration, and voluntary social deference accorded to an individual based on the perceived instrumental societal value of their occupation.

In fact, it is useful to acknowledge the common characteristics of occupational prestige and status. First, they are both reputational constructs that emerge from the subjective consensus of others. Second, functional perspectives

have proposed that status is a reward system that motivates and encourages individuals to contribute to a social group (Thibaut & Kelley, 1959; Willer, 2009). Occupational prestige has been similarly described as a reward (Siegel, 1971) that motivates qualified individuals to pursue occupations of societal importance (K. Davis & Moore, 1945; Reiss, 1961; Siegel, 1971). Third, status and occupational prestige provide the same benefits, including those that are psychological (such as having the respect, admiration, and voluntary deference of others) and tangible (e.g., increased likelihood that others will attend to your needs). Fourth, they can both be distinguished from the resource-based pillars of SES because they are rooted in social perceptions of instrumental value. Importantly, these perceptions are sometimes unassociated with income or educational attainment. For example, some occupations with lower incomes or educational requirements (e.g., Firefighters, Magnetic Resonance Imaging Technologists, Airline Pilots) are relatively higher in prestige, and some with high incomes (e.g., Petroleum Engineers, Chief Executives, Computer and Information Systems Managers) or high educational requirements (Elementary school teachers, Podiatrists, Chiropractors) are relatively lower in prestige than would be expected.

Despite these similarities, occupational prestige and status are not fully equivalent. They differ in the extent to which they reflect socially constructed consensus. Occupational prestige is rooted in shared assumptions about (1) the skills and responsibilities that are relevant for a particular occupation, (2) the relationships between jobs of various types and titles (e.g., hierarchy), and (3) the intersection of these with perceived instrumental societal value. Status, by contrast, is more tied to individual behavior and its perceived value in a more immediate group or organizational setting. An important corollary of this distinction for the current work is that occupational prestige is much more stable across contexts and time (Nakao & Treas, 1994) than status, which is context dependent (Anderson et al., 2015).

Prior Work on the Assessment of Occupational Prestige

Occupational prestige is psychological in nature, defined by an implicit consensus among members of society, and reflecting an occupation's psychological benefits. However, most efforts to evaluate the social stratification of occupations have been undertaken by sociologists and economists over the last 100 years rather than by psychologists. Research has predominately fallen into two domains. The first arranges occupations into discrete semi-ordered categories and is largely based on the historic social classes of England. For example, Erikson, Goldthorpe (1992) developed a ten-category class schema for occupations to study social mobility. The second arranges occupations in a continuous hierarchy, according to either prestige ratings (e.g., North & Hatt, 1947) or a score calculated from other indicators of SES (e.g., Duncan, 1961). There is ongoing debate about which model better represents the actual structure of society (see Ganzeboom et al., 1992), and disagreements about whether or not the socioeconomic status of occupations can further be divided into a class and status com-

ponent (Hauser & Warren, 1997). A thorough review of a century of research is beyond the scope of this work, but for the interested reader there are several reviews available (see Hauser & Warren, 1997; Nakao & Treas, 1994).

The socioeconomic structure of society in the US is predominately researched as a continuous hierarchy. We therefore turn our focus to the literature on the study of occupational prestige ratings (e.g., Hauser & Warren, 1997; North & Hatt, 1947; Smith & Son, 2014) and other continuous indices (e.g., Duncan, 1961; Ganzeboom et al., 1992; Nakao & Treas, 1994). However, some of the earliest efforts in the US took a categorical approach and relied on expert judgments. Edwards (1917), for example, assigned all occupations in the U.S. Census to one of nine broad socioeconomic groups based on his own evaluations. Subsequent efforts have primarily examined the stratification of occupations in the US as a continuum, and have extended this work considerably, producing a rich literature organized around three different approaches: 1) collecting prestige ratings for specific occupations; 2) weighted composites of the income and educational requirements of jobs, with weights derived from how well they predict prestige ratings; and 3) ranking jobs based on the distribution of education and income.

Rating the Prestige of Occupations

Modern approaches began in 1947 with a report commissioned by the National Opinion Research Center (NORC). North and Hatt (1947) were the first to ask regular people to rate the status of occupations in order to create an index of occupational prestige. In this landmark study, North and Hatt asked respondents to rate 90 occupations selected by experts to represent a broad range of then-current U.S. occupations. The limitations of this study are well-documented (see Reiss, 1961); these include limited knowledge of the occupations by raters and a limited number of occupations rated. However, this approach was the beginning of a series of occupational prestige ratings, each of which has been an extension and/or update of earlier attempts (J. A. Davis & Smith, 1991; Hauser & Featherman, 1977; Nakao & Treas, 1994; Siegel, 1971; Smith & Son, 2014; Stevens & Hoisington, 1987). These updates were often done without collecting new data. Instead, researchers used the previous ratings of older occupational titles in the census to estimate ratings for newer ones based on similarity (i.e., similar skill requirements and responsibilities). For example, Siegel (1971) used data collected in several surveys to provide prestige ratings for all of the occupations in the 1960 census (Census, 1963). These ratings were subsequently mapped onto the occupations included in the 1970 census (Hauser & Featherman, 1977) and the 1980 census (J. A. Davis & Smith, 1991; Stevens & Hoisington, 1987). New ratings were later collected for the 1980 census and mapped onto the 1990 census occupations (Nakao & Treas, 1994).

The most recent update to the prestige ratings of occupations in the census framework was completed by Smith and Son (2014) for the 2010 census. They used the same approach as previous NORC studies (Hout et al., 2016) and

collected prestige ratings for 860 occupations from the U.S. Department of Labor's standard occupational codes (SOC). Raters were a subset of participants in the 2008 General Social Survey. Each of the 539 occupations included in the 2010 census was then matched to one or more (up to seven) of these SOC codes (for more details, see Smith & Son, 2014). These ratings may serve researchers who are interested in the associations between prestige and other variables included in the census, but the aggregation of prestige information from 851 to 539 occupations reduces the fidelity of the ratings and may obscure the effects of interest in research on the relationship between occupational prestige and many other psychological constructs (i.e., those not covered by the census).

This limitation of occupational prestige ratings, rooted in the NORC/North and Hatt approach, primarily reflects historical discrepancies in job classification systems used by various governmental agencies (Pollack et al., 2002). In recent years, these discrepancies have been substantially reduced by the establishment, maintenance, and growth of the Occupational Network (O*NET) of the Bureau of Labor Statistics (Handel, 2016; Levine & Oswald, 2012). The O*NET database has improved upon previous job classification in three important ways. First, O*NET includes hundreds more specific occupations than the census, which increases the fidelity of prestige estimates from self-reported occupations. Second, it provides a taxonomy of occupations by organizing them into higher order job families, which can be used to investigate differences between occupational fields. Third, O*NET collects data about a large number of job features and characteristics from job holders, supervisors, and employers, which provides a wealth of information about each specific occupation. These improvements have not yet permeated through the psychological research literature dealing with socioeconomic status, as evidenced by the absence of a repository of ratings that is more regularly updated and easy to implement in social science research.

Weighted Composites of Income and Education

A second approach to classifying occupations was developed in response to the limited number of occupations included in the original North and Hatt (1947) study. Based on the idea that occupation is an intervening variable between the education required to obtain the job and the income received from holding it, Duncan (1961) used the prestige scores for 45 of the 90 occupations collected by North and Hatt (1947) to estimate the relative weights of income and education in predicting prestige. These weights, which were about equal, were used to derive what Duncan (1961) termed the Socio-economic Index (SEI) of occupations based on predicted scores. Much like the North-Hatt (1947) occupational prestige ratings, Duncan's SEI was updated for each new census (Blau & Duncan, 1967; Hauser & Featherman, 1977; Stevens & Cho, 1985; Stevens & Featherman, 1981). These updates were primarily based on Seigal's (1971) prestige scores until Nakao and Treas (1992) estimated SEI for the 1980 census occupations using prestige scores collected in the General Social Survey.

Duncan's approach is understandable in the context in which he introduced it, scaling all occupations given a limited amount of data about their prestige. However, for more recent incarnations of the SEI (Nakao & Treas, 1992), it is unclear what is gained by transforming prestige scores into predicted prestige scores (Nam & Powers, 1983). Doing so treats the unique information in prestige ratings as error variance and makes occupational prestige a deterministic function of income and education.

Ranking Occupations by Income and Education

A third approach to stratifying occupations is to arrange them according to population level data (Nam & Powers, 1968). Nam and Boyd (2004) provide a detailed account of the history of census-based occupational prestige ratings and update the index of *occupational status* (Nam & Powers, 1968) – an estimate of the proportion of workers with jobs that have lower combined levels of income and education than a given occupation. This literal stratification of occupations by income and education has the same limitations as using direct measures of income and education – it omits information that is distinctly based on prestige.

What Are the Features of Prestigious Occupations?

What characteristics differentiate occupations that are high or low in prestige? Investigating systematic differences can help shed light on what features people associate with prestige and how different jobs are linked to different outcomes. Hatt (1950) proposed an operationalization of occupational prestige with three primary characteristics: 1) duties (physical components), 2) prerequisites (education/training), and 3) rewards: including financial (income), "honorific value" (psychological rewards), and working conditions (physical and psychological). Financial rewards and prerequisites correspond to the other pillars of SES – income and educational requirements – and the others relate to the influence of physical and psychological characteristics on prestige.

As part of the current work, we conducted a preregistered empirical evaluation of this question by using the O*NET database of job characteristics – a relatively new resource that contains the ratings of hundreds of occupations from supervisors and job holders across 247 job attributes. Identification of the characteristics of high and low prestige jobs will provide new information regarding the association between occupational prestige and outcomes (e.g., health and mortality), such as the extent to which the benefits of prestige are driven by people with higher prestige occupations being afforded more social capital and other psychological benefits (Han et al., 2015), people with low prestige occupations being exposed to greater occupational hazards (Hatt, 1950), or a combination of both.

The Present Research

Despite the availability of occupational prestige ratings for US census occupations and recommendations to mea-

sure it as one of the three pillars of SES (Diemer et al., 2013), psychological researchers have been slow to integrate measures of occupational prestige into their work. The cause of this is uncertain but may be attributed to the procedural challenges of collecting occupational information (e.g., how many occupations?, which ones?, how to ask participants?) or a lack of conceptual clarity in the diverse approaches described previously in hard-to-find governmental reports. The current work aimed to provide a reliable, well-validated, and easily implemented index of occupational prestige with the potential to improve understanding of the differential effects of the resource availability versus status components of SES.

In Study 1, we collected a comprehensive set of occupational prestige ratings for 1029 specific occupations, including all jobs and 22 broader job families in the O*NET database. We evaluated the reliability of these ratings with ICC analyses. Next, in Study 2, we developed a crosswalk between the O*NET occupations used in Study 1 and census occupations used in previous occupational prestige indices. This was done to validate the new ratings and make it easier for researchers to integrate prior findings with data collected using the newer and more comprehensive set of ratings.

In Studies 3 and 4 we used additional data from O*NET and the Bureau of Labor Statistics to evaluate the construct validity of occupational prestige more broadly. One strength of using the O*NET occupational classification system for this work is its connection to other governmental data. The O*NET database is a rich source of information about occupations, including information about 408 physiological and psychological characteristics of each job gathered from ongoing surveys of employers, employees, and industry experts (United States Department of Labor, 2015). In Study 3, we used data from the Bureau of Labor Statistics to establish convergent and discriminant validity with the other pillars of SES: income and education. Then in Study 4, we used the O*NET data to identify the physiological and psychological features of occupations most strongly associated with prestige.

Transparency and Openness

We report how we determined our sample size, all data excluded, and all measures administered in the study. Data were analyzed using R, version 4.0.5 (R Core Team, 2021)

and the package psych, version 2.0.8 (Revelle, 2020). Unless otherwise noted (as in Study 3b and Study 4), the study designs and analyses were not pre-registered for this work. All data, analysis code, research materials for this (and subsequent studies), and a complete walkthrough of the analytic code (in the Supplemental Materials) are provided on OSF (<https://osf.io/ngk2t/>).

Study 1

In Study 1, we collected ratings of occupational prestige for O*NET occupations and job families from an online convenience sample and evaluated the psychometric properties of these ratings. This involved multiple steps including identifying the most widely held occupations in each job family, collecting prestige ratings for each occupation and job family, and assessing their reliability based on intraclass correlation coefficients (ICCs). Sample size was determined by the number of ratings targeted for each occupation and occupational field. We targeted a mean of 150 ratings for the specific occupations and of 200 for the occupational fields.

Method

Participants

Participants were 3,113 unique respondents recruited from Amazon's Mechanical Turk platform. Of these, 37 participants were removed during data cleaning based on inconsistent or implausibly rapid responding, leaving a total of 3,076 raters. The participants self-reported age: $M = 39$, $Mdn = 35$, $SD = 13$, range: 18-87; and gender identity: 53% women and 47% men. The educational attainment of raters with respect to years of schooling ($M = 15.7$ years; $Mdn = 16$; $SD = 3.3$) and level of degree attainment (see [Table 1](#)) were consistent. Approximately 71% of the sample reported being employed at the time of survey completion (see [Table 2](#)). In line with common practice at the time of data collection, mTurkers from India were excluded from participating. For the remaining participants, we used meta-data collected by Qualtrics to identify what country the participants responded from, which is reported in [Table 3](#).

Table 1. Educational Attainment of Raters

| Educational Attainment Level | Participants | Percentage |
|--|--------------|------------|
| Less than 12 years | 22 | 0.72% |
| High school graduate | 285 | 9.3% |
| Currently in college/university | 103 | 3.3% |
| Some college/university but did not graduate | 663 | 21.6% |
| College/university degree | 1,366 | 44.4% |
| Currently in graduate or professional school | 72 | 2.3% |
| Graduate or professional school degree | 440 | 14.3% |

Note: 125 of the 3,076 raters did not provide information about their education.

Table 2. Employment Status of Raters

| Job Status | Participants | Percentage |
|----------------------------|--------------|------------|
| Currently a student | 142 | 4.6% |
| Not employed | 120 | 3.9% |
| Not employed, seeking work | 158 | 5.1% |
| Homemaker | 180 | 5.9% |
| Employed | 2,177 | 70.8% |
| Retired | 174 | 5.7% |

Note: 125 of the 3,076 raters did not provide information about their current job status.

Materials

Occupations. The prestige ratings collected in this study are based on the occupational framework of the Occupational Information Network (O*NET; onetonline.org). The O*NET program is sponsored by the U.S. Department of Labor/Employment and Training Administration (USDOL/ETA) through a grant to the North Carolina Department of Commerce (National Center for O*NET Development, 2021b). A key feature of O*NET is the ongoing development and maintenance of a database containing information about a wide range of occupations in the economy of the U.S. This includes job descriptions, details about many job characteristics (see Study 4), job training requirements, and job outlook data (e.g., information about growth prospects and emerging sectors).

Occupations in the O*NET database are organized according to the Standard Occupation Classification system (the O*NET-SOC). More information about this system and the process by which occupations are evaluated for inclusion is available at <https://www.onetcodeconnector.org/oca/step1>.

Ratings in Study 1 were collected on 1,029 specific occupations. This included all the specific occupations cataloged by O*NET at the time of data collection and several additional occupations representing finer distinctions than those that exist in the O*NET-SOC classifications. For example, 4 specific job titles for psychologists were added to those included in the O*NET-SOC framework; Social, Cognitive, Developmental, and Personality Psychologists were

all added given their relevance to psychology research and researchers. Similarly, the occupations rated here captured finer distinctions for the following O*NET-SOC occupations: “Accountants and Auditors” (split into 2 occupations), “Anthropologists and Archeologists” (2), “Biochemists and Biophysicists” (2), “Door-To-Door Sales Workers, News and Street Vendors, and Related Workers” (3), “Farmers, Ranchers, and Other Agricultural Managers” (2), “Fine Artists, Including Painters, Sculptors, and Illustrators” (3), “Human Resources Specialists” (3), “Loan Interviewers and Clerks” (2), and “Poets, Lyricists and Creative Writers” (5). Ratings were also collected for 11 occupations not currently listed in the O*NET-SOC framework. Of these, three have recently been deprecated from the framework (“Bindery Worker”, “Job Printer”, “Billing, Posting, and/or Calculating Machine Operator”) and the remaining eight are “other” categories for occupations that did not have them (e.g., “Other Business Worker”, “Other Mining Worker”).

Occupational Families. In addition to the prestige ratings collected for the specific occupations, we also collected prestige ratings for the 22 job families. O*NET organizes job titles and codes hierarchically by degree of specificity. For example, “Pile Driver Operators (47-2072)” is listed under the broader categories of “Construction Equipment Operators (47-2070)”, “Construction Trades Workers (47-2000)”, and “Construction and Extraction Occupations (47-0000).” In this example, the latter category – the most encompassing – represents the job family. Some of the job families contained a large number of occupations (up to 110). Raters were provided examples of occupations for each family based on the most widely represented jobs. Tables of the most widely held jobs by family – these were the stimuli presented to raters of the job families – are included as Table S1 through S22 in the Supplemental Materials. Raters were given the same instructions and rating scales used for occupations. An example of the rating task for a job family is given in Figure S4.

Attention-check items: To ensure attentive responding and compliance with the instructions, multiple attention check items were administered among the ratings of occu-

Table 3. Distribution of Raters by Country (Top 10)

| Country | Participants | Percentage | Cumulative |
|-----------------------------|--------------|------------|------------|
| United States of America | 2,782 | 90.4% | 90.4% |
| India | 53 | 1.7% | 92.2% |
| Canada | 21 | 0.7% | 92.8% |
| United Kingdom | 17 | 0.6% | 93.4% |
| Romania | 14 | 0.5% | 93.9% |
| Republic of North Macedonia | 11 | 0.4% | 94.2% |
| Russia | 11 | 0.4% | 94.6% |
| Mexico | 10 | 0.3% | 94.9% |
| Philippines | 10 | 0.3% | 95.2% |
| Italy | 8 | 0.3% | 95.5% |

Note: The remaining 167 respondents represented an additional 57 countries. 67 countries were represented in the full sample of 3,076 raters.

pations and occupational families – see Figures S5 through S9 in the Supplemental Materials.

Procedure

The ratings were collected between October 29, 2015, and May 12, 2016, from participants recruited through Amazon's Mechanical Turk crowdsourcing platform. The task title and description alerted respondents that they would be asked to provide their opinion about the relative prestige ratings of jobs. Respondents were given a brief description of the task and were asked to provide consent. This survey was deemed exempt from ongoing IRB oversight as no individually identifying information was collected or retained.

After consenting, participants advanced through the ratings portion of the survey in which 14 stimuli were presented on each webpage. These 14 stimuli included 13 occupations or occupational families plus one attention check item. At the outset of data collection, participants were given five pages of stimuli: four pages of occupations to be rated and one page of occupational families. After sufficient data were collected for the (much smaller number) of occupational families, subsequent participants received only four pages of occupations to rate. The median number of jobs and fields rated by each participant was 52 ($m = 52.6$). Sample size targets were set at an average of 150 ratings per occupation in order to exceed the sample sizes collected for prior ratings of occupational prestige (e.g., Hout et al., 2016; Smith & Son, 2014) and the minimum sample size needed to generate stable means and standard deviations regardless of the degree of skewness (85; Piovesana & Senior, 2018).

Directions at the top of each page instructed raters to rate each occupation based on their opinion about its prestige using a sliding scale from 0 to 100 (inclusive, using integer units). Raters were further instructed to use the full range of the scale as much as possible and were given the following anchors as recommendations:

100 – the occupation is more prestigious than any other
greater than 75 – the occupation is much more prestigious than average

between 50 and 75 – the occupation is somewhat more prestigious than average

50 – the occupation is about average relative to other occupations

between 25 and 50 – the occupation is somewhat less prestigious than average

less than 25 – the occupation is much less prestigious than average

0 – the occupation is less prestigious than any other occupation

Each occupation was then presented with a bolded header indicating the job title followed by the three or four sentence job description provided by O*NET. This text describes the job tasks, the need for specialized training or licensing (when relevant) and lists more specific job titles that are included or excluded as a subset of the named occupation. See Figures S2 and S3 in the Supplemental Materials for examples. The slider under each description was

set to the middle (50); raters were required to move the slider to record a valid response.

After completing their ratings, participants were administered several questions about their demographics and background. In order, these included items about age and gender, then two questions (given in random order across participants) about the level of their educational attainment and the number of years of education completed, a question asking about which format of reporting they prefer for educational attainment, and three questions about their own employment status (see Figures S10 through S14 in the Supplementary Materials for more details). Participants were exited from the survey without compensation upon failure of three attention checks (warnings were given after the second failure of an attention check) and data from these participants were not retained.

Analyses

Prestige scores were derived from the arithmetic mean of the ratings for each occupation and job family. Standard errors were calculated by resampling the ratings for each occupation (or family) using bootstrapping techniques. This enabled empirical derivation of the 95% confidence intervals around the means. In addition to providing an indication of the variability in ratings, these values provide a basis for comparison relative to the confidence intervals that would be expected if the ratings were normally distributed.

To empirically estimate reliability of the scores, we calculated two forms of reliability following the decision criteria set forth by Koo & Li (2016). The first is the two-way random effects, multiple raters/measurements, consistency model (Koo & Li, 2016; McGraw & Wong, 1996), typically referred to as ICC(C,k). This reflects the use of *average* ratings of each occupation by a random subset of raters from a larger population with similar characteristics. It also reflects consistency of scores across raters after accounting for systematic error (e.g., response style), in effect, the rank order consistency of ratings across raters. We also report the two-way random effects, multiple raters/measurements, absolute model, as introduced by Shrout and Fleiss (1979) and referred to as ICC(2,k). This differs from ICC(C,k) only in that it reflects the degree of absolute agreement rather than rank order consistency (see the Supplemental Materials for a detailed discussion of the special handling required given the planned missingness design). We also report the average correlation between raters for overlapping ratings (Pearson's and Spearman's) as a post-hoc analysis of rater reliability.

Results

Occupations were each rated an average of 152.8 ($Mdn = 152$, range = 116 to 192) times, and the occupational families were each rated an average of 208.0 ($Mdn = 207$, range = 189 to 222) times. In Table 4, we present the occupational prestige scores for the fields. In Table 5, we present the 15 occupations with the highest and the lowest mean prestige scores and the 10 occupations closest to the median. The overall mean for jobs was 53.1 ($sd = 14.0$) and for job fami-

Table 4. Mean Occupational Prestige Rating by Occupational Field

| Occupational Field | M | 95% CI |
|--|------|--------------|
| Engineering and Architecture | 79.1 | [77.4, 81.0] |
| Life, Physical, and Social Sciences | 78.2 | [76.4, 80.1] |
| Law and Legal Services | 76.9 | [74.7, 78.8] |
| Computers and Mathematics | 74.8 | [73.0, 76.6] |
| Healthcare | 70.5 | [68.2, 72.7] |
| Arts, Design, Entertainment, Sports, and Media | 67.8 | [65.8, 69.9] |
| Military | 67.8 | [64.7, 70.5] |
| Business and Financial Operations | 67.1 | [64.8, 69.5] |
| Management | 63.7 | [61.2, 66.2] |
| Education, Training, and Library Services | 58.2 | [55.9, 60.6] |
| Community and Social Services | 56.1 | [53.7, 58.4] |
| Protective Services | 55.6 | [52.9, 58.3] |
| Manufacturing and Production | 46.3 | [43.8, 48.8] |
| Personal Care and Related Services | 43.7 | [40.8, 46.5] |
| Installation, Maintenance, and Repair | 43.2 | [40.7, 45.7] |
| Construction and Extraction | 42.2 | [39.8, 44.5] |
| Office and Administrative Support | 41.6 | [39.3, 44.1] |
| Farming, Fishing, and Forestry | 39.1 | [36.3, 42.0] |
| Sales Related Services | 36.7 | [34.0, 39.1] |
| Transportation and Material Moving | 35.7 | [33.2, 38.4] |
| Food Preparation and Serving | 27.4 | [25.0, 29.8] |
| Building and Grounds Cleaning and Maintenance | 24.2 | [21.9, 26.7] |

lies was 54.4 ($sd = 17.1$). Prestige scores for all occupations are available for download with the Supplemental Materials online at (<https://osf.io/ngk2t/>).

In Figure 1, plots of the mean ratings and empirically derived confidence intervals are shown for the fields and jobs respectively. The figure illustrates that mean prestige was estimated with high levels of precision for occupations and fields at all levels. Results of the ICC analyses also indicate high reliability among the raters for ratings of both jobs and job families. Results of ICC(C,k) consistency analyses were .9996 for jobs and .9997 for job families, respectively, while the ICC(2, k) values were .9962 for jobs and .9986 for job families, respectively. The average correlation between raters (for overlapping ratings) was 0.93 (Pearson's) and 0.76 (Spearman's rank-order), respectively; for fields, these were 0.92 and 0.68, respectively.

Discussion

In Study 1, we collected prestige ratings of O*NET jobs and job families from a large online sample of raters and evaluated their reliability. In general, the reliability of ratings was very high, suggesting strong agreement across raters about the relative prestige of occupations and job families. In fact, the ICC metrics suggested nearly perfect reliability. In addition to indicating the high reliability of the ratings, this can also be partially attributed to the large number of occupations and ratings. The average correlation

between raters for overlapping ratings was also high (.92 to .93), showing high consensus among the raters.

A limitation of this study is that the sample was not representative and the limited demographic information collected about the raters makes it difficult to assess how this impacted the ratings. In general, mTurk samples tend to be younger, more educated, have less income and more education, and include less individuals from ethnic or racial minorities than representative samples (Levay et al., 2016). The available demographic data from our sample aligns with these tendencies except for age. The mean age in our sample is equivalent to the median age in the US. The present sample also had more education than the general US population with 68% reporting a post-high school degree, compared to 48% (Pew Research Center, 2022). While having a more educated sample can reduce concerns about comprehension of the term prestige and the descriptions of the occupations, it is not ideal. If people with higher levels of education systematically view some occupations as more (or less) prestigious it would introduce bias in the present ratings.

Other work suggests that mTurk samples are more representative than in-person convenience samples (Berinsky et al., 2012) and share similar personality characteristics to a representative sample (McCredie & Morey, 2019). The most recent Census prestige ratings were conducted in a "roughly representative sample" (Hout et al., 2016, p. 1) and previous work shows ratings between representative samples and experts converge (Hauser & Warren, 1997; Treiman, 1977).

Table 5. Mean Occupational Prestige Rating by Occupation

| Occupation | M | 95% CI |
|---|------|--------------|
| <u>Top 15</u> | | |
| Other - Physician and/or Surgeon | 88.9 | [86.5, 91.1] |
| Surgeon | 88.1 | [85.3, 91.0] |
| Neurologist | 87.9 | [85.8, 89.9] |
| Aerospace Engineering and Operations Technician | 84.1 | [81.4, 86.7] |
| Biochemist | 83.9 | [81.7, 85.9] |
| Aerospace Engineer | 83.8 | [81.0, 86.6] |
| Neuropsychologist and/or Clinical Neuropsychologist | 82.8 | [80.3, 85.3] |
| Physicist | 82.7 | [80.0, 85.0] |
| Nuclear Medicine Physician | 82.7 | [79.6, 85.6] |
| Pediatrician | 81.8 | [79.5, 84.1] |
| Nuclear Engineer | 81.5 | [78.3, 84.3] |
| Obstetrician and/or Gynecologist | 81.4 | [78.4, 84.1] |
| Medical Scientist (except Epidemiologist) | 81.2 | [78.7, 83.8] |
| Judge, Magistrate Judge, and/or Magistrate | 80.9 | [78.2, 83.3] |
| Biomedical Engineer | 80.9 | [78.0, 83.5] |
| <u>Middle 10</u> | | |
| Administrative Services Manager | 54.3 | [51.1, 57.1] |
| Electrician | 54.2 | [51.2, 57.4] |
| Physical Therapist Assistant | 54.2 | [51.2, 57.5] |
| Property, Real Estate, and/or Community Association Manager | 54.1 | [51.3, 56.7] |
| Human Resources Manager | 54.1 | [51.5, 56.7] |
| Compensation, Benefits, and/or Job Analysis Specialist | 54.0 | [51.3, 56.8] |
| Education Administrator - Preschool and Child Care Center/Program | 53.9 | [50.7, 56.7] |
| Supervisor/Manager of Personal Service Workers | 53.7 | [50.8, 56.5] |
| Wind Turbine Service Technician | 53.7 | [50.7, 57.1] |
| Precious Metal Worker | 53.7 | [50.4, 56.8] |
| <u>Bottom 15</u> | | |
| Septic Tank Servicer and/or Sewer Pipe Cleaner | 23.0 | [19.7, 26.7] |
| Food Service Attendant/Helper | 23.0 | [20.0, 26.5] |
| Maid and/or Housekeeping Cleaner | 22.7 | [19.5, 26.0] |
| Other - Food Preparation Worker | 22.6 | [19.5, 25.9] |
| Laundry and/or Dry-Cleaning Worker | 22.2 | [19.2, 25.5] |
| Door-to-Door Sales Worker | 22.2 | [19.5, 25.1] |
| Food Server | 22.0 | [19.5, 24.5] |
| Street Vendor | 22.0 | [19.0, 25.1] |
| Slaughterer and/or Meat Packer | 21.6 | [18.8, 24.2] |
| Other - Building Cleaning Worker | 21.3 | [18.6, 24.2] |
| Cook - Fast Food | 20.5 | [17.4, 23.8] |
| Locker Room, Coatroom, and/or Dressing Room Attendant | 20.0 | [16.8, 23.5] |
| Parking Lot Attendant | 19.5 | [16.6, 22.2] |
| Telemarketer | 15.0 | [12.0, 18.2] |
| Dishwasher | 14.5 | [12.0, 17.4] |

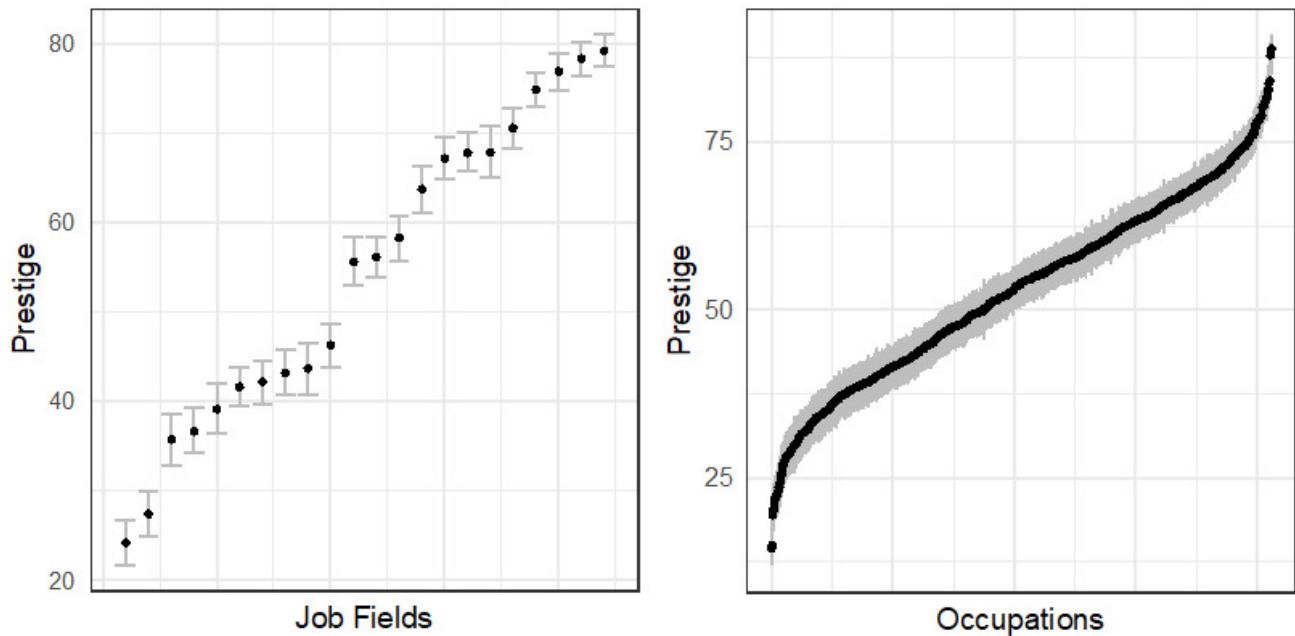


Figure 1. Mean Occupational Prestige Ratings and Confidence Intervals for Job Fields and Occupations

Together, these factors, and the similar structure in occupational hierarchies across industrialized countries (Treiman, 1977), suggest that recruiting a representative sample is not necessary to estimate the prestige of occupations in a society. The results show that a large number of people agree about which occupations are higher and lower in prestige across a wide range of occupation titles. The high levels of agreement among raters suggests the aggregated ratings are precise estimates of the prestige afforded by society for these occupational roles.

In the next study, we examine correlations between the present ratings and previous indices. A weak association between the ratings collected in the present sample and past work would indicate that demographic differences between the present sample and the general population biased the ratings, whereas a strong association would provide support for the conclusion that the use of a non-representative sample of mTurk workers in the present work did not systematically impact the current ratings.

Study 2

In Study 2, we evaluated the convergent validity of the ratings derived in Study 1 to prior ratings of occupational prestige. Previous indices, as described in the introduction, fall into one of two major categories: 1) ratings of the prestige of occupations (e.g., North-Hatt prestige indices) and 2) weighted composites of income and education (e.g., SEI). To provide evidence of consistency with older ratings, we estimated correlations between the new scores, the two most recent ratings of the prestige of occupations (from the “North-Hatt” series), and the three most recent weighted composites, or “SEI” scores.

The full North-Hatt series contains four indices of occupational prestige published by the National Opinion Research Center (NORC) at the University of Chicago. The first

of these, the North-Hatt study (North & Hatt, 1947), reported ratings for only 90 occupations and the primary purpose of the second project in this series, the Hodge-Siegel-Rossi (HSR) studies (Hodge et al., 1964), was to (i) replicate the 1947 findings (Valdes & Dean, 1965). The correlations between these ratings ($r = .99$) were high and there is evidence showing they also correlate strongly with the newer indices in this series, so we focused on the two most recent published sets of ratings that included a larger and more representative list of occupations.

These two indices are: the 1989 General Social Survey (GSS) Prestige Ratings (J. A. Davis & Smith, 1991; Nakao & Treas, 1990) and the 2012 update sample for the GSS dataset (Smith & Son, 2014). Like the 1964 ratings, the 1989 (Nakao & Treas, 1990, 1992) ratings sought to replicate earlier work while expanding the number of occupations to (additionally) include all of those used in the 1980 Census (704 occupations in total). The method used in this study split the raters into 10 groups, with each group rating about 110 occupations. The 2012 update sample for the GSS dataset (Smith & Son, 2014) collected ratings on a large number of jobs, then crosswalked these to about 540 jobs matching those in the 2010 Census. Recall that the decision to move away from the framework generated using jobs listed in the 1980 U.S. Census was motivated by the desire to map occupations to the rich set of data collected by O*NET, other programs and departments in the U.S. Bureau of Labor Statistics, and even other agencies in the U.S. Department of Labor. Examples of the data linkage opportunities are provided in Studies 3 and 4.

The other popular approach of stratifying occupations is using weighted composites of income and education. These are generally known as socioeconomic index (SEI) approaches and they were developed as a means of estimating prestige for the (many) cases where large samples of ratings had not been collected. The techniques use the same basic

approach: reverse engineering scores based on the weights produced when regressing the available ratings (i.e., scores for jobs that had been rated) onto the average educational attainment and income of each occupation. In most reports, these regressions tend to produce roughly equally weighted regressors. The more recent work using the SEI approach has been conducted by Stevens and Cho (1985), Nakao and Treas (1994), and Hauser and Warren (1997). We, therefore, use the SEI scores from these to compare the current prestige ratings reported in Study 1 to previous weighted composite models.

Procedure

Connecting the present ratings to previous ones from the North-Hatt series required manually “crosswalking” job titles across the two frameworks using labels provided in each publication (from the respective U.S. Census year). This work was conducted first by a research assistant working under the direction of the last author (Condon), then again (independently) by the last author (Condon). A small number of discrepancies between these crosswalks were subsequently resolved by the last author. Complete results of the crosswalk (including the specific labels given for each occupation and the mapping of titles across different frameworks) are available for download with the Supplemental Materials and online in a database that can be filtered and searched at (<https://www.occupationalprestige.com/data/>).

The data used to estimate the correlations between the present ratings and SEI ratings are based on a crosswalk of the SEI measures reported by Frederick and Hauser (2010). In the supplemental materials, we also provide crosswalks from the occupations included in Study 1 to the 1980 and 1990 Census job codes, SOC codes, and the most recent O*NET/SOC codes (2018).

Results

In [Table 6](#), we report the correlations between the new occupational prestige ratings collected in Study 1, the 1989 ratings for the General Social Survey based on the 1980 U.S. Census job titles (J. A. Davis & Smith, 1991; Nakao & Treas, 1990), and the 2012 update for the GSS survey based on a subset of the Census job titles (Smith & Son, 2014). We also include correlations with the prestige ratings of job families collected in Study 1, though it should be noted that these categories reflect a different level of abstraction than the specific jobs. The substantial correlations between the new ratings and the latest from the North-Hatt series support the validity of the new ratings and replicate the stability in occupational prestige ratings over time (Nakao & Treas, 1994).

In [Table 7](#), we report the correlations between the new occupational prestige ratings and the three SEIs: those reported by Stevens and Cho (1985), Nakao and Treas (1994), and Hauser and Warren (1997). Again, we see a substantial correlation between the new ratings and measures based on SEI.

Discussion

In Study 2, we created a crosswalk between the occupational prestige scores collected in Study 1 and previous ratings from the North-Hatt series that used U.S. Census Bureau based job titles. The new ratings are highly correlated with both the 1989 and 2012 ratings at a level roughly equivalent to the correlation between them (.79 to .85), supporting previous work that showed high consistency between occupational prestige ratings, often collected decades apart (Nakao & Treas, 1994). Similarly, the new ratings were also associated (.78 to .80) with “predicted” occupational ratings scores derived using the approach first introduced by Duncan (1961). The strong correlations between the current ratings and previous indices provides evidence of temporal stability and convergent validity with older indices.

The strong association between the prestige ratings and previous indices also suggests that the nature of the sample used to estimate the prestige of occupations did not systematically impact the scores in substantial ways. This aligns with previous work showing that people rank the prestige of occupations relatively consistently across industrialized nations (Treiman, 1977).

Study 3

In Study 1, we collected and validated the prestige ratings of O*NET occupations and job families and in Study 2, we connected them to extant ratings of the prestige and social standing of occupations. In Study 3, we estimate the convergent and discriminant validity of the occupational prestige ratings reported in Study 1 with other indicators of socioeconomic status. In Study 3a, we estimated the correlations between the occupational prestige scores and the average income and educational attainment level of individuals in each occupation. These are ecological correlations (Robinson, 1950) across occupations, not across individual occupation holders. An ecological correlation is the association between variables that represent groups of individuals. Here, the correlations are between, for example, the occupational prestige and income of everyone who holds a particular occupation. They should be higher than individual level correlations because they remove individual level within-job variability in education and income and do not account for measurement error in reporting.

Future research using the present index of occupational prestige will likely investigate the effects of occupational prestige at the individual level. In line with previous work (e.g., Hughes et al., 2021), we anticipate correlations between the pillars to be much smaller at the individual level. Therefore, to better understand the relationship between the pillars of SES among individuals in a sample of typical size and composition for studies in psychology, we examine the correlations between occupational prestige, self-reported household income, and educational attainment in Study 3b using a national online sample of U.S. adults.

Table 6. Zero-order Correlations Between Occupational Prestige and “North-Hatt” Indices

| | Occupational Prestige by Job | Occupational Prestige by Job Family | 1989 North-Hatt |
|-------------------------------------|------------------------------|-------------------------------------|-----------------|
| Occupational Prestige by Job Family | .76 [.73, .78] | | |
| 1989 North-Hatt | .79 [.77, .81] | .69 [.66, .71] | |
| 2012 North-Hatt | .85 [.82, .88] | .69 [.64, .74] | .80 [.77, .84] |

Note: Values in square brackets indicate the 95% confidence intervals for each correlation. All the correlation estimates shown have a p value < .001.

Table 7. Zero-order Correlations Between Occupational Prestige and Socioeconomic Indices

| | Occupational Prestige by Job | Stevens & Cho, 1985 | Nakao & Treas, 1994 |
|-----------------------|------------------------------|---------------------|---------------------|
| Stevens & Cho, 1985 | .77 [.72, .81] | | |
| Nakao & Treas, 1994 | .78 [.74, .82] | .97 [.97, .98] | |
| Hauser & Warren, 1997 | .80 [.76, .84] | .95 [.94, .96] | .97 [.97, .98] |

Note: Values in square brackets indicate the 95% confidence intervals for each correlation. All the correlation estimates shown have a p value < .001.

Study 3a

Method

The Bureau of Labor Statistics has made data available in the public domain regarding the average educational attainment level (<https://www.bls.gov/emp/tables/education-and-training-by-occupation.htm>) and salary and wage estimates (https://www.bls.gov/oes/current/oes_nat.htm) for occupations in the O*NET occupational framework. Note data regarding the mean educational attainment level and average income were available for 719 and 716 O*NET occupations, respectively. Validity coefficients were produced by estimating the correlations between the occupational prestige ratings from Study 1, the educational attainment levels, and income for all occupations with available data. Additional details, including links to the data online, are listed in the Supplementary Materials.

Results

The correlations among all three socioeconomic indicators were comparable, with occupational prestige correlating slightly more with educational attainment ($r(715) = .78$ [.75, .80]) than with income ($r(714) = .73$ [.70, .76]). Educational attainment and income are correlated with one another in roughly the same range ($r(714) = .73$ [.70, .75]). The magnitudes of these correlations support convergent validity across the three pillars of socioeconomic status overall, however more detailed review of the correlations by job family also provides some evidence of discriminant validity. The correlations among these variables for all job families are shown in Table S25 in the Supplementary Materials, and they include several examples where the correlation of prestige with educational attainment and with income diverge considerably. Several fields have higher correlations between prestige and income. For example, Educational Training and Library Services had a correlation among prestige and income of .74 (95% CI [.60, .84]) compared to .54 (95% CI [.33, .70]) for prestige and education.

There is also evidence of high variability in the magnitudes of the associations within fields as well as among them. Specifically, 5 of the fields did not have statistically significant prestige-education correlations (Management; Farming, Fishing, & Forestry; Computers & Mathematics; Community & Social Services; Food Preparation & Serving), and 4 of the fields did not have statistically significant prestige-income correlations (Management; Farming, Fishing, & Forestry; Computers & Mathematics; Community & Social Services).

Discussion

Across occupations, correlations between occupational prestige ratings, educational attainment, and income were high (.73 to .78), indicating convergent validity – as expected for indicators of the same psychological construct. Occupations with higher prestige, in general, require more education and pay higher wages than occupations with lower prestige. Correlations this high might suggest to the reader that an individual's SES can be measured effectively with any one of these indicators of SES in order to study the impact of SES on outcomes, or combined to create a composite indicator of SES. However, these are ecological correlations – correlations between the mean prestige, income, and education for each occupation – and remove the individual variability of income and educational attainment within each occupation. Therefore, these occupation-level correlations might overestimate of the relationship among these variables at the individual level.

Study 3b

In order to better understand the relationship between occupational prestige and other indicators of SES for participants in a typical study in psychology and other behavioral sciences, in Study 3b we use data from a national sample to estimate the correlations between them at the individual level. This study is preregistered on OSF (<https://osf.io/>

[ngk2t/](#)) and was deemed exempt by the University of Oregon's Institutional Review Board.

Method

Participants

We recruited $N = 573$ participants from the Prolific online data collection platform. For this analysis, we excluded participants who indicated they were retired, unemployed, a homemaker/parent, or a student ($N = 191$), because we do not have prestige scores for these responses. We excluded an additional 4 participants who did not provide responses to any of the SES items. The remaining $N = 378$ participants self-reported the following demographics: age, $M = 38$, $SD = 12$; gender, women = 224 (59.3%), men = 148 (39.2%), nonbinary = 6 (1.6%). Participants also self-reported race and ethnicity using the following categories: Black, Asian, Latino/Latina, Native American, and White. They could select one or multiple categories or choose to self-describe in an open-ended response. The responses were: Black = 47 (12.4%), Asian = 31 (8.2%), Latino/Latina = 16 (4.2%), White = 250 (66.1%), 29 participants selected multiple categories (7.7%), and 5 provided an open-ended response (1.3%). Of the participants who selected multiple categories, 5 selected Native American.

Procedure

Participants were recruited to participate in an unrelated online interactive round robin study that consisted of two parts. For Study 3b, sample size was determined by the number of participants who provided self-report responses in the 15-minute Part 1 survey, prior to any other experimental activities. All participants who provided consent and completed the Part 1 self-report SES measures were included in the analysis. This includes participants who did not show up for or complete the second part of the study. Prior to analysis, we determined that sample size of the part 1 responses would be greater than 250 and therefore adequate to calculate reliable correlations between the SES indicators (Schönbrodt & Perugini, 2013).

Materials

Demographics. Participants self-reported their age, gender, and race/ethnicity.

Occupational Prestige. Participants used drop down menus to select their current occupational family and current occupation from the list of 1029 occupations included in Study 1. They initially used a dropdown menu to select their current occupation family and then the specific occupation from a dropdown list of all occupations in that family. In addition to a specific occupation, participants could also indicate if they were a student, unemployed, retired, or household worker. The prestige scores for the indicated occupation is the participant's occupational prestige.

Household Income. Respondents indicated household income by selecting one of 10 bins denominated in USD. The first bin was <\$15,000. The next 6 bins were \$10,000 ranges

between \$15,000 and \$75,000 (e.g., \$15,000 to \$25,000). The next two bins were \$75,000 to \$100,000 and \$100,000 to \$125,000 and the last bin was > \$150,000. For this analysis, household income was transformed into a numeric 1-10 scale.

Educational Attainment. Participants indicated their highest level of educational attainment from the following choices: "Did not finish high school", "High school grad, general education diploma", "Some college", "Associate's Degree (2 year college degree)", "Bachelor's Degree (4-year college degree)", "Postgraduate (e.g., Master's, PhD., MD.)". These categories were transformed into a numeric 1-6 scale.

Results

The distributions of the SES indicators and the zero-order correlations among them are reported in [Table 8](#). These correlations indicate that the associations between SES indicators are substantially lower at the individual level than they are for occupations.

Discussion

Correlations among SES indicators in data from a national sample show that, at the individual level, the strength of associations between the three pillars of SES is substantially lower than those at the occupational level (i.e., Study 3a). Though both analytic approaches may be useful (under different circumstances), the individual level correlations provided in this study provide a better approximation of the associations among SES indicators in research with diverse samples of working adults. The lower magnitude of the correlations in this study reflect greater heterogeneity of educational attainment and income among individual respondents in comparison to the values that are aggregated by occupation in Study 3a. Though these small positive correlations provide some additional evidence for convergent validity in SES indicators, they more clearly demonstrate discriminant validity between occupational prestige and the other indicators. They are not redundant. Moreover, these correlations underscore the importance of measuring and analyzing occupational prestige, in addition to income and educational attainment, when studying SES.

Considered individually, the findings from Study 3a supports studying SES with a single indicator or composite, whereas Study 3b supports studying indicators of SES independently. Together, the results highlight some of the complexities of measuring and studying SES and how important it is for researchers who study SES to consider the level of the effect (e.g., occupation versus individual), and how each indicator could impact an outcome. Given the impact of SES in daily life, future work can use the present ratings to examine the effects of SES with greater nuance. For example, future work can investigate the differential effects of income, education, or occupational prestige on life outcomes, or how the outcomes are influenced by characteristics of prestigious jobs.

Table 8. Correlations Between SES Indicators for Individuals

| Variable | M | SD | 1 | 2 | 3 |
|-----------------------|-------|-------|-------------------|-------------------|---|
| Occupational Prestige | 52.71 | 13.28 | | | |
| Income | 5.64 | 2.79 | .22 [.12, .31] | | |
| Education | 4.36 | 1.26 | .37 [.28, .46] | .42 [.34, .50] | |

Note. All correlations were significantly different than zero, $p < .001$. Degrees of freedom for correlations between the occupational prestige scores and each of the other indicators was $df = 374$, and $df = 376$ for the correlations between each of the other indicators. *M* and *SD* represent mean and standard deviation, respectively, and the values in square brackets indicate the 95% confidence interval for each correlation.

Study 4

What factors influence the prestige of occupations? Having identified a large new set of ratings and validated them against older measures, we sought to identify the specific aspects of jobs that are associated with prestige. This work was enabled by the development and maintenance of an O*NET database of standardized ratings for 408 job characteristics for 974 occupations in the U.S. economy (National Center for O*NET Development, 2021a). The O*NET job characteristics are mainly based on survey responses from a representative sample of workers and employers about job conditions and the cognitive, interpersonal, and physical skill requirements for each of the various occupational titles (Handel, 2016). More details about the data collection methodology, including some criticisms and concerns (e.g., literacy demands on respondents suggesting biased response rates, general concerns about measurement overlap and inconsistency) are discussed in Handel (2016) and United States Department of Labor (2015). In Study 4, we used both supervised and unsupervised statistical learning approaches to identify the job characteristics most and least associated with occupational prestige. The analyses in Study 4 were pre-registered at <https://osf.io/ngk2t/>.

Materials

As a first step in determining the components of occupational prestige, data for 407 job characteristics were downloaded directly from the O*NET website (O*NET, 2021). For each job characteristic, a mean score was provided for a large subset of the O*NET occupations based on survey responses from employers and job holders; the number of jobs with scores for each characteristic ranged from 114 to 974, with a mean of 911.8 and a median of 967. There are numerous potential causes for this missingness, including the addition of occupations, O*NET data collections strategy, and the number of available raters in specific occupations or occupational families. For the purposes of this analysis, we assumed that the data is missing at random and used all available data. As described in the O*NET Content Model (National Center for O*NET Development, 2021c) shown in Figure S24, each job characteristic was categorized into one of several broad domains: Abilities, Interests, Knowledge, Skills, Work Activities, Work Context, Work Styles, and Work Values. Many of these broad do-

main also include more narrow categories (e.g., physical, cognitive, psychomotor, and sensory abilities).

Next, the job characteristic scores were used to assess redundancy in the variables. Many of the job characteristics were rated based on two subtle variations: (1) the extent to which the characteristic was seen as *important* for the job, and (2) the *level* of the characteristic required to perform the job. For example, the job characteristic of “Skill – Instructing Others” was assessed in terms of its importance to a given job and the level (of skill) required to perform at the job. As expected, the importance and level of this skill was generally high for teachers of most types and low for jobs such as mail carriers, models, and barbers. Though the scores deviated substantially in a few instances (e.g., preschool teachers had high scores for importance and moderate scores for level), the level and importance of this characteristic was highly correlated (.91) across all jobs.

Among the total of 407 job characteristics, there were 161 pairs of importance and level, and the correlations between them were typically high (.85 and 1.00); only three pairs had correlations below .8 (“Getting Information” [.76], “Identifying Objects Actions and Events” [.77]; and “Selective Attention” [.77]). As there were more missing scores for “level” than “importance,” we removed the level measure for all characteristics that included both types to reduce the likelihood of multicollinearity in subsequent analyses. At this stage, there were a small number of additional pairs that remained highly correlated (above .9). For example, “Writing” was correlated .90 with “Written Comprehension” and .95 with “Written Expression”. After review of these redundancies between the first and last author, seven additional variables were dropped in favor of retaining more widely assessed and generalizable characteristics. The variables dropped were “Gross Body Equilibrium”, “Rate Control”, “Speech Recognition”, “Systems Evaluation”, “Speaking”, “Written Comprehension”, and “Written Expression”. This left a total of 240 job characteristics for subsequent analysis.

Analysis

The analytic strategy in the pre-registration (<https://osf.io/ngk2t/>) called for the evaluation of prestige with the O*NET data (after trimming out redundancies) based on two methods: (1) using principal components analysis to first reduce the dimensionality of the O*NET

variables, then reporting on the associations of prestige with the component scores; and (2) conducting item-level analyses using machine-learning methods (Elleman et al., 2020) to report the O*NET variables that are most associated with prestige scores. For the latter analysis specifically, we sought to identify the individual characteristics of occupations most strongly associated with occupational prestige, using the so-called BISCUIT methodology. Relative to other widely-used machine learning methods (e.g., lasso regression, random forest), the BISCUIT method has been demonstrated to provide similar levels of predictive accuracy while also preserving transparency and parsimony (Elleman et al., 2020). To conduct these analyses, we used the bestScales function from the “psych” package (Version = 1.9.10 or later; Revelle, 2020) in the R programming language (R Core Team, 2021). This function takes a list of variables and uses resampling techniques (k-fold or bagging) to return the n number of items most highly correlated with a criterion. We used the k-fold method of cross-validation (e.g., $k = 10$) and report the characteristics that are most stable (i.e., those that appear with a frequency equal to k).

Results

Principal Components Analysis

To identify the number of components in the O*NET characteristics we conducted a parallel analysis and considered numerous fit statistics reported from the vss function in the psych package (Version = 1.9.10 or later; Revelle, 2020). Parallel analysis suggested 16 or 17 factors, but most of the fit statistics failed to resolve when up to 20 factors are extracted. At more parsimonious levels of extraction, there is modest support for a three-component solution based on the Very Simple Structure criterion (see Figure S23; Revelle & Rocklin, 1979). This solution was further supported based on comparative review of the solutions with two through five extracted components for interpretability and incremental variance explained. Table S28 in the Supplemental Materials shows the job characteristics with the highest loadings on these components; proposed labels for the 3 components are Physical (e.g., depth perception, inspecting equipment as a work activity, reaction time), Critical Thinking (e.g., systems analysis, complex problem solving, deductive reasoning), and Interpersonal (e.g., concern for others, social orientation, self-control) characteristics of occupations. Results from the regression of the occupational prestige ratings on these component scores is shown in [Table 9](#).

Item Level Analyses

The BISCUIT machine learning methodology was used to identify the O*NET job characteristics most associated with the prestige ratings of jobs. [Table 10](#) shows the characteristics with the strongest positive correlations and [Table 11](#) the characteristics with the strongest negative correlations with the occupational prestige ratings when analyzing all 240 of the O*NET characteristics with ten-fold cross-validation.¹ The characteristics are ordered by the mean correlation with prestige; a complete listing of the characteristics is provided in the Supplemental Materials. The characteristics with the highest positive correlations provide strong validation of the occupational prestige ratings and their association with status; these are the extent to which occupations provide opportunities for recognition ($r = .84$, $sd = .00$),² achievement ($r = .81$, $sd = .00$), and (quality) working conditions ($r = .80$, $sd = .00$). The remaining characteristics in [Table 9](#) include several cognitive variables such as inductive and deductive reasoning, critical thinking, reading comprehension, judgment and decision making, and writing. The list also suggests that prestige is associated with more analytical, technical, and scientific work (e.g., science, systems analysis, analytic thinking, investigative interests).

The characteristics with the strongest negative correlations show that occupations that require more physical and repetitive labor are considered less prestigious. This suggests that less prestigious occupations require more doing and less thinking. The negative association between physical labor and prestige may also help explain why some occupations that are highly skilled and at times have high individual value, such as plumbers, are perceived as having relatively low prestige.

Discussion

Using O*NET’s extensive data about the characteristics of each occupation, in Study 4, we used two analytic approaches to identify key features of occupations associated with occupational prestige. The results of both analyses supported the fundamental premise of this work: occupational prestige is a psychological indicator of an individual’s standing in the social and economic hierarchy of society. With the PCA approach, we identified three components of job characteristics and showed that cognitive skills, predominately psychological in nature, are strongly related to prestige, more than either interpersonal or physical skills. Moreover, results of the BISCUIT analysis also supported the importance of cognitive skills for working in high prestige occupations and highlighted potential psychological benefits of high prestige occupations: recogni-

1 Exploratory analyses in the Supplementary Materials show the strength of associations for job characteristics in each of the categories in the O*NET Content Model (see pages 41 to 46). These provide relative rankings of the job characteristics within each category (abilities, interests, knowledge, skills, work activities, work contexts, work styles, and work values) with respect to occupational prestige ratings.

2 The standard deviation in these analyses is for the correlations across the 10 folds.

Table 9. Regression Analysis Summary for O*NET Occupational Feature Components Predicting Occupational Prestige Scores

| | Estimate | SE | 95% CI | | p |
|-----------------------------|----------|-----|--------|-------|-------|
| | | | lower | upper | |
| Intercept | 0.00 | .02 | -.04 | .04 | .95 |
| Physical component | -.21 | .02 | -.25 | -.17 | <.001 |
| Critical thinking component | .78 | .02 | .74 | .81 | <.001 |
| Interpersonal component | .06 | .02 | .02 | .10 | .001 |

Note: Reported estimates are standardized regression parameters. This model predicted substantial variance in the prestige ratings, $R^2 = .65$; $F(3, 967) = 607.60$, $p < .001$.

Table 10. Top 15 O*NET Job Characteristics Positively Associated with Occupational Prestige

| Job Characteristic | mean | |
|------------------------------|------|------|
| | r | sd |
| Recognition | .84 | 0.00 |
| Achievement | .81 | 0.00 |
| Working Conditions | .80 | 0.00 |
| Inductive Reasoning | .78 | 0.01 |
| Deductive Reasoning | .78 | 0.01 |
| Critical Thinking | .77 | 0.00 |
| Complex Problem Solving | .75 | 0.01 |
| Reading Comprehension | .75 | 0.00 |
| Active Learning | .74 | 0.01 |
| Science | .72 | 0.01 |
| Judgment and Decision Making | .72 | 0.01 |
| Systems Analysis | .71 | 0.01 |
| Writing | .71 | 0.00 |
| Analytical Thinking | .70 | 0.01 |
| Investigative | .70 | 0.01 |

Table 11. Top 15 O*NET Job Characteristics Negatively Associated with Occupational Prestige

| Job Characteristic | mean | |
|---|------|------|
| | r | sd |
| Spend Time Bending or Twisting the Body | -.54 | 0.01 |
| Spend Time Walking and Running | -.52 | 0.01 |
| Trunk Strength | -.52 | 0.01 |
| Spend Time Making Repetitive Motions | -.52 | 0.01 |
| Spend Time Standing | -.51 | 0.01 |
| Extent Flexibility | -.50 | 0.01 |
| Dynamic Strength | -.50 | 0.01 |
| Stamina | -.50 | 0.01 |
| Static Strength | -.50 | 0.01 |
| Handling and Moving Objects | -.49 | 0.01 |
| Gross Body Coordination | -.48 | 0.01 |
| Speed of Limb Movement | -.48 | 0.01 |
| Performing General Physical Activities | -.47 | 0.01 |
| Spend Time Using Your Hands to Handle Control or Feel Objects Tools or Controls | -.45 | 0.01 |
| Multilimb Coordination | -.43 | 0.01 |

tion, achievement, and better working conditions. The negative associations found between prestige and the physical demands of occupations may provide insight into one potential mechanism connecting SES with health.

General Discussion

In the present work, we presented a theoretical framework for the study of occupational prestige, and we argued that research on SES would benefit from psychologists measuring occupational prestige more often and in better ways. In Study 1, we collected prestige ratings of 1029 occupations, the largest number of specific occupations to date, and showed that people agree on which occupations have high and low prestige. In Study 2, we found evidence of convergent validity with previous indices. In Study 3, we used data from the US department of labor and from a national sample of respondents to show that in job-level and person-level data, occupational prestige is positively correlated with other SES indicators but not redundant with them. Finally, in Study 4 we found that jobs that involve critical thinking and other abstract reasoning tasks have

high prestige, and jobs that involve onerous physical tasks have low prestige.

Theorizing about Occupational Prestige: Status and Perceived Instrumental Value

In the introduction, we argued that occupational prestige can be understood by extending Anderson et al.'s (2015) theoretical analysis of social status. Focusing on small face-to-face groups, Anderson et al. defined status as the respect, admiration, and voluntary deference accorded to people based on their perceived instrumental social value. We proposed that occupational prestige can be understood in similar terms but accorded to people based on their occupational roles.

It is thus noteworthy that in the analyses of job characteristics in Study 4, the two strongest correlates of occupational prestige were *achievement* and *recognition*. These domains are two out of the six broad work values contained in O*NET's Occupational Value Profiles (OVP; Rounds et al., 2008, 2013; others were independence, relationships, support, and working conditions). Occupations were rated

by experts on the extent to which they satisfied each work value. Occupations with high achievement value “are results oriented” and give employees “a feeling of accomplishment,” and those with high recognition value “are often considered prestigious” (O*NET online; <https://www.onetonline.org/find/descriptor/browse/1.B.2>). These definitions align with the idea that prestigious occupations bring respect and admiration and are perceived to have societal value.

Beyond these broad work values, occupational prestige was substantially associated with a variety of abilities and duties required of jobs. The results of Study 4 show that more prestigious jobs tend to involve abstract reasoning and complex cognitive tasks, and less prestigious jobs tend to involve demanding physical work. Looking at the highest- and lowest-prestige jobs in Table 5 of Study 1, we can observe further nuances. The most prestigious jobs all require years of highly specialized formal training. Low-prestige jobs often have elements that are unpleasant: in addition to taxing physical demands, some involve tasks or working conditions that many people would find disgusting (e.g., septic tank cleaner, slaughterer) or socially unpleasant by virtue of being annoying to others (e.g., telemarketer, door-to-door sales worker) or being required to fulfill demands from strangers (food service, parking lot attendant).

These results may shed further light on how to apply Anderson et al.'s (2015) status framework to occupational prestige, and in particular, in sharpening the idea of perceived instrumental value. One potential challenge is that in absolute terms, society needs food service workers, septic tank cleaners, and many of the other occupations that were rated as low in prestige, so it would be hard to argue that they do not have instrumental value. But perhaps people are implicitly basing prestige judgments on beliefs about the incremental or replacement value of the workers in various occupations, not the absolute value of the work itself. At the high end of the prestige spectrum are occupations where workers are very difficult to replace because of lengthy and specialized training. At the low end are occupations that have often been labeled as “unskilled” or “low-skill” positions. These labels have come under justifiable criticism (Cepla & Dempster, 2021), but they probably reflect common beliefs that such jobs could be done by almost anyone. As a result, even if an occupation involves work that is valuable to society, if people think that any given worker does not offer much added value over anyone else, the job may not be considered prestigious. If a job is poorly paid and unpleasant, that may compound the impression that the workers who hold the job do not have the skills or training to pursue better options.

How could this idea be tested in future research? As noted above, commonly held beliefs about replacement value are almost certainly not normatively correct. In particular, many people may underestimate the training and skill it takes to be competent at some, perhaps many, low-prestige jobs. We would predict that experimental manipulations to correct these misperceptions should affect prestige ratings in predictable ways. We would also expect that

time trends in public understanding of occupations should be associated with changes in their prestige.

Measuring Occupational Prestige: Practical Recommendations

Our primary recommendation for measuring occupational prestige is simple: researchers should do it more. As documented by Antonoplis (2022) and reinforced by our own review, articles about SES often ignore this important construct. It is our hope that by providing standardized ratings of a large list of occupations, the present work will lower practical barriers for researchers. To make it as easy as possible for other researchers to draw on the present work and measure occupational prestige, we have created a resource repository with the job list to be incorporated into surveys and questionnaires, and a lookup table linking occupations to prestige ratings, which can be easily integrated into a data analysis workflow (<https://www.occupationalprestige.com>).

The modest correlations we observed among occupational prestige, education, and income in Study 3b reinforce the idea that these variables are not interchangeable indicators of a single, latent construct. Rather than thinking of SES as a unidimensional property of persons, researchers should think of it as a broad domain reflecting intersecting social conditions, and measurement decisions should be based on more nuanced theorizing from this perspective (Antonoplis, 2022, presents a decision tree for making such decisions). Occupational prestige lends itself well to being interpreted through the lens of a social condition, since one person's occupational prestige is based on the judgments of others. Because researchers will often find it beneficial to measure multiple SES variables, we also recommend that researchers studying SES routinely preregister their analysis plans. Preregistration is beneficial both as a process for making theory-driven decisions about data analysis, and as safeguard against biases that can arise from hidden flexibility in data analysis (Nosek et al., 2018; Srivastava, 2018).

In addition to identifying the characteristics of high and low prestige jobs, Study 4 highlighted the benefits of using the O*NET classification system. First, it is the most comprehensive index of current US occupations and includes over 400 more occupations than the Census occupations used in previous indices. Second, using O*NET connects the prestige ratings to a wealth of information about each occupation. The analyses we conducted with this data provided novel insight into the components of work and how they are associated with prestige and identified individual characteristics of occupations associated with prestige. This can provide new avenues for future research to investigate how the different components and characteristics of occupational prestige influence important life outcomes, such as health and well-being.

Limitations and Future Directions

Occupations change over time as innovation and technology create new jobs, change the nature of others, and render some obsolete. Any index of occupations, including

the present work, is limited by being a snapshot of the standing of occupations at the time of data collection. While changes will necessitate periodic updating of occupational prestige ratings over time, the substantial levels of consistency shown with previous indices of occupational prestige in Study 2 suggests enough stability that the present index should be useful for some time. That said, we believe that the transparency of methods and data presented in the current work (and in the Supplementary Materials) make the ongoing maintenance of this framework more feasible than prior frameworks.

In addition to the natural fluctuation of occupations, important questions remain about how and when to use these ratings of occupational prestige. These ratings are useful when studying a diverse sample in the United States with many different occupations, but they might not afford the fine-grained distinctions necessary for studying differences within a specific context. For example, “professor” may be a specific enough category to usefully distinguish among participants in a representative sample, but in a focused study at a university, prestige differences between disciplines may be important to capture. Similarly, the present ratings may not be useful outside of the United States where the nature of some jobs and their perceived social value may be different. In these contexts, researchers may benefit from replicating our methodology to collect and validate new prestige ratings, rather than simply applying the current ones. The current ratings should not be assumed to generalize to novel contexts without further testing.

An important future direction will be to further develop and test theories that link occupational prestige to important outcomes, and to distinguish those theorized mechanisms from other SES variables like education and income. One important outcome that has received significant attention is health. The association between SES and health is well documented (Adler et al., 1993; Veenstra, 2000; Zell et al., 2018), and work using previous indices has shown occupational prestige is associated with overall health (Fujishiro et al., 2010) and mortality (Christ et al., 2012), controlling for education and income. There are several possible reasons why this may be so. One possibility is that people in high-prestige occupations have the social networks to access high quality care – indeed, many of the most prestigious jobs are various occupations of physicians. A second possibility is that the voluntary deference offered to people with prestigious occupations helps them in getting access and better quality care. A third possibility is that the physical demands or challenging conditions of low-prestige occupations are affecting health. Future work can use our new index to examine this association with greater precision and investigate these possible mechanisms, as well as rule out mechanisms that are better captured by other SES variables (e.g., income providing the means to afford high-quality health care and insurance).

The associations between prestige and the individual characteristics of occupations also pointed toward another interesting conclusion – the characteristics of high prestige occupations are in line with the skills emphasized in a tra-

ditional liberal arts education. This may be a surprise to students and university administrators who focus on job readiness. For the last decade students have been gravitating toward degrees in applied STEM fields based on the expectation that the skills acquired in these majors will prepare them for jobs after graduation (Fry et al., 2021). Further, university administrators have been reducing the number of liberal arts degrees offered (Costa, 2019). The evidence from Study 4 suggests that students who want prestigious jobs, whether inside or outside of STEM fields, should focus on developing the broad reasoning skills typically associated with a liberal arts education (e.g., reading comprehension, writing, critical thinking, and deductive reasoning). For undergraduate STEM majors, this emphasizes the importance of general education requirements outside of their specific major.

Further work is also needed to identify the factors that influence the formation and maintenance of perceptions of occupational prestige. As discussed in Study 1, these occupational prestige ratings are limited in that they were not drawn from a sample of raters that is representative of the US population. Sensitivity analyses indicated that no statistically significant differences result from the inclusion/exclusion of raters from the United States (see the Supplementary Materials), but more extensive analyses are needed to identify whether – and to what extent – other characteristics of the raters may meaningfully alter perceptions of occupational prestige. Prior work (Stephens et al., 2014) suggests that SES is an influential driver of both cultural identity and behavior, and many other person-level characteristics are likely also relevant (e.g., interests, familiarity/exposure). We hope that the current work will encourage more research in this direction.

Conclusion

The index of occupational prestige collected and validated in this work is a reliable and valid estimate of the prestige afforded specific occupations. The evidence shows that the benefits of having a high prestige occupation may be different than having a high income or an extensive educational background. Given the importance of an individual’s occupation in both their everyday life and their standing in the social and economic hierarchy of society, future psychology research seeking to assess SES should include occupational prestige ratings alongside the more commonly captured indicators of SES.

Contributions

Contributed to conception and design: BTH, DCM, ML, SS

Contributed to acquisition of data: BTH, DMC, ML

Contributed to analysis and interpretation of data: BTH, DMC, SS

Drafted and/or revised the article: BTH, DMC, SS, ML

Approved the submitted version for publication: BTH, DMC, SS, ML

Acknowledgements

The authors are grateful to Edward J. Condon for his contribution to the linking of occupations across organizational frameworks.

Funding Information

This research was supported in part by a grant from Oregon Consumer Justice and a Graduate Research Fellowship awarded to Bradley T. Hughes from the Wayne Morse Center at the University of Oregon.

Competing Interests

We have no known conflicts to disclose.

Data Accessibility Statement

All data, materials, and code can be accessed at <https://osf.io/ngk2t/>. Preliminary results were presented at the 22nd annual Society for Personality and Social Psychology conference in 2021, Virtual.

Submitted: March 13, 2023 PST, Accepted: December 22, 2023 PST



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