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RESEARCH REPORT

Employer Expectations of 21st-Century High School Graduates: Analyzing Online Job Advertisements

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Individuals with a high school education represent the largest subset of the U.S. workforce. However, little is known about the employer expectations of these individuals, particularly in the area of soft skills—also known as 21st-century skills. Online job advertisements offer useful data for examining these expectations, as they may supplement employer survey data and reflect actual recruitment practices. Our analysis of 68,505 online job advertisements suggests that employers hold generally lower expectations for the soft skills of high school–educated individuals than they do for postsecondary-educated individuals. However, employer expectations for two soft skills—professionalism and customer service skills—appear to be substantially higher for high school–educated individuals than for postsecondary-educated individuals. Additional results highlight similarities and differences within the high school–educated workforce across nine workplace industries. We discuss the implications of these results not only for high school–educated individuals and the organizations that employ them but also for practitioners and educators charged with assessing and providing training for these skills.

Keywords High school education; workforce; employer expectations; soft skills; professionalism; customer service; 21st-century skills; job advertisements; job training; job assessment; *HiSET*[®] test

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Employers' expectations of employees' skill sets and personal attributes provide critical information for various stakeholders. These expectations inform workplace preparedness curricula in secondary, postsecondary, and adult education settings for specific industries and occupations. By providing potential employees with a sense of the types of workers they seek, employers enable job candidates to evaluate whether they are an appropriate fit for a particular position or whether there are areas in which they may require additional training. More broadly, these expectations may influence candidates' perceptions regarding the types of skills necessary to be successful in the workplace more generally and to achieve their socioeconomic goals (Velasco, 2012). These expectations may also communicate an organization's culture, values, and mission to potential employees. Moreover, comparing employee expectations to benchmarks of employee candidates' work readiness facilitates the identification of various skill gaps (e.g., Hart Research Associates [HRA], 2015; National Association of Colleges and Employers [NACE], 2018; Quacquarelli Symonds, 2019; Society for Human Resource Management [SHRM], 2019).

Traditionally, empirical accounts of employer expectations have relied on survey data. These data have provided valuable information regarding the nature of successful job performance from an employer perspective. For example, one consistent trend among these studies is employers' increasing demand for employee *soft skills* (HRA, 2015; NACE, 2018; Quacquarelli Symonds, 2019; Rainie & Anderson, 2017; Robles, 2012; SHRM, 2019; World Economic Forum, 2016). Also referred to by terms such as *21st-century skills*, *noncognitive constructs*, *career readiness skills*, and *employability skills*, common examples of soft skills include interpersonal skills, conscientiousness, leadership, creativity, critical thinking, emotional intelligence, resilience, adaptability, teamwork, problem solving, and ethics (e.g., Kautz et al., 2014; Klieger et al., 2015; Kyllonen, 2012). Although there is some debate as to the definition of a "soft skill" (e.g., Kautz et al., 2014), each is typically distinct from constructs like traditional cognitive skills (e.g., intelligence), foundational skills (e.g., literacy, mathematics), or technical skills (e.g., plumbing, welding, computer programming).

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Despite these insights, survey data possess some limitations. Response rates for these surveys are often low (Bartlett, 2005), typically resulting in relatively small sample sizes. In addition to lower statistical power and precision in describing employer expectations, this tendency for low response raises questions regarding representativeness and self-selection. Furthermore, these data may be criticized for their subjectivity as well as the degree to which they reflect actual recruitment practice. Many of these studies also lack independent peer review, missing an important opportunity for feedback regarding methodological rigor and suggested improvements to the research. In some cases, the authors of these studies themselves acknowledge that their methods are “nonscientific” (Rainie & Anderson, 2017, p. 3).

As a result of these criticisms, research examining online job advertisements has become increasingly popular (e.g., Adobe, 2019; Calanca *et al.*, 2019; Deming & Kahn, 2017; Rios *et al.*, 2020). Compared to surveys, this methodology entails the analysis of much larger and more representative sources of data regarding employer expectations, and it better reflects organizations’ actual hiring practices. These advertisements often represent job candidates’ initial opportunity to evaluate not only skill expectations but also the degree to which they meet these expectations. Thus, employers’ ability to articulate and communicate skill expectations to job applicants clearly and accurately is critical. The advantages of these studies’ methodology are supplemented when subjected to a peer review process (Calanca *et al.*, 2019; Rios *et al.*, 2020). In one of the earliest studies using this methodology, Carnevale *et al.* (2014) noted some general trends regarding the types of occupations and industries represented in online job advertisements posted through Burning Glass Technologies (BGT). Specifically, they reported that online job advertisements overrepresent positions that require a college degree and industries that seek “high-skilled” workers, such as for white-collar office and science, technology, engineering, and mathematics occupations.

Expanding on Carnevale *et al.* (2014), subsequent research examined the types of skills employers prioritize within online job advertisements. For example, Deming and Kahn (2017) analyzed nearly 45 million advertisements for “professional” occupations—that is, those requiring a college education—posted through BGT from 2010 to 2015. These authors reported that, across these advertisements, the most commonly listed skills could be categorized as cognitive (e.g., problem-solving research, analytical, critical thinking, math, statistics), social (communication, teamwork, collaboration, negotiation, presentation), and character (organized, detail oriented, multitasking, time management, meeting deadlines, energetic). The authors also used multiple regression to report that social skills outperformed cognitive skills in predicting employee wages and employer firm outcomes, even after accounting for years of education and experience. Similarly, Calanca *et al.* (2019) reported that skills such as maturity, delegation skills, and team-building skills were associated with the highest salary rewards within a sample of 245,000 job advertisements in the United Kingdom, posted through the Adzuna job search engine. In one of the largest studies examining online job postings, Adobe (2019) reported that communication skills and creativity were listed in at least half of the 2 million job advertisements it analyzed. Comparatively, this study also noted that these skills were listed in only about one fourth of 2 million resumes analyzed.

Occupations Requiring a High School Education

The aforementioned “webscraping” studies have focused largely on occupations that require a postsecondary degree (e.g., Deming & Kahn, 2017; Rios *et al.*, 2020). This research is valuable in that these occupations represent a significant and specialized segment of the workforce. Consequently, however, occupations that require only a high school education are typically excluded from investigation. In the United States, high school education credentials include a traditional high school diploma or an equivalency credential, such as the GED (GED Testing Service, 2018), the *HiSET*[®] test (ETS, 2018), or the Test Assessing Secondary Completion (TASC; Data Recognition Corporation, 2016), among others. The omission from the webscraping literature of jobs that require only a high school–level education is notable because occupations that typically require a high school education represent the largest proportion of jobs in the United States, relative to jobs that typically require other academic credentials (U.S. Bureau of Labor Statistics [BLS], 2020; see Figure 1). Moreover, a 2019 employer survey noted that nearly half of employers recently reduced the education requirements in their hiring criteria, with almost one third planning to do the same in the near future (Adecco, 2019), suggesting further potential expansion of the high school–educated segment of the workforce. It should also be noted that employees with a high school education or less were the educational group that lost the most jobs in the United States as a result of the COVID-19 pandemic (Georgetown University Center on Education and the Workforce, 2020).

More generally, individuals with only a high school education constitute the largest educational attainment subgroup of the U.S. population, according to the most recent U.S. census (U.S. Census Bureau, 2018; see Figure 2). Although some

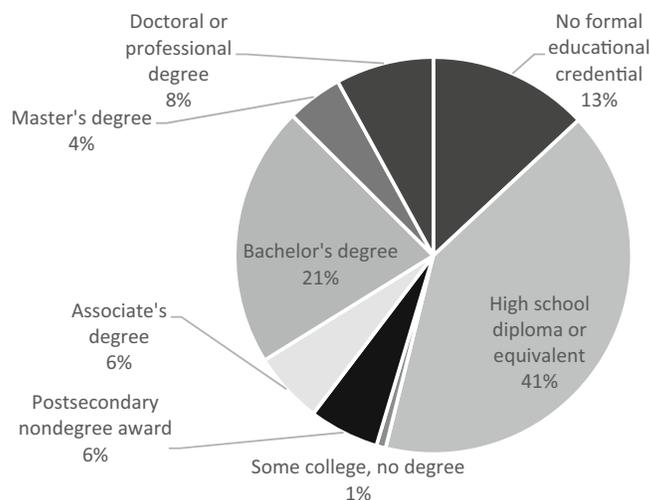


Figure 1 All U.S. occupations by typical education level. Number of all U.S. occupations = 789. Data source: U.S. Bureau of Labor Statistics, 2020.

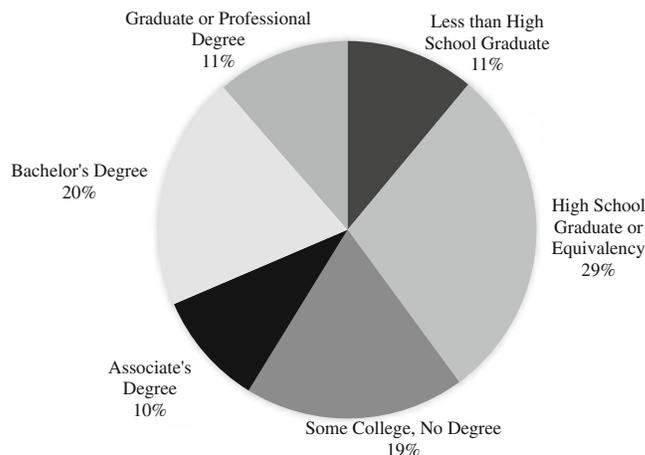


Figure 2 U.S. civilian noninstitutionalized population (age 18 years and older) by education level, 2018. Approximate $N = 249,193,000$. Data source: U.S. Census Bureau, 2018.

projections suggest that U.S. postsecondary enrollment rates will increase in the coming years (Hussar & Bailey, 2019), this trend contradicts actual enrollment figures, which have decreased every year from 2010 to 2016 (i.e., the most recent year of available data; Hussar & Bailey, 2017; see also Juszkiwicz, 2017; Ma & Baum, 2016; McFarland et al., 2017; National Student Clearinghouse Research Center [NSCRC], 2017). This decline may reflect the substantial financial cost of American postsecondary education or other practical challenges (Associated Press & NORC, 2019). Regardless, these obstacles coincide with attitudinal trends, as recent surveys have demonstrated that approximately half of U.S. secondary students believe a high school education is sufficient for obtaining a living wage (Associated Press & NORC, 2019). Moreover, projected decreases in U.S. college enrollment appear to have been accelerated due to the COVID-19 pandemic (NSCRC, 2020). Thus, high school–educated individuals represent a substantial pool of current and future employees.

Unsurprisingly perhaps, occupations that require only a high school education are often described as “low-skill” jobs (e.g., Maxwell, 2008). In its Occupational Information Network (O*NET), the U.S. Department of Labor categorizes these occupations into Job Zone 2, describing them as requiring only “some” preparation (National Center for O*NET Development [O*NET], 2008). Some high school jobs¹ may also be categorized into Job Zone 1, which requires “little or no” preparation (O*NET, 2019). By comparison, the highest zone—Job Zone 5—requires “extensive” preparation, typically including a graduate degree (O*NET, 2019). Other models describe high school jobs in even less flattering terms, for instance, some employment websites categorize “professional” occupations as those that typically require a postsecondary

credential (see Deming & Kahn, 2017), implying — perhaps inadvertently — that jobs requiring only a high school education are in some ways “less professional” or “unprofessional.”

These job zones and other descriptions typically refer to the level of academic or technical skill required for high school jobs. Conversely, the degree to which these descriptions also apply to the level of “soft” or noncognitive skills desired in high school jobs may be gleaned from various sources. Given that webscraping studies have already observed variations in soft skill expectations across educational requirements even within postsecondary occupations (Rios *et al.*, 2020), it is plausible that high school occupations may possess a unique profile of soft skill expectations. Soft skill importance ratings derived from O*NET data suggest that soft skills tend to become increasingly important for higher job zones (Sackett & Walmsley, 2014). However, as previously alluded, these job zones are not synonymous with educational requirements.

Conversely, investigations specifically describing employer expectations of high school – educated individuals appear to be scarce and entirely derived from survey studies. Holzer (1997) reported that customer service skills were desired for 82% of “white-collar” jobs and 51% of “blue-collar” jobs that required only a high school education. Moreover, the employers surveyed in this study perceived that social and verbal skills were in increasing demand at the time. Elsewhere, De Leon and Borchers (1998) noted that, although employers valued traditional skills, such as reading, writing, and mathematics, in high school graduates, soft skills, including communication skills, critical thinking, group interaction skills, “personal development skills” (i.e., self-esteem, ambition), leadership skills, and “employability skills” (i.e., conscientiousness), were also highly sought. In fact, these employers often ranked these soft skills as more important than technical skills. Other researchers have demonstrated that, even when important specific soft skills are not identified, many employers place more value on evaluations of soft skills than on the actual high school diploma or equivalency credential (Hartwig & Sitlington, 2008; Hickox, 2015).

However, the aforementioned potential limitations of survey data suggest that studies involving online job advertisements for high school jobs would provide significant additional value. We were unable to locate any employer survey studies beyond these two examples (De Leon & Borchers, 1998; Holzer, 1997), which used samples with a relatively narrow geographical focus or industry, and these two are now more than two decades old. Thus these results may not be generalizable to the U.S. high school job market more generally or to current employer expectations.

Our Study

We aim to address a significant existing gap in our research knowledge, as our study appears to represent the first empirical research focusing on job advertisements for occupations that typically require only a high school education. Specifically, our primary research goal is to describe the skills and characteristics employers value in high school – educated employees, as described in online job advertisements. Our focus on jobs that require only a high school education is the most significant distinction between our study and those of previous researchers (e.g., Rios *et al.*, 2020). We believe that examining high school jobs is critical owing to the sheer volume of these jobs in the United States — which outnumber those of any other educational requirement — and the possibility that skill expectations for these jobs may differ from those requiring higher education. Evaluating advertisements within the original pool identified by Rios *et al.* facilitates a direct comparison of skill requirements across education levels. Another difference between our study and that of Rios *et al.* is that we have expanded the list of skills we are examining within the job ads beyond those included in Rios *et al.* Finally, we examine potential differences in employer expectations across job industries. Given the diversity of job tasks and responsibilities across industries, it is plausible that some soft skills are more relevant for certain industries than others, even within the same educational requirements (i.e., high school). Conversely, cross-industry comparisons also permit the potential identification of skills that are universally desirable (i.e., “transferable” soft skills).

Method

Identifying Jobs Requiring Only a High School Education

Our study examined an initial pool of approximately 480,000 job advertisements extracted from the websites [CareerBuilder.com](https://www.careerbuilder.com) and [CollegeRecruiter.com](https://www.college recruiter.com) between February and April 2017 by Rios *et al.* (2020). Jobs requiring a high school education were identified using two criteria. First, educational criteria were defined by identifying advertisements that included the exact terms “high school diploma,” “high school equivalent,” “GED,” “HiSET,” or “TASC” anywhere in the posting. A review of relevant online advertisements prior to our search suggested that these

21st-Century Skills (Rios et al., 2020)	Personality-Based Skills
Adaptability	Assertiveness
Collaboration	Dependability
Communication Skills	Diligence
Creativity	Friendliness
Critical Thinking	Generosity
Ethics	Inquisitiveness
Oral Communication	Intellectual Orientation
Problem Solving	Leadership
Professionalism	Negotiation Skills
Self-Direction	Optimism
Service Orientation	Organization
Social Intelligence	Resilience
Time Management	Self-Discipline
Written Communication	Social Responsibility
	Stability
	Work Ethic

Figure 3 Constructs searched within job advertisements.

were the terms used to describe educational requirements. Second, high school jobs were defined by identifying advertisements with a relevant job title in the posting’s job title field, along with one of the aforementioned educational terms in the advertisement’s job snapshot field. Relevant job titles were identified through publicly available data maintained by the U.S. Department of Labor’s Bureau of Labor Statistics (BLS). Specifically, BLS describes the typical educational requirements for nearly 800 unique occupations (BLS, 2020; Table 1.7). Examples of the most prevalent occupations typically requiring a high school education include office clerks, customer service representatives, and personal care aides. Within these criteria, we integrated steps to reduce false positives, that is, the identification of jobs that required more than a high school education. For example, the term “high school” was not used as an educational criterion because this term would likely identify jobs that occur within a high school but require an education other than a high school diploma or equivalency (e.g., high school teacher). Additionally, specifying high school educational requirements within advertisements with relevant job titles was necessary because organizations may vary in the specific educational requirements for their respective positions (BLS, 2020, Table 5.3). Advertisements that included multiple positions, such as those posted by recruiting firms, could be identified by excessive overall text length and were removed. After also removing duplicate advertisements, our screening process resulted in a final sample of 68,505 relevant job advertisements.

Determining Skills to Identify Within Job Advertisements

We first reviewed the high school job advertisements for the set of skills identified by Rios et al. (2020). This set of skills was selected to conduct direct comparisons between those requiring only a high school education and those requiring a postsecondary education (Rios et al., 2020). These skill terms (Figure 3) were initially informed by a thorough literature review, focusing on constructs that may be characterized as “21st-century skills” (see Rios et al., 2020). We supplemented this list with a set of skills based on the Big Five personality model, including terms with high workplace relevance (i.e., Naemi et al., 2014; Figure 4). These skills were selected given their established predictive validity for job performance (e.g., Barrick & Mount, 1991; Hurtz & Donovan, 2000; Judge et al., 2013). As when identifying relevant jobs, we used exact terms to identify skills. For instance, the exact term “communication skills” was among those required to identify this skill; the separate terms “communication” and “skills” were insufficient. For both sets of skills, specific search terms were also omitted if they appeared to generate false positives. For example, the specific term “leading” was not used for detecting leadership skills because this term was often used in advertisements to describe the hiring organization (e.g., “We are a leading company in ...”) rather than a desirable employee characteristic.

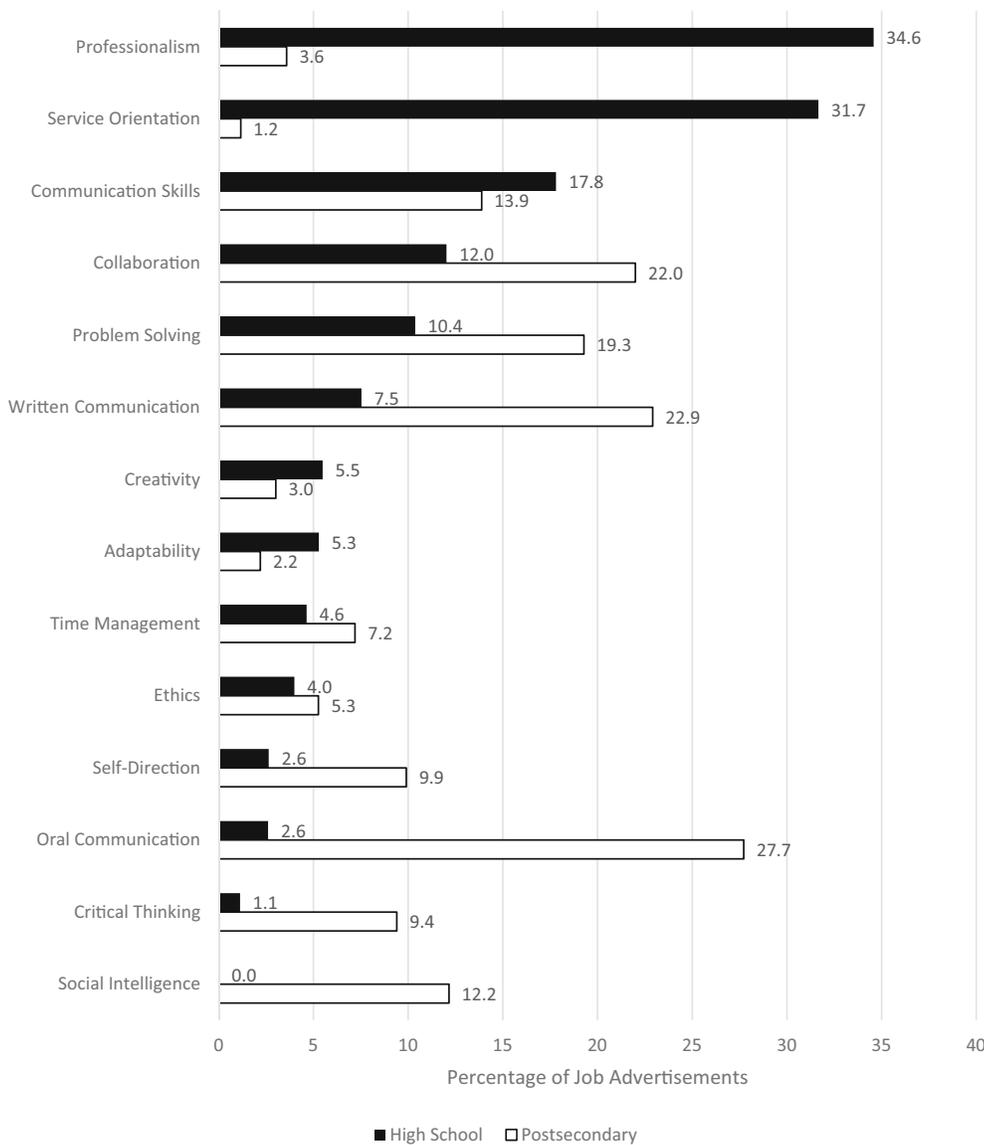


Figure 4 Soft skill expectations for jobs requiring a high school versus postsecondary education. Number of job postings: high school, *n* = 68,505; postsecondary, *n* = 141,941. Skills are presented in descending order by percentage of postings within high school occupations. Data source for postsecondary percentages: Rios et al., 2020.

Results

Soft Skill Expectations: High School Versus Postsecondary Jobs

Findings relating to the first set of soft skills (i.e., Rios et al., 2020) are displayed in Figure 4. Because the high school jobs representing the focus of our study did not require a postsecondary credential, we expected no overlap with those analyzed by Rios et al., 2020. The large sample size of more than 200,000 job advertisements combined across educational requirements suggests that even trivial differences between high school and postsecondary jobs regarding the proportion of advertisements that mention a specific skill will be statistically significant (Kline, 2013). Therefore, we propose practically meaningful differences as those of at least five percentage points between high school and postsecondary jobs. Thus skills listed in high school job advertisements may be grouped into three categories based on their frequency relative to postsecondary job advertisements: those that are of similar importance, greater importance, or less importance.

As displayed in Figure 4, a number of skills appeared with a similar frequency (i.e., within five percentage points) between high school and postsecondary jobs: adaptability, communication skills, creativity, ethics, and time management. However, aside from communication skills, each of these skills was listed in approximately 5% or less of advertisements for high school jobs. Conversely, only two skills were listed more frequently in high school jobs than in postsecondary jobs, and the differences were substantial. Specifically, professionalism was listed in 34.5% of high school job advertisements but only 3.6% of postsecondary advertisements. Similarly, service orientation was listed in 31.7% of high school job advertisements compared to only 1.2% of postsecondary job advertisements. The remaining seven skills—representing half of those included in these analyses—were listed at a lower frequency in high school job advertisements relative to postsecondary jobs: collaboration, critical thinking, oral communication, problem solving, self-direction, social intelligence, and written communication. However, collaboration (12.0%) and problem solving (10.4%) were nonetheless listed in at least 10% of high school job advertisements.

Expectations of Personality-Based Soft Skills

Results pertaining to the additional set of personality-related skills not included in Rios *et al.* (2020) are included in Figure 5. The soft skills most frequently listed in high school job advertisements were leadership (15.5%), diligence (12.4%), and stability (12.0%). Each of the other skills was listed in less than 10% of advertisements.

Soft Skill Expectations by Industry

We further analyzed job advertisements within occupational industries to observe trends in soft skill expectations. Job advertisements were categorized into specific industries by cross-referencing respective job titles against the BLS's 2016 National Employment Matrix (NEM) titles and codes (BLS, 2020). High school jobs that were identified through their job titles (as opposed to educational requirement keywords) were more amenable to this categorization. To focus our analyses on a manageable number of industries with sufficient representation in our data set, we isolated industries represented by at least 100 advertisements. Advertisements representing occupations in the (a) health care practitioners and technical occupations and (b) health care support industries were combined to increase subsample size. These criteria resulted in nine industries (and their respective NEM codes): construction and extraction (47–0000), food preparation and serving related (35–0000), health care (29–0000 and 31–0000), management (11–0000), office and administrative support (43–0000), production (51–0000), protective services (33–0000), sales and related (41–0000), and transportation and material moving (53–0000). Examples of jobs within each of these industries that typically require only a high school education are listed in Table 1, along with the number of advertisements in our sample for each industry. We also only describe analyses including soft skills that were represented by at least 10% of the overall pool of high school job advertisements, again to maintain a manageable amount of analysis focusing on the most relevant skills: collaboration, communication skills, diligence, leadership, problem solving, professionalism, service orientation, and stability.²

Results are presented in two configurations. First, results are displayed with separate graphs by soft skill, to facilitate a comparison of the importance of each soft skill across industries (Figure 6). These charts include a reference line representing the proportion of overall high school job advertisements that include each soft skill. Several notable trends may be observed in these data. For example, communication skills and service orientation skills tend to be more important in industries like food preparation and serving related, management, office and administrative support, and protective services and less desired in construction and extraction, production, and transportation and material moving industries. Similarly, management and food preparation and serving related occupations are among those in which leadership and collaboration skills are particularly valued.

The second configuration for these same analyses presents findings with separate graphs by industry, providing a soft skill “profile” for each occupational grouping (Figure 7). We again include reference markers in these charts for the proportion of overall high school job advertisements that mention each soft skill. These charts may be useful for describing the types of soft skills that employers in specific industries typically emphasize, based on job advertisements. For example, protective services occupations appear to prioritize communication skills, professionalism, and service orientation over other soft skills, with the former two noticeably exceeding employer expectations relative to the overall high school workforce. This configuration also communicates whether certain industries generally possess higher or lower soft skill expectations

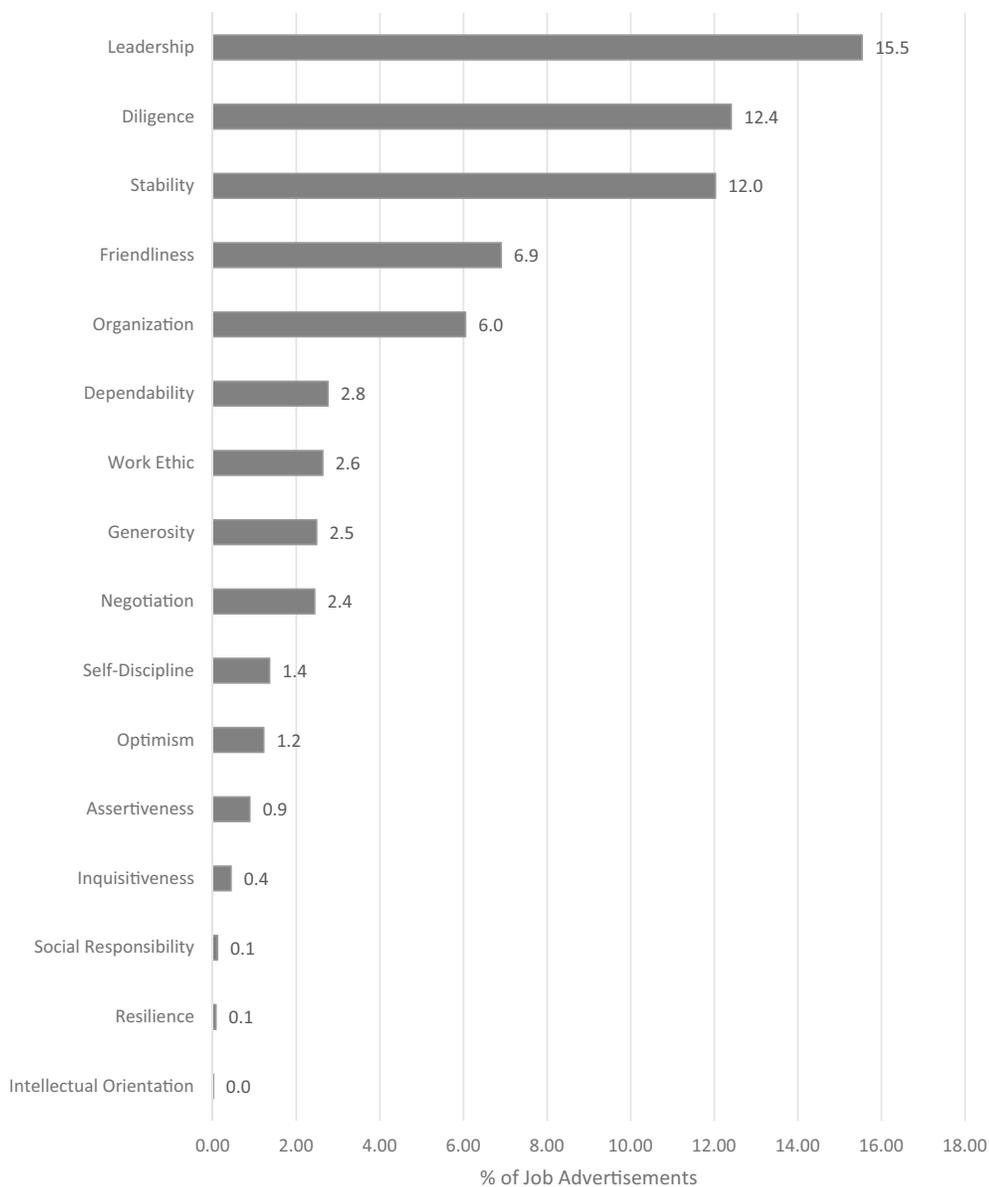


Figure 5 Personality-based skill expectations for jobs requiring a high school education. Number of job advertisements = 68,505.

relative to the overall workforce. For instance, soft skill expectations for production occupations appear to be relatively low, as the proportions for each of the soft skills were below those observed for the overall sample. Conversely, soft skill expectations for industries like food preparation and serving related, management, and office or administrative support generally exceeded or approached those for the overall workforce for each of the soft skills.

Discussion

On the basis of the 2018 U.S. census, more than 71 million Americans hold a high school degree or equivalency but no postsecondary academic credential (U.S. Census Bureau, 2018), representing the largest educational attainment group in the country. The U.S. job market appears to reflect this fact, as occupations requiring a high school education represent the largest proportion of overall occupations in the United States (BLS, 2020). A 2019 employer survey noted that nearly half of employers recently reduced education requirements in their hiring criteria, with almost one-third planning to do the same in the near future (Adecco, 2019), suggesting even further potential occupational opportunities for high

Table 1 Industries Included in Industry-Specific Analyses

Industry	NEM code groupings	Example occupations requiring a high school education	No. advertisements analyzed
Construction and extraction	47–0000	carpenters, electricians, mining machine operators	326
Food preparation and serving related	35–0000	chefs, head cooks, server/waitstaff supervisors	113
Health care	29–0000, 31–0000	pharmacy technicians, opticians, home health aides	288
Management	11–0000	transportation managers, mail superintendents, property managers	173
Office and administrative support	43–0000	customer service representatives, tellers, file clerks	2,238
Production	51–0000	machinists, welders, printing press operators	932
Protective services	33–0000	police officers, correctional officers, security guards	272
Sales and related	41–0000	travel agents, real estate agents, salespeople	1,409
Transportation and material moving	53–0000	commercial pilots, flight attendants, bus/subway operators	696

Note. NEM = National Employment Matrix.

school-educated individuals. Nonetheless, little is known about employers' skill expectations for high school-educated employees. For prospective employees to possess an accurate perspective on these expectations, clear communication from employers is necessary (Krahn *et al.*, 2002). Soft skill deficiencies may lead not only to greater unemployment rates among high school-educated individuals but also to underemployment among individuals with a postsecondary education, as employers turn to postsecondary graduates to fill high school occupations (Zemsky, 1997). We attempted to address these issues empirically, focusing on soft skill expectations as conveyed through job advertisements.

Overall, the perception of high school jobs as “low-skill” occupations in the context of technical or academic skills appears to generalize to soft skills as well. Our results suggest that there are lower expectations regarding soft skills for high school-educated employees: Only 2 of the 14 soft skills we compared against postsecondary job advertisements were referenced at a noticeably higher frequency in high school job advertisements. However, these exceptions—professionalism and service orientation—appear to be highly desirable to employers of high school-educated individuals, given that they were each observed in approximately one-third of high school job advertisements. Collaboration, communication skills, and problem solving were also mentioned in at least 10% of high school job advertisements, but these expectations were comparable to or lower than those for employees with a postsecondary education. Supplementary analyses demonstrated that only 3 of an additional 16 21st-century skills—leadership, diligence, and stability—were mentioned in at least 10% of high school job advertisements. The apparently low employer expectations for some soft skills may be surprising. For example, given the significant consequences of ethics violations and the emphasis placed on ethics through formal postsecondary training (e.g., Waples *et al.*, 2009; Winston, 2007), one might expect more frequent mention of these traits in job advertisements. Similarly, despite the abundance of customer service and other similar occupations that require a high school education, relevant competencies, such as negotiation skills, were mentioned infrequently in advertisements.

Industry-specific comparisons suggest that soft skill expectations are similar across a variety of high school occupations, but exceptions largely followed expected trends. For instance, communication, collaboration, and service orientation skills tend to be more important in industries that involve frequent interpersonal interactions (e.g., food preparation and serving related, management, office and administrative support, protective services) than in those involving more solitary tasks or machinery operation (e.g., construction and extraction, production, transportation and material moving). Similarly, it is unsurprising that leadership skills are particularly valued in management positions.

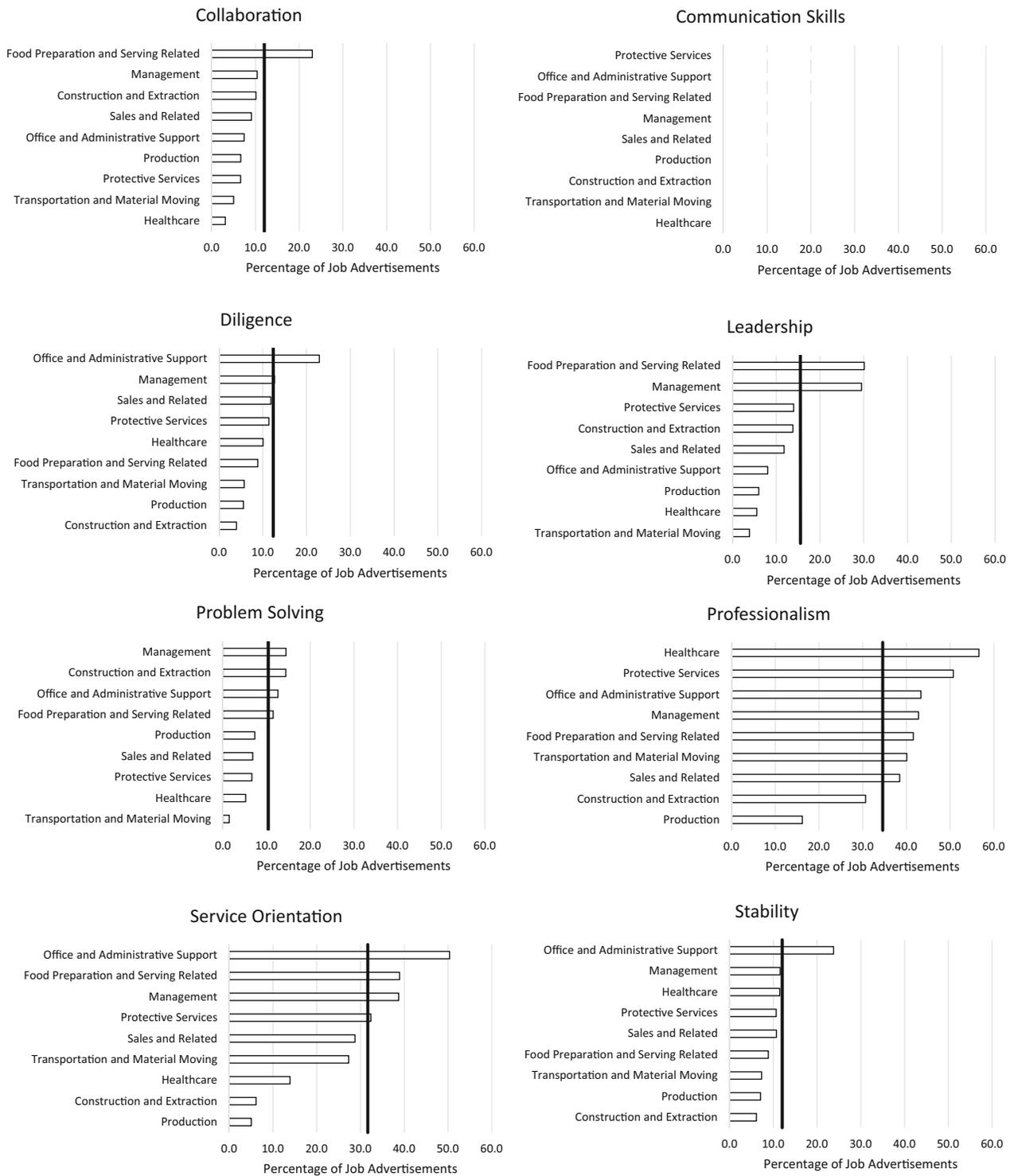


Figure 6 Industry-specific soft skill expectations for jobs requiring a high school education, by skill. Vertical line refers to the percentage of overall job advertisements ($N = 68,505$) that mention each respective soft skill. Graphs present industries in descending order by respective percentage of advertisements.

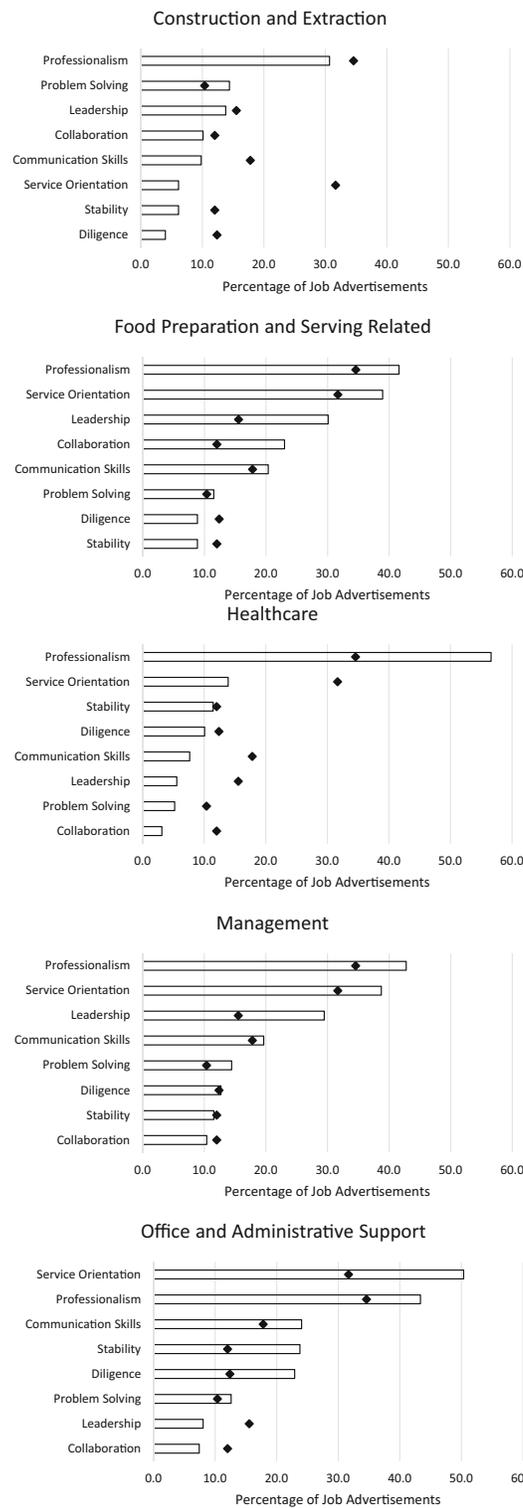


Figure 7 Industry-specific soft skill expectations for jobs requiring a high school education, by industry. Diamond markers refer to the percentage of overall job advertisements ($N = 68,505$) that mention each respective soft skill. Graphs present skills in descending order by respective percentage of advertisements.

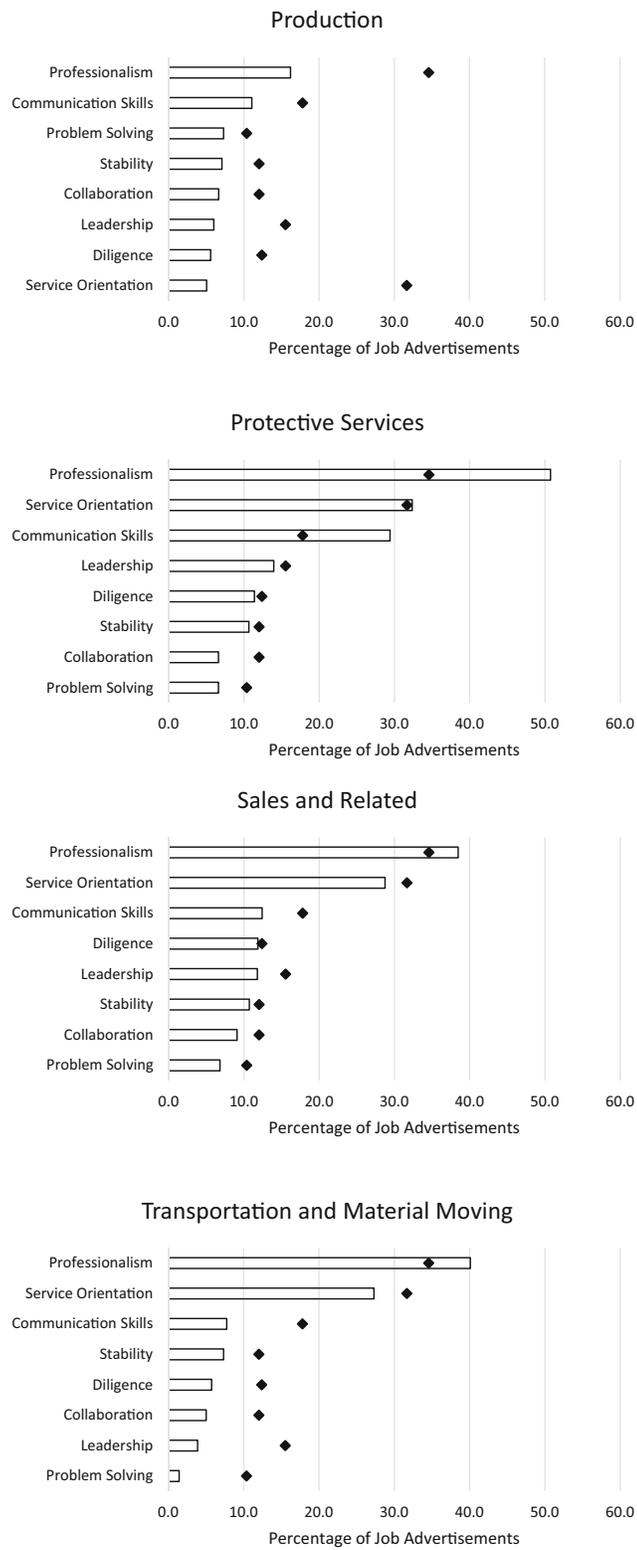


Figure 7 Continued

A few less obvious trends also appear, though some may be explained by examining the specific occupations within each industry. For example, health care occupations—which typically involve frequent interactions with patients or among staff (e.g., physicians, nurses)—rarely mention relevant soft skills, such as collaboration, communication skills, and service orientation, in job advertisements. However, health care occupations that require only a high school education tend to be those that emphasize more administrative tasks, such as preparing equipment and assisting with patient billing, rather than direct patient contact (Table 1). Another somewhat unexpected finding demonstrates that leadership skills are highly valued in food preparation and serving related occupations. Again, however, occupations in this industry that require a high school education appear to be positions of leadership (Table 1).

These results also communicate overall soft skill expectations within specific industries. These results may inform the degree to which employers' personnel selection methods signal the soft skills they value based on experience or survey data. In turn, employers may use these findings to evaluate and adjust assessment, selection, training, and job performance evaluation methods. Comparisons across industries illustrate notable differences in soft skill expectations. For example, soft skill expectations appear to be generally low in production occupations, whereas these expectations are higher in fields like food preparation and serving related, management, and office or administrative support. It is possible that these results distinguish occupations in industries with high projected growth from those that may be susceptible to machine or computer automation. For instance, production occupations—which represented the lowest soft skill expectations in our sample—are expected to experience significant losses in the upcoming decade (BLS, 2020), suggesting that occupations with fewer soft skill expectations are most amenable to automation. Future research may examine these associations more rigorously.

Practical Implications: Evaluating and Developing Relevant Soft Skills

On the basis of identifying the soft skills most prominently desired by employers of high school–educated individuals, one practical implication involves the methods used to assess these skills. Unfortunately, challenges in defining the constructs most relevant to high school occupations complicate actionable recommendations. For instance, we identified professionalism as the soft skill in greatest demand by employers of high school–educated individuals. However, authors across various industries have argued that professionalism is subjective, possesses no singular conceptualization, and may in fact be impossible to define (Birden *et al.*, 2014; Carter & Wilson, 2006; Hamilton, 2008; Lynch *et al.*, 2004; Numerato *et al.*, 2012; Roth & Zlatic, 2009; Servage, 2009; Wilkinson *et al.*, 2009). Unsurprisingly, researchers have identified dozens of instruments used to assess professionalism, often concluding that multiple measures are likely necessary for an accurate evaluation (e.g., Veloski *et al.*, 2005; Wilkinson *et al.*, 2009).

Similarly, service orientation—which ranked second in employer demand in our sample—has proven elusive in its definition (Ladhari, 2008; Vaish *et al.*, 2016; Wirtz & Jerger, 2016; Yarimoglu, 2014); is often evaluated through inherently subjective measures, such as customer satisfaction (Hong *et al.*, 2013); and may require industry-specific assessment (Ladhari, 2008). These factors contribute to inconsistent findings when attempting to empirically identify customer satisfaction predictors (Szymanski & Henard, 2001). These complexities prompt debate regarding the degree to which soft skills are innate or learned and the most effective means for training (e.g., Baum, 2002; Birden *et al.*, 2014; Lerman, 2013; Passi *et al.*, 2010; Sackett & Walmsley, 2014; Williams *et al.*, 2022).

Limitations and Future Directions

One potential limitation of our study involves the method we used to identify soft skills and related search terms. Although our methodology was chosen to limit false positives, the relatively low frequency with which skills were detected within our sample of job advertisements may hinder comparisons and interpretations of results. However, it should also be noted that the frequency with which skills were identified in our study was similar to those of previous similar studies (Calanca *et al.*, 2019; Deming & Kahn, 2017). Nonetheless, the existence of several soft skill frameworks (see review by Rios *et al.*, 2020) implies some debate regarding the definition of a “soft skill,” including the potential omission of key constructs. In turn, despite the fact that we included 30 soft skills in our search criteria, some skills may have been overlooked. Some of these skills may represent relatively new concepts (e.g., intercultural competency; Dearsdorff, 2009) that have not yet migrated from research contexts into employers' personnel selection practices. Additional taxonomies, such as O*NET's Work Styles or the National Academies of Sciences, Engineering, and Medicine's (2017)

delineation of intrapersonal and interpersonal skills, may also warrant further study. Research comparing online job advertisement findings with expert ratings of soft skill expectations (e.g., O*NET; see Burrus *et al.*, 2013; Golubovich *et al.*, 2015) would also be valuable, particularly as they pertain to differences across educational requirements. Ultimately, the designation between categories like “soft” and “hard” skills may be less critical than the skills’ importance in the workplace.

Our search terms primarily included adjectives and synonyms of the target construct, though advertisements may vary in the degree to which they use these terms. Our finding that high school job advertisements are more likely to include language related to broad communication skills rather than specific oral or written communication skills further supports the influence of advertisement terminology. Alternatively, employers may describe soft skills in job advertisements through behavioral examples or critical incidents. Analytical approaches like natural language processing and machine learning (e.g., Boselli *et al.*, 2018) may address these concerns. Another potential reason for skill omissions in advertisements is that employers do not advertise skills they believe are of obvious importance. In turn, employers may signal the importance of these skills to potential employees at other stages of the personnel selection process (e.g., interviews). This possibility suggests that the relationship between job advertisements and employers’ actual hiring behavior warrants future study.

It is also possible that high school jobs are not advertised through websites as commonly as jobs requiring other educational credentials. Recent estimates suggest that up to 90% of postsecondary jobs are advertised online (Carnevale *et al.*, 2014). National data suggest that high school jobs outnumber postsecondary jobs (BLS, 2020), yet our sample identified fewer high school job advertisements relative to postsecondary occupations (i.e., Rios *et al.*, 2020), replicating findings from previous online job advertisement research (e.g., Carnevale *et al.*, 2014). One explanation for this discrepancy is that there were fewer vacancies for high school jobs than postsecondary jobs during the time frame reflected in our job advertisement sample. Alternatively, although it is possible that employers of high school–educated individuals use websites other than the ones we included, it is also possible that these employers are more likely than postsecondary employers to use other avenues to advertise open positions, including billboards, print ads, help wanted signs, word of mouth, or academic connections with high schools or adult education institutions (e.g., career technical education). Future studies may examine how—and if—soft skill expectations are communicated to potential employees via these alternative recruitment methods. More generally, this observation introduces some discussion regarding the degree to which the webscraping methodology accurately represents the high school job market (Carnevale *et al.*, 2014). This possibility may be particularly likely for specific high school job industries that were not well represented in our advertisement sample. Furthermore, future studies may attempt alternative methods for aligning job advertisements with specific industries, given that our methodology could perform this alignment only for a subsection of the advertisements in our sample. The relatively low frequency of skill detection may also be due to employer practices in crafting job advertisements. Soliciting input from employers would provide supplementary insights regarding job advertisement development.

Future research may also focus on foundational issues associating soft skills and job performance within high school jobs. These results would supplement and potentially validate employer expectations of these skills. Various meta-analyses have linked higher soft skills to improved job performance (e.g., Barrick & Mount, 1991; Hurtz & Donovan, 2000; Judge *et al.*, 2013) and deficient soft skills with negative occupational outcomes, including turnover (Zimmerman, 2008). Similarly, studies that have associated soft skills with salaries as listed in online job postings (Calanca *et al.*, 2019; Deming & Kahn, 2017) could be expanded to include actual employee salaries and other performance outcomes. Regardless, these studies rarely consider the education levels of these occupations or their employees. Specifically, results demonstrating that soft skills are generally less associated with job performance for high school jobs relative to postsecondary occupations would align with our results and with expert ratings (e.g., Sackett & Walmsley, 2014). Conversely, findings suggesting that soft skills are of similar predictive validity regardless of education level may warrant reconsideration of our conceptions of high school occupations and employees, as well as the job advertisement practices of high school job employers. This research could be supplemented by studies conducted outside of the United States to better understand employer expectations of high school–educated individuals internationally (e.g., Krahn *et al.*, 2002; Mazrekaj *et al.*, 2019).

Another interesting avenue for potential future research involves differentiating employer expectations of candidates with a traditional high school diploma from those who obtained a high school equivalency credential (e.g., GED). The

job advertisements in our study typically did not differentiate between these two groups, which appears to reflect standard industry practice. However, these groups may differ on key factors, such as age, job experience, and family obligations (Patterson, 2013; Tyler *et al.*, 2003; Williams, 2019). Although most employers appear comfortable in accepting individuals with an equivalency credential, others continue to hold stereotypes about these individuals' skill sets and may be less willing to hire them relative to traditional high school graduates (Hartwig & Sitlington, 2008; Tuck, 2012). Negative perceptions of high school equivalency holders are also described by researchers, who have argued that such individuals are deficient in critical soft skills and may possess limited career interests (e.g., Heckman *et al.*, 2010). Conversely, research has suggested that high school equivalency holders may exhibit superior soft skills (e.g., conscientiousness, motivation) and a more diverse set of occupational interests than normative samples (Williams, 2019; see also Jepsen *et al.*, 2016; Patterson, 2013). On the basis of current industry practice, job advertisement studies comparing these two groups may be challenging, so alternative research strategies may be required to elucidate these similarities and differences.

Although our study included a large set of advertisements, they represent a relatively brief temporal window; future research will permit the investigation of the longitudinal evolution of employers' online job advertisement practices, including, but not limited to, the addition of new constructs. Studying these trends both during and after the COVID-19 pandemic would also provide value from research and practical perspectives. The arguably tenuous future of many high school occupations also provides a challenging backdrop for future research. Various scholars have contested the value of a high school education in the United States (e.g., Clark & Martorell, 2014; McDaniel & Kuehn, 2013). Even though high school–educated workers represent a significant portion of the U.S. workforce, it is often noted that these individuals typically possess lower salaries, fewer opportunities for upward mobility, and greater unemployment rates relative to more highly educated individuals (BLS, 2019; Rubb, 2006). High school occupations currently represent the largest segment of U.S. occupations, many of which are projected to grow in the coming decade. However, it is possible that this growth will be overshadowed by the elimination of various high school occupations: 23 (76.7%) of the 30 occupations projected to experience the most rapid declines the United States for the years 2019–2029 require only a high school education (BLS, 2020, Table 1.5).

Thus high school occupations may be best positioned as interim or part-time occupational opportunities for individuals while they work toward more stable and higher-compensating occupations, including through higher educational attainment. This pathway suggests that high school–educated workers may leverage existing soft skills that are desired by employers of postsecondary-educated employees. In other words, soft skills that are valued in both high school and postsecondary occupations may be considered “transferable” soft skills. Our study identified several soft skills that may meet this criterion: adaptability, communication skills, creativity, ethics, and time management. Furthermore, it is plausible that many of these soft skills facilitate success in postsecondary endeavors. Throughout their academic and occupational careers, these employees may also focus on improving soft skills that are particularly valued by employers of postsecondary-educated employees. Nonetheless, research associating soft skills with wages and growth projections within high school occupations would also appear valuable, recognizing the variation that exists within this education level.

Concluding Comments

The precise articulation of employers' soft skill expectations holds implications for various stakeholders, including prospective employees, educators, and assessment professionals. These implications may be accentuated for the high school–educated population, who represent the largest segment of the U.S. population and its workforce. Our results suggest that, although employers typically hold lower soft skill expectations for high school–educated individuals, several soft skills are still prioritized, particularly professionalism and customer service skills. In addition to their relevance to employee performance, these results may reflect perceived skill gaps among employee candidates. Complexities in defining these concepts present challenges in evaluating and cultivating these skills and underscore the value of continued collaboration among educators, employers, and researchers. One significant factor that should be included in these conversations involves whether this training should occur within academic (i.e., K–12, adult education) or workplace settings. Regardless, it is likely that a one-size-fits-all approach to assessment and training is untenable across industries or occupations. Conversely, training strategies that are contextualized to specific workplace settings may be most effective. The economic benefits of this work could manifest at the individual, organizational, and regional or national levels.

Notes

- 1 Throughout this report, we use the terms *high school jobs/occupations* as shorthand to refer to occupations requiring a high school education, not those that are performed within a high school workplace (e.g., high school teacher).
- 2 Results involving other occupational groups and soft skills are available from the corresponding author.

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