Conformity and Soft Skills as Determinants of Alternatively Credentialed Non-College Graduate Hireability

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Abstract

Despite targeting technical skills, vocational school graduates earn less than college graduates. This paper presents evidence that conformity selection and perceived skill gaps explain differences in hireability. Microdata from the United States reveal a perceived soft skill deficit for alternatively credentialed non-college graduate (ACNG) labor. Conformity is also important, but the direction of effect is heterogenous by employer type. Conformity and perceived skill gaps explain about one-third of the hireability variance. Perceived soft skill gaps explain more hireability variance than widely recognized factors like the industry of occupation. Opposite conventional explanation, results suggest that conformity reduces hireability on average. Respondents tend to perceive ACNG candidates as an even mix of high and low performers. Evidence favors employer risk aversion toward labor productivity as a preferred explanation of low ACNG demand. The conclusion incorporates discussion of public misperception on vocational school costs and suggests activities to reduce unconscious bias.

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1. Introduction

A substantial gap exists between the skills expected by employers and those possessed by college graduates[1, 2, 3, 4]. Experts view college alternatives, including vocational school, to be useful for technical training, but the traditional college degree retains a wage premium over vocational education. Unemployment, underemployment, and other adverse labor outcomes follow a similar pattern[5]. This paper seeks to resolve the apparent discrepancy between these outcomes while preserving the mainline economic view that employers pay for perceived job candidate skill. To explain the apparent discrepancy, this paper tests the hypothesis that employers expect an offsetting non-technical skill deficit when considering an alternatively credentialed non-college graduate (ACNG). I find evidence that employers and the general population in the United States expect a low level of soft skills from ACNG job candidates.

Alternative credentials refer to credentials other than the undergraduate degree[6]. The category includes, for example, industry certifications, portfolios of work, digital badges, and other records of unaccredited learning and achievement. Individuals typically obtain alternative credentials to improve employability. That is, they typically have the same goals as a college student. Many individuals obtain alternative credentials as a supplement to a college degree. Such a situation is Pareto-superior to degree attainment alone and is therefore intentionally excluded from the analysis. This paper focuses on the comparatively interesting case of alternative credentials as a substitute for a college degree. This research is valuable as a diagnostic tool at the skill level. If specific skills explain labor outcome differences, alternative learning providers can improve their products to reduce the outcome gap.

The signaling model has become one of the two standard explanations of the value of the college degree. Signaling theory provides three advantages over human capital theory for the present study. First, signaling theory can explain labor outcome variance when human capital is held constant.

Second, the signaling model empowers a questionnaire research design. In an

2

idealized human capital model, the measures of human capital would correspond to production process inputs. Establishing a wide array of such skill measures would be complicated and prone to measurement sensitivities, assumptions, and errors of various kinds. In this framework, a questionnaire is a second-best design that provides a proxy for the functional measure of skill.

Signaling theory takes the reverse approach. According to the signaling model, employer perception of candidate quality critically determines willingness to pay. How employer perception relates to candidate productivity, if at all, is secondary. In this framework, a questionnaire is an ideal measurement tool. An additional benefit of using a questionnaire is the ability to ask hypothetical questions. Real job candidates might vary systematically in ways not observed by an analyst, but hypothetical questions preclude this issue.

Third, signaling theorists have laid out a testable hypothesis for weak labor outcomes among non-college graduates. Following this model, scholars claim that the college degree signals intelligence, conscientiousness, and conformity[7]. This paper hypothesizes that, in contrast, alternative credentials signal nonconformity and low conscientiousness.

Employer demand for conscientiousness and conformity follows a bliss point pattern. Excess individual conscientiousness can disturb team performance[8]. Conformity can lead to a lack of innovation and suboptimal organizational practices[9]. Conformity selection occurs in part through heuristic cognition or unconscious bias.

Risk aversion is a distinct explanation for conformity selection. Some employers are not able to evaluate an alternative credential with confidence. Such an employer views ACNG labor as a gamble with some odds of positive or negative outlier value. The employer may not prefer to hire such a candidate due to risk aversion, even if their point estimate for ACNG labor value is higher than their point estimate for a recent college graduate. If firm size effects are positively associated with ACNG hireability, this will add weight to an explanation based on risk aversion.

3

2. Data and Methodology

A simple model of demand for labor provides context for the hypothesis of interest. This model is clarified in Equations 1a and 1b:

$$S_j = f(H_j) \tag{1a}$$

$$w_{ij} = E_i(MRP_j) = f_i(S_j) \tag{1b}$$

Job candidate j generates a signal of productivity S_j from unobserved human capital H_j. Employer i, forms an expectation of the marginal revenue product of j on the basis of $f_i(S_j)$, an employer-specific evaluation of S_j. A specific employer is willing to pay a specific job candidate wages of w_{ij}.

This study uses ordinary least squares (OLS) regression analysis to estimate the effect of perceived skill gaps on hireability. An employer is willing to pay more for a relatively hirable individual. The representation of willingness to pay makes hireability a proxy of demand for labor and w_{ij}. This paper hypothesizes that employers preferentially value soft skills in the course of $f_i(S_j)$ to explain the reduced willingness to pay for ACNG labor relative to college graduate labor. If employers do bias toward soft skills in job candidate evaluation, one or more soft skill gap factors should yield a negative coefficient in a regression on hireability.

This paper leverages an original set of online questionnaire responses ($n = 322$). Responses are cross-sectional data obtained in early February of 2021. Respondents are United States citizens at or over the age of eighteen. Qualified respondents participated in the survey through the Amazon Mechanical Turk platform.

The survey includes 65 questions in two sections[1]. The first section captures respondent characteristics, and the second section captures a skill-level evaluation of various hypothetical job candidates. Grouping these variables into

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[1]See Appendix A for a full copy of the survey.

three groups simplifies discussion. There is the dependent variable of interest, independent variables of interest, and categorical controls.

In this study, the categorical variables and the control variables are the same set. The independent and dependent variables of interest are Likert-type responses on a 10-point scale [2]. Higher Likert-type values indicate greater agreement with the associated statement. Categorical controls include state of residence, the industry of occupation, employer status, firm size, and a measure called duration.

Duration measures the length of time the respondent believes it takes to obtain an alternative credential. Employer status describes whether an individual makes hiring and firing decisions in the course of their employment. The variable takes one of three values: yes, no, or unemployed. Employer effects refer to the case where an individual states that they do make hiring and firing decisions. State of residence refers to a state within the United States or the District of Columbia.

The dependent variable of interest is called hireability. Hireability measures agreement that, "For many professions, alternative credentials can qualify a person for an entry-level position." The dependent variables of interest include perceived skill gaps and rulebreaker effects.

Rulebreaker effects refer to a collection of three factors that measure respondent agreement with statements about nonconformists, or "People who are willing to break formal or informal rules and norms." The first statement indicates that nonconformists present a risk to a company's reputation, productivity, or value. This statement received the least agreement and greatest response variance among three qualitatively different descriptions of noncon-

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[2]It is an accepted practice to treat Likert-type responses as either categorical or continuous for regression analysis. Jaccard and Wan provide support for continuous analysis of Likert-type data. They note that severe departures from the assumptions on cardinality "do not seem to affect Type I and Type II errors dramatically," particularly when the Likert scale is five or more points[10]. This paper uses a 10-point scale and treats these data as continuous.

formists ($\mu = 6.29, \sigma = 2.51$).

The second statement indicates that nonconformists are held back by rules, and "could just as easily be high performers as low performers." This statement received the most agreement and least variance among rulebreaker statements ($\mu = 6.93, \sigma = 2.10$). The agreement with this statement provides evidence against the thesis that employers value conformity for its own sake. In turn, this adds weight to the theory that employers value conformity as a risk aversion tactic while knowing that nonconformity signals positive outlier potential. The third rulebreaker effect states that rulebreakers are creative, innovative, and likely to benefit company culture ($\mu = 6.71, \sigma = 2.18$).

Rulebreaker effects and perceived skill gaps are structurally linked. One of the skills that respondents evaluate is nonconformity, or "willingness to break formal or informal rules and norms." Interpreting rulebreaker effects jointly with the conformity gap effect enables better explanatory power and diagnostic utility.

Perceived skill questions in the second section of the survey allow for two ways to calculate perceived skill gaps. Perceived skill gaps are measured separately with and without overqualification effects. Overqualification effects are important in external research[11, 12], but skill gap analysis that ignores these effects is also routine[13].

Perceived skill is a Likert-type response reporting agreement stating that a particular candidate has a particular skill. For each of 13 skills, the respondent imagines and reports skill levels for the ideal candidate, the average actual employee, the average recent college graduate, and the average ACNG. As a result, 52 of the 65 questions in the survey are questions on perceived skill about kind of candidate.

The raw skill gap for a candidate is the difference between the perceived skill for that candidate and the ideal candidate. The perceived skill gap with overqualification effects equals the raw perceived skill gap. The perceived skill gap without overqualification is zero if the raw skill gap is negative, and otherwise, it is equal to the raw skill gap.

6

The concept of skill is intentionally treated loosely in this analysis. The thirteen factors treated as skills include attractiveness, verbal, written, and body language communication skills, conscientiousness, customer service skill, emotional intelligence (EQ), expected salary, teamwork, technical skill, willingness to break formal or informal rules (nonconformity), willingness to work odd hours, and willingness to commute.

Results focus on ACNG skill gap coefficients and also comparative skill gaps between ACNG labor and recent college graduates. Perceived ACNG skill gaps are also called absolute skill gaps. Subtracting the perceived recent college graduate skill gap from the absolute skill gap yields the comparative skill gap.

Models of these variables will support the hypothesis if soft skills are more important than technical skill gaps. Significant rulebreaker effects would provide evidence that conformity is valued differently for different types of employers. A positive relationship between firm size and hireability would support an explanation from risk aversion.

3. Results

The median hireability response was eight out of ten. The mean response is about 7.42. Absolute skill gaps and comparative skills gaps are both important explanations of hireability. Soft skills explain hireability better than technical skill does in both absolute and comparative terms. Technical skill is not a contributing factor in any model of interest. Of the thirteen skills investigated, seven skills contribute to the preferred model.

Table 1 reports five interesting multiple regressions. Models 1 through 4 maximize adjusted r-squared for a given set of factors. Factors in these models are not constrained using a p-value threshold. Model 4 is the preferred model, and factors in this model have a p-value less than 0.28. Model 5 is a special case designed to answer an analytical question.

Models 1 and 2 maximizes adjusted r-squared using absolute skill gaps. Model 1 includes overqualification effects, and Model 2 excludes these effects.

7

This model is useful to demonstrate which skills are important determinants of ACNG hireability. The key result from these two models is that measuring skill gaps without overqualification is preferred.

Models 3 through 5 also exclude overqualification effects. Model 3 maximizes adjusted r-squared using comparative skill gaps. This model explains hireability by comparing ACNG labor to recent college graduates by skill. Model 4 synthesizes comparative and absolute skill gaps.

Table 1: Linear Models of Hireability

	1	2	3	4	5
Comparative, Attractiveness	-0.161***		-0.185*		
Comparative, Conscientiousness			-0.140		
Comparative, Customer Service			0.138	0.142*	0.145*
Comparative, EQ			-0.0955		
Comparative, Odd Hours			-0.177*	-0.255***	-0.260***
Comparative, Teamwork			-0.196*	-0.242**	-0.251**
Comparative, Writing			0.128	0.0920	0.0934
Comparative, Rulebreaker					0.0182
Duration	0.666**	0.634**	0.811***	0.744**	0.719**
Duration^2	-0.0884**	-0.0857**	-0.113***	-0.103**	-0.1000**
Employees 1-10					-0.187
Employees 11-50					0.398
Employees 51-200	-0.475*	-0.480**	-0.364	-0.459*	-0.258
Employees 201-500					0.135
Employees 501-1,000					0.420
Employees 1,001-5,000					0.0812
Employees 5,001-10,000					0.0789
Employees 10,000+					0.279
Gap, Attractiveness		-0.367***		-0.350***	-0.358***
Gap, Body Language-IT	0.100	0.132		0.106	0.0874
Gap, Conscientiousness	-0.0657	-0.0845		-0.132**	-0.134**
Gap, EQ	-0.0966	-0.0952			
Gap, Nonconformity					0.0574
Continued on Next Page					

Table 1 − Continued

	1	2	3	4	5
Industry Credentials Required	0.706*	0.722**	0.374	0.378	0.375
Industry Credentials Normal	0.932**	0.926**	0.487*	0.436*	0.448*
Industry Credentials Sometimes	0.467	0.475			
Industry Credentials Unknown	0.641*	0.684**			
Industry, Agriculture	1.368	1.619*			
Industry, Energy	-1.277*	-1.190*	-1.200*	-1.442**	-1.448**
Industry, Finance	-0.811***	-0.783***	-0.712***	-0.715***	-0.717***
Industry, Information Technology	0.335	0.264	0.438*	0.306	0.337
Industry, Law	-1.813***	-1.670**	-1.935***	-1.876***	-1.857***
Industry, Transportation	1.512*	1.643**	1.216	1.403*	1.350*
Is Employed Non-Manager	-0.336	-0.383*	-0.497**	-0.471**	-0.451**
Is STEM Worker	-0.491**	-0.529**	-0.525**	-0.557**	-0.564**
Rule Breakers Risky	0.0732*	0.0715*	0.0880**	0.0747*	0.0762*
Rule Breakers Rockstars	0.133**	0.128**	0.147**	0.141**	0.140**
Rule Breakers Culture Add	0.0905	0.0974*	0.115**	0.112**	0.110**
State, Arizona	-1.157**	-1.048**	-0.755	-0.823*	-0.790
State, Arkansas	-2.690***	-2.817***	-2.489***	-2.664***	-2.770***
State, California	-0.575*	-0.570**	-0.488*	-0.435	-0.446
State, Colorado	-1.446**	-1.423**	-1.463**	-1.521***	-1.508***
State, Connecticut	-1.401	-1.550			
State, Florida	-0.444	-0.454			
State, Hawaii	-3.232***	-3.271***	-2.884***	-2.869***	-2.812***
State, Illinois	-0.637	-0.699*	-0.596	-0.675*	-0.698*
State, Kansas	-3.283**	-3.486**	-2.923*	-3.116**	-3.101*
State, Kentucky	-3.143***	-3.167***	-2.583***	-2.729***	-2.679***
State, Louisiana	-1.455*	-1.255*	-0.915	-0.941	-0.898
State, Maryland	-0.596	-0.642			
State, Nebraska	-2.037*	-2.167*	-1.391	-1.655	-1.596
State, Nevada	-1.406	-1.470	-1.465	-1.434	-1.409
State, New Jersey	-1.145	-1.139	-0.976	-0.936	-0.963
State, New York	-0.692**	-0.640*	-0.617*	-0.595*	-0.590*
State, Ohio	-3.943***	-4.024***	-4.051***	-3.808***	-3.761***

Table 1 – Continued

	1	2	3	4	5
State, Pennsylvania	-0.752	-0.687	-0.608	-0.534	-0.539
State, South Carolina	-1.183	-1.243	-1.361	-1.310	-1.347
State, Tennessee	-1.878**	-1.909**	-1.545*	-1.843**	-1.799**
State, Texas	-0.906**	-0.851**	-0.797**	-0.790**	-0.789**
State, Washington	-0.817	-0.863*	-0.880*	-0.996**	-1.003**
Constant	5.036***	5.356***	4.755***	5.327***	5.343***
Adjusted R-sqr	0.2181	0.2512	0.2331	0.2784	0.2654
R-sqr	0.3253	0.3539	0.3310	0.3706	0.3799
p(F)	0.0000	0.0000	0.0000	0.0000	0.0000

* $p < 0.10$, ** $p < 0.05$, *** $p < .01$

Rulebreaker effects are significant in all models. Nonconformity is insignificant in a multiple regression that includes rulebreaker effects. The insignificance of nonconformity is intuitive because these factors essentially describe the same thing. Rulebreaker effects describe the way a respondent qualitatively views conformity. Excluding overqualification, a conformity skill gap indicates that a respondent views ACNG labor as less conformist than ideal. The way a respondent views conformity substantially implies their ideal level of conformity and how deviations from that ideal will impact willingness to hire. This implication is substantial but imperfect. Because the implication is substantial, a conformity skill gap does not improve adjusted r-squared. Because the implication is imperfect, there is an opportunity to force the conformity skill gap into the model. While the p-value will be unacceptably high, it is still analytically interesting to obtain the direction of the conformity skill gap effect. This is what Model 5 does.

Model 5 takes Model 4 and adds additional factors for employer size, the absolute skill gap for conformity, and the comparative gap for conformity. These factors are insignificant, so the coefficient does not provide a confident estimate of the magnitude of the effect. The signs of the effects do add marginally to the

cumulative evidence for conclusions. Rulebreaker effects are robustly positive and significant in all models. Positive rulebreaker effects indicate that nonconformity is positive on hireability. The positive coefficients on nonconformity skill in Model 5 reinforce this result.

Employer size is a categorical variable, so regression technically treats this variable as a series of dummies. One employer size dummy contributes to Model 4, and it has a negative coefficient. The negative coefficient might appear to be evidence against the claim that large employers are more favorable to ACNG labor. However, the dummy in Model 4 represents an employer size that is less than average. The implication is that the model constant contains a positive effect for larger employers. Model 5 reinforces the subtle implication. Model 5 contains positive coefficients for most firm sizes, including firms at or above the median size.

Figure 1 adds to the evidence that large firms favor alternative credentials. Firm size is a categorical variable with nine possible responses. Figure 1 plots a numeric transform of the variable along the horizontal axis. The vertical axis represents the frequency of response for a given value. Responses from one through eight represent increasing intervals of firm size. The negative coefficient on employer size in Model 4 corresponds to a response of three in the horizontal axis. A response of nine indicates that the question is not applicable because the respondent is not employed. The ninth response is dropped from Model 5 to prevent multicollinearity. There is no loss of analytical power in Model 5 because the dropped dummy does not represent firms of any size. This figure further illustrates that the negative coefficient pertains to small firms. The high willingness to hire on the part of large employers adds to the explanation of low ACNG labor demand from risk aversion.

Models are specified using ordinary least squares (OLS). A robust linear model (RLM) and a generalized linear model (GLM) verify OLS results. RLM and GLM specification alters factor significance but does not alter the coefficient value. RLM and GLM models account for abnormal factor distribution. In the OLS specification of Model 4, the preferred model, p-values did not exceed

11

Figure 1: Distribution of Firm Size


Density

Discretized Firm Size
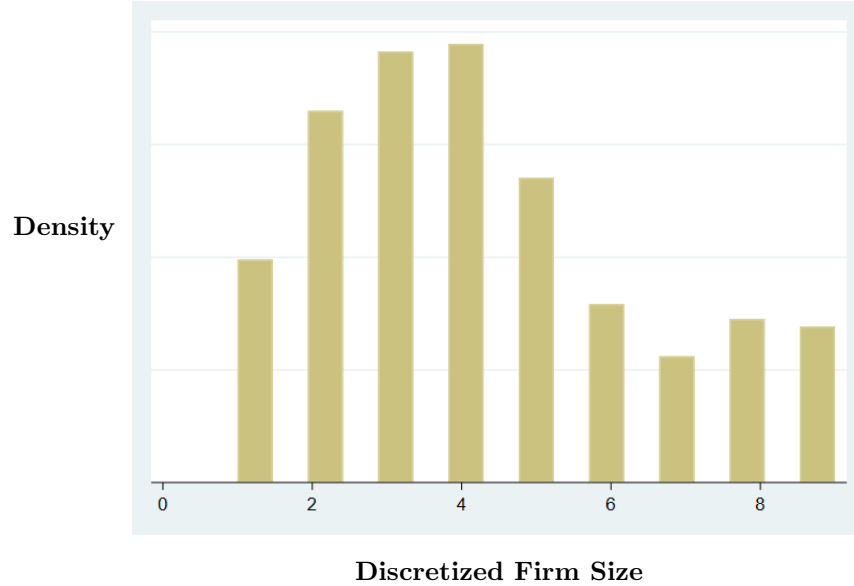
0.28. In RLM specification, p-values did not exceed 0.41. In GLM specification, p-values did not exceed 0.38. Overall, OLS seems slightly overfit, and RLM seems slightly underfit compared to GLM. This analysis is mainly concerned with the direction of factor effects rather than a precise estimate of coefficient magnitudes. The important result from robustness testing is that coefficients did not change, and the direction for each factor is plausible ($p < 0.5 < p'$).

Model 4 identifies seven skill gaps as important explanatory factors. Four important skill gaps are comparative, and three are absolute gaps for ACNG candidates. Figure 2 illustrates the distribution for each important skill gap. Reflecting on this figure helps inform a diagnostic analysis for use by alternative learning providers. ACNG candidates can also supplement their learning to address these gaps. A simple remedy does not seem to apply for attractiveness and willingness to work odd hours. Conscientiousness is difficult to train, but analysis suggests perception management as a remedy. Perceived conscientiousness has a slight correlation duration (Pearson's $r = 0.21$). Spending additional time to obtain a credential is a way to improve perceived conscientiousness.

12

ACNG supplementation of a credential with additional self-study time may also improve perceived conscientiousness.

The important body language communication gap is an interaction with the information technology industry variable. The interaction indicates a reduced penalty for lack of body language communication skills in the information technology industry. A reduced penalty for soft skill deficit helps explain the particular flourishing of alternative credentials in the information technology industry. The reduced penalty in this particular industry might be related to its relative lack of regulation. Another hypothetical explanation is that the reduced penalty is related to cultural norms in the industry. Suppose that there is a diminished technical need for social skills in programming. In that case, introverts obtain a comparative advantage in this field. Further study that includes personality data is encouraged to test this hypothesis. The interacted body language skill gap and the customer service skill gap are interesting for niche learning providers.

Figure 2: Distribution of Important Gaps
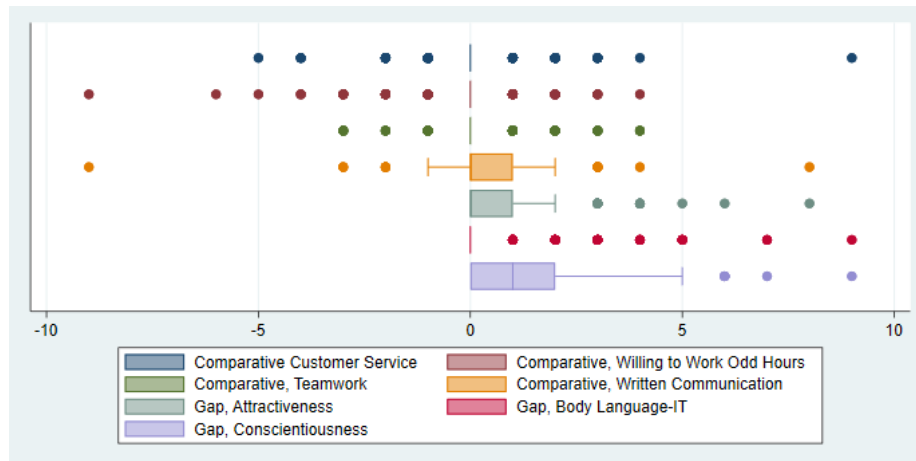
The gaps in teamwork and written communication skill seem to be the best candidates for feasible remedy with broad learning provider applicability. Writ-

13

ten communication skill is uniquely amenable to online learning. Written communication skill is also unique in the response distribution. The written communication skill gap is a comparative gap where the interquartile range favors ACNG labor. This indicates the perception that ACNG providers are generally capable of providing this skill. The distribution reflects positive and negative outliers. Positive outliers indicate that the typical provider can improve by emulating market leaders. Negative outliers indicate that some learning providers are particularly poor at training this skill. If learning providers are generally effective in training this skill, improvement for ineffective providers is likely to be feasible.

Alternative learning providers can use project-based learning and social learning techniques to facilitate teamwork skill development. These are not the most common pedagogies, but they are an established and effective pattern. An online environment can implement courses with project-based learning and social learning. The distribution of responses indicates that improving teamwork skill has neither the maximum penalty nor the maximum return potential compared to improving written communication. Model results preclude decisive prioritization of written communication skills. Model 4 indicates that the effect of teamwork skill on hireability is more reliable and larger in magnitude compared to the coefficient on written communication skill. Targeting both of these two skills is feasible and beneficial to educational quality.

The preferred model explains about one-third of hireability variance, but how much of the explanatory power is attributable to skill gaps? Table 2 provides evidence on the importance of perceived skill gaps and rulebreaker effects relative to other factor groups. Model 4 is composed of factor groups. Table 2 summarizes results for simple regressions of each factor group on hireability. Industry and state effects are factor groups regarded in external literature as important for models in the labor market.

Table 2 shows that perceived skill gaps and rulebreaker effects explain more variance in hireability compared to the state, industry, and other effects. Industry and state effects are also less stable. A simple model of industry effects

14

Table 2: Factor Group Explanatory Power in a Simple Regression

Effect Group	Adj R-Sqr	R-Sqr	Max p-value
Absolute Gap	0.0615	0.0703	0.097
Comparative Gap	0.0176	0.0298	0.687
Industry	0.0303	0.0454	0.958
Other Factors	0.0072	0.0288	0.537
Rulebreaker	0.0783	0.0869	0.127
State	0.0469	0.1033	0.772

on hireability results in some industry effects approaching a p-value of 1. In contrast, the least significant absolute skill gaps are statistically significant in a simple regression ($p < 0.1$). These findings collectively provide evidence that perceived skill gaps and rulebreaker effects are factors of high importance for models of hireability.

4. Conclusion

This study provides evidence that the general population is favorable to alternative credentials. Hiring managers have higher hireability than employees that are not managers. Alternative credentials signal a qualitatively different basket of skills compared to recent college graduates. Americans perceive ACNG labor as weak in soft skills, but learning providers can make changes to mitigate this issue. Alternative credentials signal low conformity, but this results in added hireability on average.

Alternative credentials also signal that a candidate is risky. An explanation of low ACNG demand from employer risk aversion better explains the results compared to an explanation of selection for conformity. In addition to a direct response indicating risk perception, firm size effects support an explanation from

risk aversion. Large employers face a lower risk premium for various reasons. For instance, large employers can spread risk across many hires. Risk premiums are also lower for large employers because they have access to better hiring data.

The classic signaling model explanation for employer preference of college graduate labor over ACNG labor is that the college degree provides a comparative signal of conscientiousness and conformity. This paper replicates the importance of conscientiousness. Gaps in perceived conscientiousness are important, but conscientiousness is not an important differentiator between college graduates and ACNG candidates.

While hireability is negatively associated with conformity on average, this varies importantly by the employer. Descriptions of employer preferences better explain the willingness to hire ACNG candidates than skill gaps. Industry effects are also important, but effects at the employer level are significantly more reliable than industry effects. Scholars, industry members, and others consider state effects and industry effects to be important explanations of the willingness to hire based on an alternative credential. Skill gaps better explain hireability compared to industry and state effects.

Risk aversion and conformity selection are both partially unconscious biases that lead to an inefficient organizational operation. A practical recommendation is for organizations to implement bias control processes concerning ACNG evaluation. An example of a process improvement would be for a human resources department to maintain a list of specific credentials valued for particular job families.

Another action item is for educational institutions, policymakers, and the general public to invest further in correcting alternative education misinformation. A survey on trade schooling taken in 2019 provides evidence on the role of this kind of misinformation[15]. Only 27 percent of respondents correctly responded that lower debt is an advantage of enrolling in trade school relative to college. Additionally, over 75 percent of respondents failed to notice that trade school graduates receive industry employment sooner and receive specialized training when compared to a four-year college.

16

Obtaining a college degree after obtaining some work experience will allow students to leverage employer tuition benefits. Because ACNG hireability varies importantly by the particular employer, ACNG job candidates can reduce the risk of a lengthy job search by applying to many employers at the outset of the job search. Social networking, online research into firm policy, and consulting with recruiters or other industry specialists are tactics to apprehend whether a particular employer is a likely member of the set that is favorable to ACNG labor.

The preferred model explains about one-third of hireability. Perceived skill gaps and rulebreaker effects account for most of the explanatory power in the model. There are several means of extending this research to provide improved explanatory power. A longitudinal study would allow for causal analysis and improve forecasting of ACNG hireability in the future.

Firms often adopt best practices and new technologies that industry leaders first adopt. The result that large employers and employers in the information technology industry may indicate a future of general high support for alternative credentials. Google has not required a college degree since before 2013[17]. Laszlo Bock, then Senior Vice President of People Operations at Google, stated the following in 2013: "After two or three years, your ability to perform at Google is completely unrelated to how you performed when you were in school, because the skills you required in college are very different." In 2020, Google added three new certificate programs to an existing set and declared that all of its certificates are equivalent to an undergraduate degree for their hiring purposes[18].

If perceived skill represents actual skill, this study provides evidence that employers should be more willing to hire an ACNG. At the same time, this paper provides evidence that perceived and actual skill levels sometimes do not align. For example, the average recent college graduate in the sample has more perceived technical skills than the average ACNG. The perceived technical deficiency among ACNG labor is surprising because last-mile training, a kind of alternative education, has been specifically recommended in popular literature

17

to remedy the technical skill gaps among recent college graduates. Further study of the differences between perceived and actual skills is encouraged.

In many cases, employer-perceived skill gaps are not statistically different when comparing recent college graduates with ACNG candidates. Employers are already favorable to individuals with alternative credentials, but specific steps will prevent the loss of this favorable status. Results suggested curriculum improvements that target specific skills. In addition, public education on alternative education, creation of new programs in underserved industries, and public policies that give fair treatment to unaccredited education can do much to improve public support for alternative credentials.

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