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

John Vandivier[a]

[a]*4400 University Dr, Fairfax, VA 22030*

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 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.

Keywords: education economics, signaling, hireability, conformity, vocational

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Email address: jvandivi@masonlive.gmu.edu (John Vandivier)

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 the 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 the 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

idealized human capital model, the measures of human capital would correspond to production process inputs. To establish 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. The manner in which 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]. In contrast, alternative credentials are hypothesized to signal nonconformity and low concientiousness.

Research indicates that 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 decisionmaking, or unconcious 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.

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. These questions can be grouped

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

into three groups of variables. There is the dependent variable of interest, a set of independent variables of interest, and some 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 some 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-

[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 with the statement 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 some kind of 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.

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 yiels 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 not valued by employers per se. 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 are constructed to maximize adjusted r-squared. 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. This model is useful to demonstrate which skills are important determinants of ACNG favorability. 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 is useful for understanding which skills give a hireability advantage to ACNG labor over new

college graduates. Model 4 synthesizes comparative and absolute skill gaps.

Table 1: Linear Models of Hireability

	1	2	3	4	5
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**
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
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*
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***

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Table 1 – Continued

	1	2	3	4	5
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***
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**
Duration	0.666**	0.634**	0.811***	0.744**	0.719**
Duration^2	-0.0884**	-0.0857**	-0.113***	-0.103**	-0.1000**
WOQ, Gap, Attractiveness	-0.161***				
WOQ, Gap, Body Language-IT	0.100				
WOQ, Gap, Conscientiousness	-0.0657				
WOQ, Gap, EQ	-0.0966				
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**
Gap, Attractiveness		-0.367***		-0.350***	-0.358***
Gap, Body Language-IT		0.132		0.106	0.0874
Gap, Conscientiousness		-0.0845		-0.132**	-0.134**
Gap, EQ		-0.0952			
Comparative, Attractiveness			-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

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Table 1 – Continued

	1	2	3	4	5
Comparative, Rulebreaker					0.0182
Gap, Rule Breaker					0.0574
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, but the conformity skill is insignificant when rulebreaker effects are included. This is intuitive, because these factors are essentially explaining the same thing. Rulebreaker effects describe the way a respondent views conformity in a qualitative way. Excluding overqualification, a conformity skill gap indicates that a respondent views ACNG labor as less conformist than ideal. The degree to which a candidate is less conformist than ideal is almost fully implied in rulebreaker effects. 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 sign of the conformity skill gap in this way. 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 coefficients are not estimated with confidence, but their signs add marginally to the cumuluative evidence for conclusions. Rulebreaker effects are robustly positive and significant in all models. Positive rulebreaker effects indicate that nonconformity is positive on favorability. This result is reinforced by positive coefficients on the conformity skill gap in Model 5.

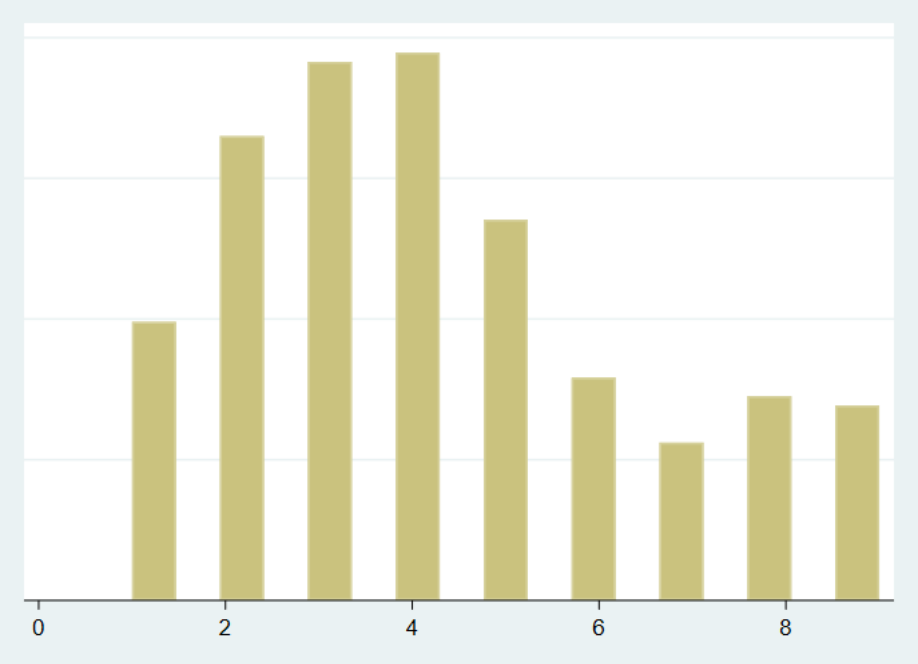
Employer size is a categorical variable, so it is decomposed into a series of dummy variables for regression. One employer size dummy contributes to Model

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. This implies that the model constant contains a positive effect for larger employers. This subtle implication is reinforced in Model 5. In Model 5, positive coefficients are identified for firms 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 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. Large employer favorability adds to the explanation of low ACNG labor demand from risk aversion.

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

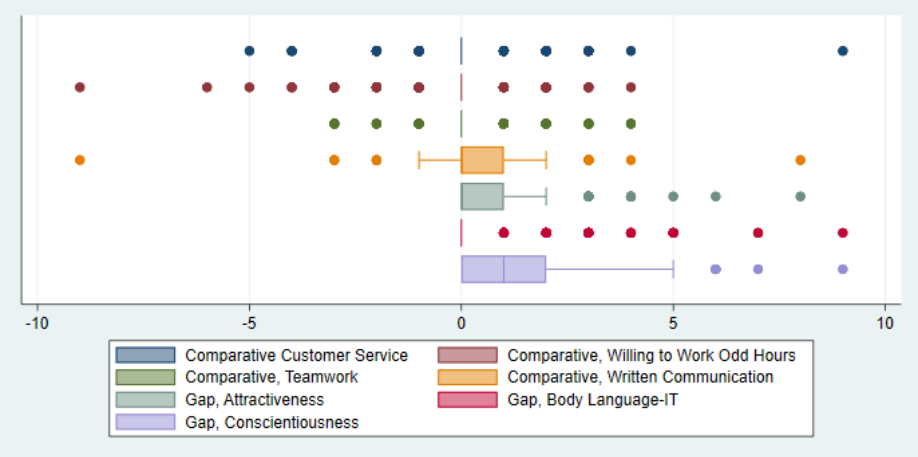
Figure 1: Distribution of Firm Size



$0.5 < p'$).

Seven skill gaps are considered important because they contribute to Model 4. Four important skill gaps are comparative gaps, and three are absolute gaps for ACNG candidates. Figure **??** 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 own learning to address these gaps. Attractiveness and willingness to work odd hours do not seem to be easily remedied. Conscientiousness is also difficult to train, although perception management is a possible remedy. Perceived conscientiousness has a slight correlation duration (Pearson's $r = 0.21$). Perceived concientiousness can be achieved through longer time to obtain for credentials. ACNG supplementation of a credential with additional self-study time may also improve perceived concientiousness.

Figure 2: Distribution of Important Gaps



The important body language communication gap is interacted 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.

The gaps in teamwork and written communication skill seem to be best candidates for feasible remedy with broad learning provider applicability. Written communication skill is uniquely amenable to online learning. Written communication skill is also unique in the response distribution. The written communica-

tion 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 some learning providers have an ability to produce even higher skill, and negative outliers indicates 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. These methods of instruction can be adapted to an online learning environment. The distribution of responses indicates that improving teamwork skill has neither the maximum penalty nor the maximum return potential compared to improving written communication. This distributional consideration should be balanced against the model results. Model 4 indicates that the effect of teamwork skill on favorability 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. 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 than do the widely utilized variables for industry and state. Rulebreaker effects collectively explain more than three times as much response variance as do industrial or state effects.

Comparing simple regressions of perceived skill gaps on hireability reproduces the finding from multiple regression analysis that overqualification effects reduce explanatory power. Overqualification effects are heterogeneously signed

Table 2: Factor Group Explanatory Power in a Simple Regression

Effect Group Name	Adj R-Sqr	R-Sqr	Max p-value
Industry	0.0185	0.0510	0.288
Rulebreaker	0.1432	0.1554	0.053
Skill Gaps with Overqualification	0.0558	0.0737	0.106
Skill Gaps without Overqualification	0.0758	0.0933	0.115
State, Robust	0.0177	0.0503	0.227
State, Semi-Robust	0.0034	0.0648	0.831

and curved by skill. As a result, nonlinear analysis is likely to improve explanatory power. Isolating overqualification effects into distinct factors may also improve model performance. Such an analysis would also require a larger sample to compensate for the loss of degrees of freedom.

Semi-robust state effects are state effects which are significant in any multiple regression described in Table 1. Robust state effects are the significant factors in a simple regression of semi-robust state effects on hireability. Illinois is an example of a state effect that appears in models 1 and 2 from Table 1 but is not significant in a simple regression of semi-robust state effects on hireability.

The r-squared associated with a simple regression of semi-robust state effects is greater than the r-squared associated with robust state effects. Analysis has shown that perceived skill gaps that include overqualification effects are comparatively weak representations of perceived skill gaps for models of hireability. These two measures allow the computation of a conservative lower-bound on the explanatory ratio of perceived skill gaps to state effects. Perceived skill gaps conservatively explain about 14 percent more variance in hireability than do

state effects[3].

With overqualification, perceived skill gaps explain about fifty percent more of the variance in hireability than industry or robust state effects. Without overqualification, the adjusted explanatory power of perceived skill gaps is about three times the adjusted explanatory power of industry or state effects. Rulebreaker effects are about twice as important as perceived skill gaps. These findings collectively provide evidence that perceived skill gaps and rulebreaker effects are factors of high importance for models of hireability.

Model 8 captures this curvilinear relationship by expanding Model 7 with quadratic and cubic factors. The coefficients in this model are not significant, but the directions of effect are as expected. In this model, the average total effect of the comparative conscientiousness gap on hireability is negative[4]. The average total effect for Model 8 as a whole is also negative[5]. When the comparative gap in conscientiousness increases above the average of 0.33, the linear effect is negative and the marginal effect is also negative, but the marginal effect is becoming less negative as conscientiousness increases.

Models 7 and 8 provide a skill-level diagnostic in service of closing the demand gap for ACNG labor. Alternative learning providers can implement body language communication training in their products, or ACNG candidates can obtain additional training and credentials that target this skill a la cart. ACNG job candidates can offset perceived conscientiousness deficit by provisioning work history or results of a personality test. External research indicates that psychological therapy and other interventions can boost conscientiousness in some cases[14].

[3]This is computed as $(0.0737/0.0648) - 1 = .1373$ and rounded to 0.14.

[4]Computed as: $-0.0018 = -0.0524 * 0.0330 - 0.0465 * 0.0330^2 + 0.0380 * 0.0330^3$

[5]Computed as: $-0.0293 = -0.1444 * 0.1415 + 0.0340 * 0.1415^2 - 0.0194 * 0.1415^3 - 0.0803 * 0.0943 - 0.0112 * 0.0943^2 - 0.0023 * 0.0943^3 - 0.0524 * 0.0330 - 0.0465 * 0.0330^2 + 0.0380 * 0.0330^3$

4. Conclusion

Larger employers face a lower risk premium for various reasons, including spreading risk across many hires and reducing the risk of any particular hire through better collections of hiring data.

This study provides evidence that skill signals are an important factor of hireability and are unique for the ACNG. Perceived skill gaps do a better job of explaining hireability than other widely recognized effects like industry and state effects. Employer factors better explain candidate hireability than do the perceived skill gaps themselves. Technical skill gaps explain less about hireability than soft skill gaps for ACNG job candidates.

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. The present paper finds evidence that conscientiousness is an important comparative difference contributing to weak ACNG demand, but conformity does not have such a general effect. This paper finds that employers of different types have qualitatively different views about conformity. Some employers demand conformity, but many demand nonconformity.

This paper provides evidence that some employers engage in conformity selection to avoid risk to the reputation, productivity, or value of a company. Ironically, such employers fail to conform to normal behavior. Respondents most often preferred to describe nonconformists as individuals who could just as easily be high performers as low performers. An explanation from risk aversion is preferred because it explains low ACNG labor demand from an employer given either of the above responses. Positive conformity selection is only able to explain the former case.

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 controls concerning ACNG evaluation. An example control would be to provide human resource procedures for formal

evaluation of particular credentials relevant to specified job families. These procedures provide immediate operational benefits regarding known credentials and job families. These procedures should also be retained for ongoing application as new credentials are developed and encountered over time.

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.

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. Other research has conducted some dynamic analysis of the same dependent variable with different regressors[16]. Analysis that includes overqualification effects and heterogeneous nonlinear relations between skill gaps and hireability would improve estimates of hireability for a candidate of a particular skill profile.

This paper noted that large employers and the information technology industry have a peculiar susceptibility to alternative credentials, so recent changes

implemented by Google may indicate future trends. 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, then 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 to remedy the technical skill gaps among recent college graduates. Further study of the differences between perceived and actual skills is encouraged.

Employers seem to be favorable to individuals with alternative credentials. In many cases, employer-perceived skill gaps are not statistically different when comparing recent college graduates with ACNG candidates. Instead of looking to actual or perceived skill differences, the college degree's social status may be better explained by public ignorance about appropriate alternative programs, a lack of appropriate programs for certain occupations, and government policy that gives preference to accredited education.

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