

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

John Vandivier<sup>a</sup>

<sup>a</sup>4400 University Dr, Fairfax, VA 22030

---

## Abstract

Despite targeting technical skills, vocational school graduates are paid less than college graduates. This paper hypothesizes that conformity selection and a perceived deficit in soft skills substantially explain reduced alternatively credentialed non-college graduate (ACNG) hirability. Microdata from the United States confirm a perceived soft skill deficit for ACNG labor. Results also indicate that conformity is a key factor of hirability, but the direction of effect is heterogeneous by employer type. Conformity and perceived skill gaps explain about one third of hirability variance. Perceived soft skill gaps explain about as much as the sum of the effects from state of residence and industry of occupation. Opposite a conventional explanation, the results of this study suggest that hirability is negatively correlated to conformity on average. ACNG job candidates tend to be perceived as creative types and an even mix of high and low performers. Evidence of risk aversion from employers with respect to labor productivity contributes to the explanation of low ACNG demand. The conclusion incorporates discussion of public misperception on the cost of vocational school and suggests that nontraditional postsecondary education is undervalued in the United States.

*Keywords:* education economics, alternative education, conformity, vocational  
*2010 MSC:* I21, I22, J20

---

*Email address:* [jvandivi@masonlive.gmu.edu](mailto: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 as useful for technical training, but the traditional college degree retains a wage premium over vocational education. Unemployment, underemployment, and other negative labor outcomes follow a similar pattern[5]. This paper seeks to resolve the apparent discrepancy between these outcomes while preserving the mainline 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 the general population of the United States, including employers, does apply a stigma to the ACNG in which soft skills are assumed to be deficient.

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 pursuing alternative credentials typically intend to leverage the credential toward better employment. 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 analysis. This paper focuses on the comparatively interesting case of alternative credentials as a substitute to the college degree in order to diagnose comparative disadvantage at the skill level. If a specific set of skills effectively explain labor outcome differences, then alternative learning providers could update products to affect better outcomes for their consumers.

The signalling model has become one of the two standard explanations of the value of the college degree. Signalling theory provides three advantages over human capital theory for the purposes of the present study. First, signalling

theory is able to explain labor outcome variance when human capital is held constant.

Second, the signalling model empowers a questionnaire research design. In an idealized human capital model, the measures of human capital would correspond  
35 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 which provides a proxy for the functional measure of skill. Signaling theory takes the reverse approach. According to the signalling model, labor demand is  
40 formed on the basis of job candidate value as perceived by an employer. In this framework, a questionnaire is ideal. The manner in which employer perception relates to job candidate technical skill, if at all, is secondary. An additional benefit of using a questionnaire is the ability to ask hypothetical questions. In pondering hypotheticals, employer evaluation of a credential or signal can be  
45 isolated from the human capital variance which occurs in actual job candidates.

Third, signalling 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]. Non-traditional education, in contrast, is hypothesized to signal nonconformity.  
50 Non-traditional courses can be completed in a shorter span of time and with reduced entry qualifications relative to the traditional degree. For this reason, alternative credentials are thought to signal low conscientiousness relative to the college degree.

Research indicates the existence of bliss points for employee conscientiousness  
55 and conformity from the point of view of an employer. 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 decisioning rather than conscious choice.

Risk aversion is a distinct explanation for conformity selection. An employer  
60 may not be able to evaluate an alternative credential with confidence. From the point of view of such an employer, an ACNG may range in value from a

positive outlier to a negative outlier. The employer may not prefer to hire such a candidate on the basis of risk aversion, even if their point estimate for ACNG labor value is higher than their point estimate for a recent college graduate. If  
65 employers with many employees are positively associated with ACNG hirability, this will add weight to an explanation based on risk aversion.

## 2. Data and Methodology

The hypothesis in this paper is based on a simple model of demand for labor which is clarified in Equations 1a and 1b:

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

70

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

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  $w_{ij}$ .

75 This study uses ordinary least squares (OLS) regression analysis to estimate the effect of perceived skill gaps on hirability. An employer is willing to pay more for a relatively hireable individual. This makes hirability a proxy of demand for labor and  $w_{ij}$ . In order to explain reduced willingness to pay for ACNG labor relative to college graduate labor, this paper hypothesizes that employers  
80 preferentially value soft skills in the course of  $f_i(S_j)$ . To provide evidence for preferential evaluation of soft skills by employers, one or more soft skills should yield a negative coefficient in a regression on hirability.

Regression analysis in this study is conducted using original cross-sectional data from an online self-completed questionnaire ( $n = 212$ ). The data is avail-  
85 able for replication or any other use<sup>1</sup>. Respondents were obtained through

---

<sup>1</sup>See [https://osf.io/8qtxf/?view\\_only=95b0c0b0c65e4b7983198cc87c2ab733](https://osf.io/8qtxf/?view_only=95b0c0b0c65e4b7983198cc87c2ab733) for data

the Amazon Mechanical Turk crowdsourcing service. Respondents were United States citizens at or over the age of eighteen, paid for participation, and selected on an opt-in, first-come, first-serve basis. The survey administration took place in July of 2020.

90       The survey includes 65 questions in two sections<sup>2</sup>. The first section captures respondent characteristics and the second section captures perceived skill relative to hypothetical job applicants. Employer responses did not significantly differ from the general population, so respondent characteristics are also interpreted as employer characteristics.

95       Regression variables in this study are categorical or Likert-type responses based on a scale from 1 to 10. Higher Likert-type values indicate greater agreement with a statement that varies by variable. Categorical variables include state of residence, industry of occupation, employer status, firm size, and a measure called duration.

100       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  
105       decisions. State of residence refers to a state within the United States. Respondents were allowed to select the District of Columbia as a state of residence, but no such responses were obtained.

Three other factor groups are investigated in the regression analysis. These variables are measured using Likert-type units and they include hirability, rule-  
110       breaker effects, and perceived skill gaps. Hirability is the dependent factor and it indicates the degree of agreement that, "For many professions, alternative credentials can qualify a person for an entry-level position."

Rulebreaker effects refer to a collection of three factors that measure re-

---

used in this study.

<sup>2</sup>See Appendix A for a full copy of the survey.

spondent agreement with statements about nonconformists, or "People who are  
115 willing to break formal or informal rules and norms." The first statement indicates that nonconformists present a risk to the reputation, productivity, or value of a company. This statement received the least agreement and greatest response variance among three qualitatively different descriptions of people that are willing to break rules ( $\mu = 6.40, \sigma = 2.55$ ).

120 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 ( $\mu = 7.42, \sigma = 1.91$ ). The agreement with this statement provides evidence against the thesis that employers value conformity for its own sake. In turn,  
125 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 description of nonconformists states that they tend to be gifted in the areas of innovation or creativity, and that such people may benefit the culture of a company ( $\mu = 7.25, \sigma = 2.03$ ).

130 Perceived skill gaps are computed two ways from perceived skill questions in the second section of the survey. Perceived skill gaps are measured separately with and without overqualification effects. Overqualification effects have been identified as important in external research[10, 11], but these effects are sometimes ignored during skill gap analysis[12].

135 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 is asked to imagine and report skill levels for the ideal candidate, the average actual employee, the average recent college graduate, and the average ACNG. Raw perceived ACNG skill gaps are calculated by differencing  
140 the perceived skill of an ideal candidate with the perceived skill of an ACNG. The perceived skill gap with overqualification effects equals the raw perceived skill gap. The perceived skill gap without overqualification effects is calculated as the raw skill gap or zero if the raw skill gap value is negative.

Rulebreaker effects and perceived skill gaps are structurally linked. Re-

145 spondents are asked to evaluate the soft skill of nonconformity, or "willingness to break formal or informal rules and norms." Nonconformity interacts with employer disposition to rulebreaking. For this reason, discussions on the importance of skill gaps include discussion on rulebreaker effects.

These methods allow for identification of a preferred model that explains hirability using perceived ACNG skill gaps. The identified model will support 150 the hypothesis if soft skills are more important than technical skill gaps. The model will support the risk aversion explanation of ACNG hirability over an explanation from conformity selection if large employer size is positively associated with hirability.

155 Comparative analysis provides additional confidence in the data by replicating the hirability gap between ACNG labor and recent college graduates reported in external research. A comparative skill gap variable is constructed for each perceived skill gap that is important in the preferred hirability model. Comparative skill gap variables are constructed by subtracting perceived recent college graduate skill from perceived ACNG skill. Multiple regression of 160 these comparison factors on hirability demonstrates which, if any, perceived skill gaps are important distinguishers of the ACNG from the college graduate. Identification of significant differences with a negative total effect on hirability will replicate external data on the lower job market value of ACNG labor and 165 provide a diagnostic on which skill or skills must be better addressed through alternative learning programs.

### 3. Results

#### 3.1. Identification of the Preferred Model

Results confirm that employers, and the population in general, associate a soft skill deficit with ACNG candidates. Employer status was associated with an 170 insignificant positive coefficient on hirability. Hirability was generally positive ( $\mu = 7.57, \sigma = 1.80$ ) and depends critically on rulebreaker effects. Rulebreaker effects have more explanatory power than perceived skill gaps, and perceived

skill gaps have more explanatory power than widely recognized factors like state  
175 of residence and industry of occupation. Duration effects, positive nonconformity selection, and the lack of important differences in conformity between ACNG and college graduate labor provide support for an explanation of ACNG hirability based on risk aversion rather than positive conformity selection.

Table 1 reports statistics for five multiple regressions. Coefficients are re-  
180 ported for selected variables for brevity. Selected variables include rulebreaker effects and any perceived skill gap which is important in any specification. In these models, an important factor is one that improves the adjusted explanatory power of the model when included. These factors are not constrained to have a p-value less than 0.1, but as a rule of thumb they happen to have a p-value  
185 less than 0.3. Of the thirteen perceived skill gaps tested, eight were important in at least one specification. Seven skill gaps were important in Model 5, the preferred model. An important interaction between the information technology industry and perceived body language communication skill was also identified.

Model 1 allows for overqualification and Model 2 uses the perceived skill gap  
190 measures that exclude overqualification effects. Models 3 and 4 are equivalent to models 1 and 2, respectively, after normalizing for industry, state, and firm size effects. Effect normalization involves retaining those factors which are robust across both models 1 and 2. For example, Alabama has a significant effect when overqualification is allowed in Model 1. The effect for respondent residence in  
195 the state of Alabama is insignificant when overqualification is excluded in Model 2. Because Alabama is sensitive to this specification change, it is considered nonrobust and excluded after normalization. Employer status was positive in all models, but it was only significant in models 1 and 2. Significance loss on employer status during normalization suggests that the effect of employer status  
200 on hirability critically interacts with industry, state of residence, and firm size, which are the normalized effects.

Model 5 is specified as Model 4 plus two adjustments. First, the factor for salary is dropped. The salary factor improved adjusted explanatory power in Model 2, but it provided no such benefit in any other model. Moreover, the



Table 1: Table of Coefficients for Multiple Regressions on Hirability, Selected Variables

	Model 1	Model 2	Model 3	Model 4	Model 5
Gap, Body Language	-2.240e-01* (8.314e-02)	-3.831e-01** (1.124e-01)	-1.507e-01+ (8.980e-02)	-3.155e-01* (1.173e-01)	-3.060e-01* (1.145e-01)
Gap, Body Language-IT	2.199e-01+ (1.269e-01)	2.298e-01 (1.656e-01)	1.837e-01 (1.334e-01)	2.791e-01 (1.707e-01)	2.771e-01+ (1.665e-01)
Gap, Commute		-2.320e-01++ (9.720e-02)	-4.953e-02 (6.862e-02)	-1.197e-01 (1.023e-01)	-1.582e-01 (1.010e-01)
Gap, Conscientiousness	2.416e-01* (8.000e-02)	3.223e-01* (1.045e-01)	1.387e-01 (8.483e-02)	2.174e-01+ (1.129e-01)	2.175e-01++ (1.093e-01)
Gap, Customer Service	-1.259e-01+ (6.389e-02)	-1.512e-01 (9.599e-02)	-1.253e-01+ (7.162e-02)	-1.276e-01 (1.037e-01)	-1.323e-01 (1.009e-01)
Gap, Nonconformity		-6.336e-02 (1.028e-01)	-3.896e-02 (6.054e-02)	-8.535e-02 (1.082e-01)	-1.034e-01 (1.036e-01)
Gap, Salary		-1.135e-01 (8.284e-02)	3.873e-02 (6.597e-02)	-6.250e-03 (8.575e-02)	
Gap, Teamwork		1.227e-01 (9.179e-02)	6.812e-02 (6.963e-02)	1.287e-01 (9.697e-02)	1.131e-01 (9.505e-02)
Gap, Technical	-1.274e-01+ (7.443e-02)		-9.408e-02 (7.702e-02)	-1.010e-01 (1.023e-01)	-9.806e-02 (1.001e-01)
Rulebreaker, Culture Add	2.612e-01** (7.057e-02)	2.829e-01** (7.015e-02)	2.114e-01* (7.187e-02)	2.279e-01* (7.190e-02)	2.235e-01* (7.036e-02)
Rulebreaker, Risky	1.688e-01** (4.993e-02)	1.758e-01** (4.813e-02)	1.517e-01* (5.160e-02)	1.472e-01* (5.063e-02)	1.686e-01** (5.006e-02)
Rulebreaker, Rockstars	1.406e-01+ (7.646e-02)	1.748e-01++ (7.245e-02)	1.669e-01++ (7.851e-02)	1.546e-01++ (7.754e-02)	1.655e-01++ (7.599e-02)
Adj R-sqr	0.3100	0.3491	0.2317	0.2554	0.2866
R-sqr	0.4408	0.4663	0.3409	0.3613	0.3880

Standard errors in parentheses. +  $p < 0.10$ , ++  $p < 0.05$ , \*  $p < .01$ , \*\*  $p < .001$ 

For each model, the probability of a greater F-statistic is less than 0.0001 and the sample size is 212.

205 p-value of this factor was unacceptably low in Model 4 ( $p > 0.9$ ). The second  
adjustment is to insert a variable for duration<sup>3</sup>. The belief that it takes more  
than a year to obtain an alternative credential is positively correlated with  
hirability ( $\beta = 0.875, p < 0.01$ ).

The preferred model is able to explain roughly one third of the variance in  
210 hirability. Rulebreaker effects are significant invariant to specification. Six of  
the seven perceived skill gaps in the preferred model are measures of soft skill.  
The coefficient for the perceived technical skill gap is insignificant, but it does  
possess an intuitive negative sign which is robust to specification. The dominant  
effect of soft skills in the preferred regression supports the main hypothesis.

215 In the classic signalling explanation of low ACNG demand, the ACNG signals  
an abnormal lack of conscientiousness and conformity. Regression analysis raises  
three problems for the conformity component of the classic explanation. These  
problems are robust to the specification and operationalization of conformity.  
First, rulebreaker effects are positively related to hirability. Secondly, a gap in  
220 perceived nonconformity skill yields a negative coefficient on hirability. This  
gap effect is equivalent to an association of low hirability and high conformity.

The gap issue applies across multiple models, but reference to a single model  
facilitates further explanation. Overqualification is ignored in Model 5, so a gap  
indicates that the job candidate has a low level of skill compared to an ideal  
225 candidate. In this model, an increase to gap size is strictly equal to a reduction  
in the underlying skill. The negative coefficient for nonconformity therefore  
indicates that a reduction to nonconformity is associated with reduced hirability.  
Similarly, an increase to the level of perceived nonconformity shrinks the gap  
size and produces a positive change in hirability. The positive relation between  
230 nonconformity and hirability is reinforced by a summary statistic, which is that

---

<sup>3</sup>Duration is a categorical variable which was important in both Models 1 and 2. As a  
categorical variable, it was decomposed into a boolean series for factor analysis. Models 1 and  
2 retained one or more duration boolean factors, but none overlapped. As a result, duration  
was dropped from Models 3 and 4.

the average actual employee is perceived to have a higher level of nonconformity than both the ACNG and the recent college graduate.

The third reason that an ACNG nonconformity signal does not explain reduced hirability is that the ACNG and recent college graduate do not significantly differ in perceived levels of conformity. This is presently demonstrated  
235 using summary statistics, but Table 3 also provides regression analysis for comparative skill gaps in a later section. The average level of perceived nonconformity for the ACNG is 6.43 with a standard deviation of 2.25. The average for a recent college graduate is 6.29 with a standard deviation of 2.36. Informally, a  
240 lack of significant difference is apparant in that the means differ by less than one quarter of a standard deviation. Formally, the F-statistic from an analysis of variance ( $F = 19.25$ ) and Pearson's chi-squared test ( $\chi = 298.80$ ) both indicate a probability of independence which is less than 0.0001.

The coefficient on conscientiousness is significant and positive across specifications. Intuition would dictate that a large gap in conscientiousness would be  
245 associated with reduced hirability. Regression of the perceived gap in conscientiousness alone on hirability does produce the expected negative coefficient. There are two reasons for the sign change on conscientiousness in the multiple regression. The first explanation is bliss point seeking and the second is an  
250 explanation from attenuation.

As previously discussed, external research indicates a bliss point for conscientiousness. As a result, the sign of the coefficient on conscientiousness is sensitive to the position of the model constant relative to the bliss point. In a simple regression of conscientiousness on hirability, the model constant is about 7.5,  
255 and the coefficient on conscientiousness is negative. In the multiple regression, the model constant is near 0.5, and the coefficient on conscientiousness is positive. The sample data is consistent with an explanation from bliss point seeking where the bliss point value is between 0.5 and 7.5.

The second explanation is that the direct measure of conscientiousness is  
260 attenuating an overstatement of the conscientiousness effect in the multiple regression. Conscientiousness is cross-correlated with several factors in all models

from Table 1. The total effect of conscientiousness is spread across the direct measure and cross-correlated factors. This explanation is tested by removing other skill gap factors and the rulebreaker effects from Model 5. Other factors  
265 such as state, industry, duration, and other effects are retained. When specified as such, the factor for the perceived conscientiousness skill gap yields the expected negative coefficient ( $\beta = -0.084, p < 0.31$ ).

Employer size is an important factor in the preferred model. The largest category of employer is positively associated with hirability. This finding sup-  
270 ports the explanation of hirability from risk aversion over positive conformity selection.

Some state and industrial effects are identified. No particular relation among state effects was found, but further comparative policy research is encouraged. With respect to industry, an interesting interaction between body language skill  
275 and employment in the information technology industry yields a positive coefficient. Body language skill gaps on their are associated with reduced hirability. The interaction indicates a reduced penalty for a lack of body language communication skill in the information technology industry. With less confidence and more generality, the interaction indicates a reduced penalty for generalized  
280 soft skill deficiency 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 a relative lack of deregulation in the industry. Another explanation is that the reduced penalty may be  
285 related to cultural norms in the industry. There is less technical need for social skill in programming, so introverts may obtain a comparative advantage in this field. These effects are not confirmed in the current study. Further study which includes job candidate personality data could test this hypothesis.

### 3.2. *Explanatory Share of Perceived Gaps*

290 The preferred model explains about one third of hirability variance, but how much of the explanatory power is attributable to perceived skill gaps? Table

2 provides evidence on the importance of perceived skill gaps and rulebreaker effects. This table compares the explanatory power of selected factor groups. Industry and state effects are widely regarded as important in explaining labor  
295 outcomes. The table shows that perceived skill gaps and rulebreaker effects are even more important in explaining hirability. Rulebreaker effects collectively explain more than three times as much response variance as do industrial or state effects.

Allowing for overqualification seems to weaken explanatory power. Overqual-  
300 ification effects seem to be heterogeneously signed per skill, so generalizing weakens overall explanatory power relative to ignoring these effects. With overqualification, perceived skill gaps explain about fifty percent more than industrial effects or robust state effects. Without overqualification, the adjusted explanatory power of perceived skill gaps is about three times the adjusted explanatory  
305 power of industry or state effects. 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 hirability. An example of a state which appears in a multiple regression from Table 1 but is not significant in a simple regression of semi-robust  
310 state effects on hirability would be [TODO].

Table 2 also describes the explanatory power of so-called rulebreaker effects. Whether the candidate is perceived as a rulebreaker is a perceived skill gap, but employers evaluate this gap in a heterogenous and multispecific way. In the first place, this heterogenous evaluation has sign and magnitude implications for  
315 the dependent variable of interest. Secondly, heterogenous evaluation implies a qualitatively different evaluation. These differences are captured using three questions in the first section of the survey.

Employer status is significantly and positively related to each of the rulebreaker effects. Rulebreaker effects are about twice as important as perceived  
320 skill gaps. These results provide evidence that ACNG hirability depends importantly on the way a particular employer views nonconformists.

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

### 3.3. Perceived Gaps Compared to the Recent College Graduate

Table 3 provides two models of hirability based only on comparative skill gaps. Model 6 is specified with differences in each perceived skill gap that was identified as important in Model 5. Model 7 consolidates factors in order to optimize adjusted explanatory power. The four factors that were eliminated in the consolidation had a p-value greater than 0.55. This indicates all four eliminated factors were more likely not to have a relation than to have a relation. The maximum p-value in Model 7 is less than 0.16.

The findings of this study on conscientiousness neither refute nor support the conscientiousness component of the classic signalling explanation. Conscientiousness is identified with some significance as a comparative skill gap, but it favors the ACNG in hirability. This appears at first to be a case similar to the counterintuitive result found in Model 5. Further analysis shows critical differences between the comparative gap specification and Model 5. When the comparative gap factor for conscientiousness is regressed alone on hirability, the positive coefficient persists. The coefficient is also insignificant. As such, the

Table 3: Multiple Regression of Comparative Skill Gap on Hirability

	Model 6	Model 7
Body Language	-3.295e-01*	-3.395e-01*
	(1.138e-01)	(1.049e-01)
Commute	1.498e-01	1.574e-01
	(1.101e-01)	(1.069e-01)
Concientiousness	1.416e-01	1.508e-01
	(1.119e-01)	(1.061e-01)
Customer Service	-1.493e-02	
	(1.143e-01)	
Technical	4.955e-02	
	(1.164e-01)	
Teamwork	1.552e-02	
	(1.008e-01)	
Nonconformity	-5.822e-02	
	(1.108e-01)	
Adj R-sqr	0.0311	0.0474
R-sqr	0.0633	0.0609
p(F)	0.0610	0.0044

15

Standard errors in parentheses

\*  $p < .01$ , \*\*  $p < .001$

explanation from attenuation fails for the comparative gap in conscientiousness. Secondly, it is not obvious whether there should be any bliss point value for the comparative gap.

The preferred model demonstrates that a perceived soft skill deficit explains ACNG hireability, but it does show that the soft skill deficit is a comparative difference between ACNG labor and the recent college graduate. Models 6 and 7 demonstrate that a few soft skills do constitute a significant difference between groups. Model 7 in combination with summary statistics on the average value of each factor also demonstrates that the total hireability effect for the collection of these three factors is negative on average<sup>4</sup>. This replicates external research which shows lower demand for ACNG labor.

Model 7 also provides a skill-level diagnostic in service of closing the demand gap. This model indicates that the soft skill of communication using body language is the only skill difference associated with reduced hireability. It is also the most significant and largest in magnitude of such differences. This result should not be interpreted as a hireability difference due to generalized communication skill. Perceived skill gaps for verbal and written communication are insignificant.

#### 4. Conclusion

This study provides evidence that skill signals are an important factor of hirability and are unique for the ACNG. Perceived skill gaps do a better job of explaining hirability than do other widely recognized effects including industry and state effects. Employer factors better explain candidate hirability than do the perceived skill gaps themselves. Technical skill gaps were identified with less relevance to the hiring decision when compared with soft skill gaps for the

---

<sup>4</sup>The respective mean values for the comparative gaps in perceived body language skill, willingness to commute, and conscientiousness are -0.3395, 0.1574, and 0.1508. The total average hireability effect attributable to these effects is described by the equation:  $Y = -0.3395 * 0.1415 - 0.1575 * 0.0943 + 0.1508 * 0.0330 = -0.0579$ .



ACNG job candidate.

This paper provides evidence that some employers engage in conformity  
365 selection as a means of avoiding risk to the reputation, productivity, or value  
of a company. An explanation from risk aversion fully this kind of conformity  
selection and also explains other behavior. Respondents were most favorable to  
the description of nonconformists as individuals that could just as easily be high  
performers as low performers. Aversion to this kind of labor is better explained  
370 as risk aversion rather than positive selection for conformity.

Risk aversion and conformity selection are both partially unconscious biases  
which lead to suboptimal organizational operation. A practical recommendation  
is for organizations to implement bias controls with respect to ACNG evaluation.  
An example control would be to provide human resource procedures for formal  
375 evaluation of particular credentials which are relevant to specified job families.  
These procedures can be immediately executed among known credentials and  
job families. These procedures should be retained for ongoing application as  
new credentials are developed and encountered over time.

Some evidence on the role of misinformation is demonstrated in a survey  
380 on trade schooling taken in 2019[13]. 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  
385 obtaining some work experience will allow students to leverage employer tuition  
benefits. Because ACNG hirability varies importantly by particular employer,  
ACNG job candidates are advised to apply to a substantial number of employers  
at the outset of the job search. Insight into ACNG hirability at a particular firm  
can be obtained prior to application through social networking with employees  
390 of the firm, online research into the policies of the target employer, or consulting  
a recruiter that specializes in the target employment industry.

The preferred model explains about one third of hirability. Perceived skill  
gaps and rulebreaker effects account for most of the explanatory power in the

model. The explanatory power of this study can be meaningfully improved  
395 in a few ways. Longitudinal study would allow for causal analysis and improve  
forecasting of ACNG hirability in the future. Other research has conducted some  
dynamic analysis of the same dependent variable with different regressors[14].  
Integrated analysis would be useful for replication and the generation of new  
models of better explanatory power. Analysis that includes overqualification  
400 effects and heterogeneous nonlinear relations between skill gaps and hirability  
would improve estimates of hirability for a candidate of a particular skill profile.

This paper noted that large employers and the information technology industry has a peculiar susceptibility to alternative credentials, so recent changes implemented by Google may be indicative of future trends. Google has not  
405 required a college degree since prior to 2013[15]. 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  
410 to an existing set and declared that all of its certificates would be treated as the  
equivalent of an undergraduate degree for their hiring purposes[16].

If perceived skill is representative of actual skill, then the current study  
concludes that employers should be more willing to hire an ACNG. At the  
same time, this paper provides evidence that perceived and actual skill levels  
415 sometimes do not align. For example, the average recent college graduate in  
the sample is perceived to have better technical skill compared to the average  
ACNG. This is surprising because last mile training, a kind of alternative education,  
has been specifically recommended in popular literature as a remedy for  
the technical skill gaps that exist among recent college graduates.

420 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. Social preference for  
the college degree may be better explained by public ignorance about appropriate  
alternative programs, a lack of appropriate programs for certain occupations,

425 and government financial and other policy which gives preference to accredited  
education.

## References

- [1] K. B. McGarry, An examination of perceived employability skills between  
employers and college graduates, Northeastern University, 2016.
- 430 [2] G. Malik, A. Venkatraman, “the great divide”: skill gap between the em-  
ployer’s expectations and skills possessed by employees, Industrial and  
Commercial Training (2017).
- [3] F. K. Abbasi, A. Ali, N. Bibi, Analysis of skill gap for business gradu-  
ates: managerial perspective from banking industry, Education+ Training  
435 (2018).
- [4] Y. Gingras, R. Roy, Is there a skill gap in canada?, Canadian Public Pol-  
icy/Analyse de politiques (2000) S159–S174.
- [5] M. Smith, Spotlight on research: The distributional impact of unemploy-  
ment (2011).
- 440 URL [https://www.philadelphiafed.org/  
community-development/publications/cascade/77/07\\_  
distributional-impact-of-unemployment](https://www.philadelphiafed.org/community-development/publications/cascade/77/07_distributional-impact-of-unemployment)
- [6] J. Brown, M. Kurzweil, The complex universe of alternative postsecondary  
credentials and pathways, American Academy of Arts and Sciences Cam-  
445 bridge, MA, 2017.
- [7] B. Caplan, The case against education: Why the education system is a  
waste of time and money, Princeton University Press, 2018.
- [8] P. L. Curşeu, R. Ilies, D. Vîrgă, L. Maricuţoiu, F. A. Sava, Personality  
characteristics that are valued in teams: Not always “more is better”?,  
450 International Journal of Psychology 54 (5) (2019) 638–649.

- [9] G. Symon, C. Cassell, Neglected perspectives in work and organizational psychology, *Journal of Occupational and Organizational Psychology* 79 (3) (2006) 307–314.
- [10] F. Green, S. McIntosh, Is there a genuine under-utilization of skills amongst the over-qualified?, *Applied Economics* 39 (4) (2007) 427–439.
- [11] M. Raybould, H. Wilkins, Over qualified and under experienced, *International journal of contemporary hospitality management* (2005).
- [12] D. Blake, Skills quotient: The solution to the ceo’s biggest problem (Oct 2018).  
URL <https://blog.degreed.com/skills-quotient-solution-ceos-biggest-problem/>
- [13] J. Arabia, Survey: What do young americans really think about trade school? (Feb 2019).  
URL <https://www.bigrentz.com/blog/trade-school-survey>
- [14] J. Vandivier, Preliminary attitudinal trends in alternative postsecondary learning, *Applied Economics Letters* (2020) 1–4.
- [15] A. Bryant, In head-hunting, big data may not be such a big deal, *The New York Times* 20 (2013).
- [16] A. Hess, Google announces 100,000 scholarships for online certificates in data analytics, project management and ux (Jul 2020).  
URL <https://www.cnn.com/2020/07/13/google-announces-certificates-in-data-project-management-and-ux.html>