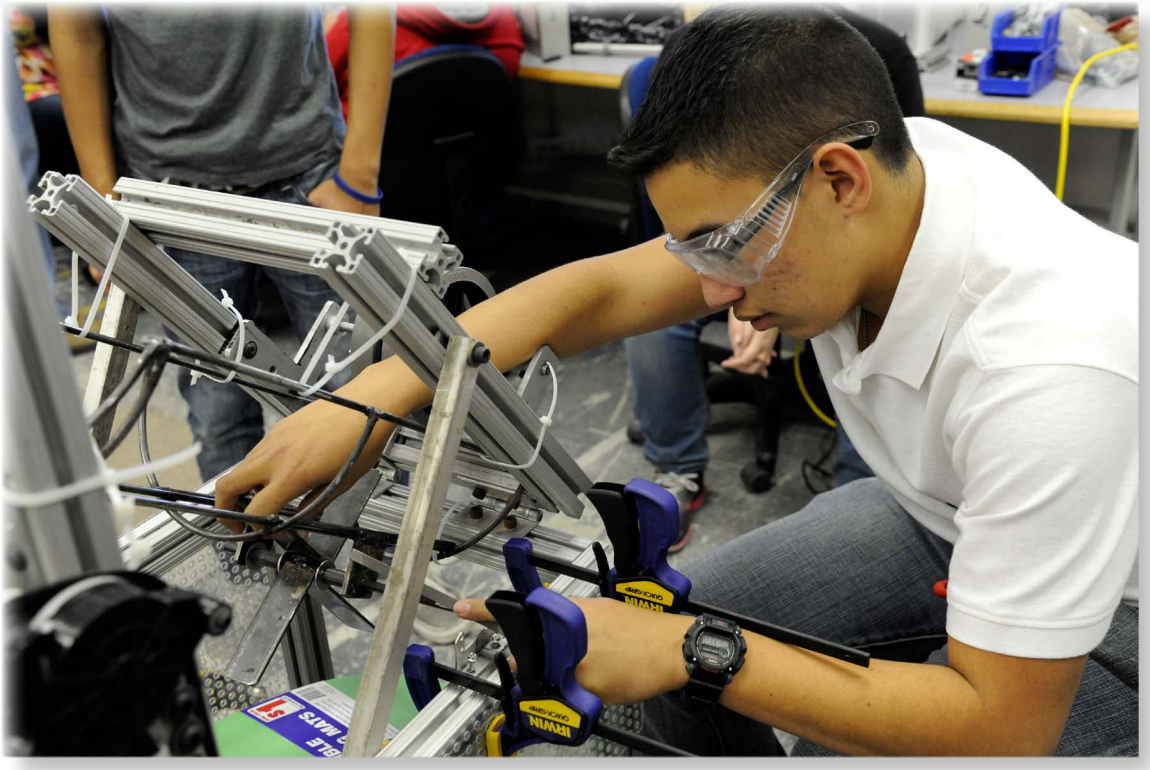
NEPC Review: Hard Work and Soft Skills (American Enterprise Institute, April 2018)



Reviewer:

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June 2018

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Suggested Citation: Rosenbaum, J. (2018). *NEPC Review: "Hard Work and Soft Skills."* Boulder, CO: National Education Policy Center. Retrieved [date] from http://nepc.colorado.edu/thinktank/review-CTE.

Funding: This review was made possible in part by funding from the Great Lakes Center for Educational Research and Practice.

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Executive Summary

A recent study published by the American Enterprise Institute seeks to illuminate how students in career and technical education (CTE) programs demonstrate higher high school graduation rates, overall educational attainment, and earnings than students in academic programs whose previous test scores are similar. Although those students who take many CTE courses by 12th grade tend to have significantly lower test scores, this study finds that these students have higher noncognitive skills (e.g., attendance and homework time). The most remarkable feature of this study is the broad array of indicators it compiles, including how much effort students exhibit on a routine task (e.g., a long and boring survey in school), and teacher reports of student effort. Using such data, the study suggests that CTE may improve attainments by improving noncognitive skills. The key implication is that, instead of the narrow policy focus on academic skills, educators need to consider how to improve students' other skills to improve education and job outcomes. While this implication is reasonably drawn from the study, educators need a clearer interpretation of these "noncognitive skills" and whether they are persistent attributes or highly changeable behaviors. Overall, however, the study presents a strong empirical analysis of a strong dataset and should prove useful for policymakers.

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I. Introduction

Research has shown that, after controlling for the lower test scores on average of students who take CTE courses, high school CTE programs are associated with higher earnings. But the mechanism underlying this relationship is not clear. This new report from the American Enterprise Institute hypothesizes that noncognitive skills mediate this relationship, and this study provides a strong test of this hypothesis.

Given major challenges from automation and global labor markets, there is increased concern about skill shortages in the United States. These shortages are particularly acute for the mid-skilled labor market, and high school career and technical education (CTE) is a potential source for providing such skills. Despite concerns about high school graduates' lack of adequate academic skills, employers more often complain about work habits and effort.[1] Indeed, although high schools have focused on increasing academic skills, there are indications that while many mid-skill jobs require only eighth-grade academic skills, they also require students to learn strong work habits.[2]

This study examines whether CTE programs' positive relationship with earnings outcomes might be explained by noncognitive skills. This study used the U.S. Department of Education's Educational Longitudinal Survey (ELS), a representative sample of 2002 tenth graders, and followed them over the next 10 years. The survey asked students about a wide range of issues (their school programs, performance, plans, etc.), and about their highest level of education and current earnings. Noncognitive skills are largely unmeasured in most research, and self-reported measures of effort are subject to criticism. The ELS offers a rich variety of other measures. This study takes several innovative approaches to measuring these skills and their impact.

Arguably, the most interesting measure examines careless answering and inconsistent an-

swers, which the report infers are indicators for student effort. The researchers argue convincingly that careless answering and inconsistent answers indicate student diligence, inferred from students' behavior on a survey given in school. The report also documents, and uses, other measures of student noncognitive skills, such as student-reported and teacher-reported measures of student effort.

This innovative study also studies the impact of noncognitive skills in comprehensive high schools and vocational high schools. The difference between these school types is an important policy issue, which has received little attention. One might speculate that specialized vocational schools offer efficiencies of size, the capacity for better equipment, and perhaps better self-esteem. But there are also serious risks of these schools creating negative self-images or having violent or negative school culture. The literature indicates some distinctive aspects of vocational schools in Chicago, Philadelphia and Massachusetts, but has not studied national samples of students in such schools. This study also examines students in vocational programs in comprehensive high schools.

II. Findings and Conclusions of the Report

Although students who take large numbers of CTE courses had significantly lower tenth grade test scores and lower motivation in academic subjects, they nonetheless have higher levels of noncognitive skills on a number of measures, such as students' careless answering and inconsistent answers, teachers' reports of student behavior in class, attentiveness, homework completion, and absenteeism.

This study clearly shows that the students who have more successful outcomes are the ones with stronger noncognitive skills. If so, then the current policy focus solely on academic skills is too narrow. Educators need to consider how to improve students' noncognitive skills, in CTE and in non-CTE classes. This is an important finding, and it should encourage researchers, policymakers, and educators to pay attention to an array of noncognitive skills which are often overlooked.

III. The Report's Rationale for its Findings and Conclusions

This report uses a conventional economic model to consider how CTE is related to various outcomes, after controlling for the usual array of background variables. Its most important innovation is in developing highly original indicators of student behaviors described above. Concerned that student reports of their efforts may be distorted, the report argues for the necessity of considering other indicators. Students' actual behaviors (careless answering and inconsistent answers) and teachers' ratings of students' efforts provide good additional indicators. The rationale for making these measures and their value in extending our understanding are both well explained and compelling.

IV. The Report's Use of Research Literature

This study builds upon a recent study by economists Daniel Kreisman and Kevin Stange.[3] This report adopts their model while creating better indicators of teachers' ratings and students' diligence on the survey. Unfortunately, it does not consider the extensive literature from prior decades. Vocational schools were often dumping grounds for troublesome students and those with low academic skills. The major federal CTE program, the 1998 Perkins Act, attempted to change that, and the present findings are more important because they examine how CTE has worked since the Perkins Act efforts.

Moreover, there is a dramatic conflict between the notion of vocational schools as dumping grounds and the aspiration of vocational schools as high-quality 21st-century-skills training institutions. A deeper review of prior research would clarify this conflict, and show how this research contributes to a broader understanding. Large vocational schools have the potential to offer resources to create high-quality training, and may have the resources to work with employers, creating job contacts and strong incentives for student effort.

The report could have benefitted from a more comprehensive literature review. The methods used by other studies to measure noncognitive skills would have helped clarify the conceptual issues, and might have opened up further inferences from the analyses done here. Instead of analyzing isolated indicators, as this report as done, prior psychological studies might have indicated how this report could have combined several indicators and clarified whether the indicators are transitory behaviors or enduring personality attributes.

The literature on vocational schools illustrates the problems and benefits from CTE in specialized or comprehensive schools. Although the report's treatments of both types of schools are adequate for the narrow definition of this paper, the paper's contributions would be enriched if it interwove the literature, context and history.

V. Review of Report's Findings

Just as the report's rationale and model are straightforward, it also uses a clear model for making inferences. The report finds moderate correlations among the various indicators of student effort.

However, the report raises some concerns. The authors examine how many vocational courses each student has taken, but does not consider how many courses students take in a single CTE field, which is often called vocational concentration. Taking a variety of vocational courses in many different fields may have a different impact than concentrating deeply in a single field.The authors should have explained why they chose to look at the number of CTE courses as their only focus and whether they lose something by ignoring "concentration in a single field." One may speculate that the report's focus on number, and not concentration, may recognize the value of exploring many different fields, which may help students determine their life and career paths.

A clearer distinction between "noncognitive skills" and "noncognitive behaviors" would have been valuable. Does CTE motivate students to work harder than they otherwise might have done? Although the authors say that most standardized tests fail to measure noncognitive skills, they don't consider whether these so-called "skills" are actually attributes of students or are merely transitory behaviors that enhance school achievement. They also raise the question of personality attributes without clearly explaining how they are related to the other two interpretations -- skills and behaviors. One might hypothesize that similar students in academic courses have the same noncognitive skills but might be less motivated to engage in the effort and appropriate behavior than if they were in practical CTE courses. Alternatively, one might hypothesize that students who are taught to engage in appropriate behaviors over long periods of time would increasingly develop new skills for how they approach their work. Indeed, when the report treats "work habits" as noncognitive skills, it implicitly treats work habits as if they indicated some enhanced skill. Although the interpretation is not important for the study itself, it is important in the practical application of these findings. If good habits are different than good skills, then students may possess appropriate noncognitive skills but they may not be motivated to exert effort to use them. CTE courses may motivate students to engage in higher efforts, even if they have only modest levels of noncognitive skills. Indeed, one may wonder if students who are motivated for a long period of time, may develop added noncognitive skills. The point is to distinguish between personality attributes (such as obsessive attention to detail), work habits (such as habitually organizing tasks and workspaces), and efforts (such as persisting through a sequence of tasks). Indeed, these may all be at work, but the authors don't consider these distinctions. Obviously, policy recommendations may entail any or all of these, so it would be useful to clarify.

Teacher ratings make these differences especially clear. Some of the attributes which are rated -- disruptiveness, attentiveness, works hard, does homework, lazy, absences, and the like -- are clearly noncognitive behaviors -- but they may not be skills. This criticism does not affect the analysis, only the way we interpret the findings and how educators might use CTE to improve student behaviors.

The report is correct about the stigma attached to vocational courses. Yet, the authors do not examine or develop this critical question. Often, simple descriptive analysis will give the impression of inferior students and inferior programs, but this analysis shows superior noncognitive skills and outcomes, presumably from effective CTE programs. Hopefully, this research will help shape public attitudes and reduce the traditional stigma.

VI. Usefulness of the Report for Guidance of Policy and Practice

This report finds that students with stronger noncognitive skills have more successful outcomes. As the authors acknowledge, these statistical analyses alone cannot prove causality. However, observational studies have shown ways that vocational teachers help students learn work habits, persistence, and attention to quality.[1, 4] However, those studies cannot generalize beyond the few schools studied. This study indicates that prior causal observa-

tions may be widespread phenomena, and support the inference that CTE improves students' attainments by improving noncognitive skills. Rather than solely focus on academic skills, as educational policy has often dictated, educators need to consider how to improve students' noncognitive skills, in CTE and perhaps in non-CTE classes as well. This finding should encourage researchers, policymakers, and educators to pay attention to an array of noncognitive skills.

This is a strong empirical analysis of a strong dataset. The researchers have constructed innovative and impressive new indicators of noncognitive behaviors. They have also done a careful and thoughtful analysis of their antecedents and later outcomes.

This paper does have limitations. There is little indication or awareness of the larger historical changes taking place in the various versions of the Perkins Act. The concept of "noncognitive skill" is superficial, and perhaps mistaken in emphasizing skill, which is persistent, rather than noncognitive behaviors, which are more transitory. Indeed, readers may wonder whether these previously neglected noncognitive skills deserve inclusion in the Perkins Act as a way to improve work readiness, especially for students with low academic achievement.

To be fair, a single article cannot consider all of the issues and these concerns should not prevent us from seeing the value of this study. Given the great skill shortages in the U.S. labor market, our society needs to better understand any potential source of skills. This paper makes it clear that CTE programs are potential sources of important skills. This paper contributes to our understanding of contemporary CTE programs. Instead of the usual focus on academic skills and job skills, CTE may develop noncognitive skills which can influence outcomes and improve the college- and career-readiness of our nation's youth.

Notes and Resources

1 Stone, J. & Lewis, M. (2012). *College and career ready in the 21st century*. New York: NY: Teachers College Press.

2 Rosenbaum, J., Ahearn, C., & Rosenbaum, J. (2017). *Bridging the gaps: College pathways to career success*. New York, NY Russell Sage Foundation Press.

3 Kreisman, D. & Stange, K. (2017, September). *Vocational and Career Tech Education in American High Schools: The Value of Depth over Breadth* (working paper). Cambridge, MA: National Bureau of Economic Research. Retrieved April 11, 2018, from http://www.nber.org/papers/w23851

4 Rosenbaum, J. (2001) *Beyond College for All: Career Paths for the Forgotten Half*. New York, NY: Russell