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Framing Parents' Attitudes Toward Career and Technical Education

Walter G. Ecton

Florida State University
United States

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Abstract: In recent years, policymakers and researchers have paid renewed attention to career and technical education (CTE), but public attitudes—especially those of parents—toward CTE remain relatively understudied. Drawing on the history of CTE and more contemporary policy discourse, this study proposes a new organizing framework for conceptualizing how CTE might be discussed in the public sphere, and then uses a survey-based experiment to examine how the ways policymakers talk about CTE might impact parents' support for CTE-related policies. Using respondents from an online marketplace, results indicate widespread support for CTE and suggestive evidence that CTE may see more support as a public policy when framed through a workforce development lens. These results offer implications for both supporters and opponents of CTE, as well as researchers and policymakers seeking to better understand nuances behind parents' opinion on an education issue with growing policy salience.

Keywords: vocational education; career and technical education (CTE); high schools, public opinion; randomized controlled trials; parent attitudes

Enmarcar las actitudes de los padres hacia la carrera y la educación técnica

Resumen: En los últimos años, los formuladores de políticas y los investigadores han prestado renovada atención a la educación técnica y profesional (CTE), pero las actitudes públicas, especialmente las de los padres, hacia la CTE siguen siendo relativamente poco estudiadas. Basándose en la historia de la CTE y el discurso político más contemporáneo,

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este estudio propone un nuevo marco organizativo para conceptualizar cómo la CTE podría ser discutida en la esfera pública, y luego utiliza un experimento basado en una encuesta para examinar cómo las formas en que los legisladores hablan sobre la CTE podrían impactar el apoyo de los padres a las políticas relacionadas con CTE. Usando encuestados de un mercado en línea, los resultados indican un apoyo generalizado para CTE y evidencia sugestiva de que CTE puede ver más apoyo como una política pública cuando se enmarca a través de una lente de desarrollo de la fuerza laboral. Estos resultados ofrecen implicaciones tanto para los partidarios como para los opositores de CTE, así como para los investigadores y los responsables políticos que buscan comprender mejor los matices detrás de la opinión de los padres sobre un tema educativo con una creciente relevancia política.

Palabras-clave: educación vocacional; educación profesional y técnica (CTE); escuelas secundarias, opinión pública; ensayos controlados aleatorios; actitudes de los padres

Enquadrar as atitudes dos pais em relação à carreira e à educação técnica

Resumo: Nos últimos anos, os formuladores de políticas e pesquisadores prestaram atenção renovada à carreira e educação técnica (CTE), mas as atitudes públicas - especialmente as dos pais - em relação à CTE permanecem relativamente pouco estudadas. Com base na história da CTE e no discurso político mais contemporâneo, este estudo propõe uma nova estrutura organizacional para conceituar como a CTE pode ser discutida na esfera pública e, em seguida, usa um experimento baseado em pesquisa para examinar como as maneiras pelas quais os formuladores de políticas falam sobre a CTE podem impactar apoio dos pais para políticas relacionadas a CTE. Usando entrevistados de um mercado on-line, os resultados indicam amplo apoio ao CTE e evidências sugestivas de que o CTE pode ver mais suporte como uma política pública quando enquadrado por uma lente de desenvolvimento da força de trabalho. Esses resultados oferecem implicações para apoiadores e oponentes do CTE, bem como para pesquisadores e formuladores de políticas que buscam entender melhor as nuances por trás da opinião dos pais sobre uma questão educacional com crescente relevância política.

Palavras-chave: educação profissional; educação profissional e técnica (CTE); escolas secundárias, opinião pública; ensaios clínicos randomizados; atitudes dos pais

Framing Parents' Attitudes Toward Career and Technical Education

Career and technical education (CTE) has long played a significant, albeit controversial, role within America's system of secondary public education. CTE (historically—and still in much of the world—called vocational education) refers to education that is designed to provide students with the knowledge, skills and training needed for specific career paths (such as manufacturing, health sciences, construction, and information technology) and typically occurs at the secondary and postsecondary levels. Debates about CTE over time have played into fundamental questions about the underlying goals of education and the role of education within American society.

These debates, along with the evolving nature of CTE, make it especially important to understand how parents—a key stakeholder in education policymaking and a key voting demographic in American elections—view CTE and its role in American's educational system. As Americans' views about the purpose of education have become increasingly focused on employment outcomes in recent years (PDK, 2017) and as public attitudes toward college have

showed signs of decline (Fishman et al., 2022; Pew, 2017), it is important for researchers, policymakers, and practitioners to understand how parents think about CTE, and to know whether the ways that CTE is discussed influences those attitudes. Given the shifts in CTE policy and curricular emphases over the past two decades, it is also relevant to know whether negative perceptions about CTE from previous eras still persist for today's parents. Moreover, as political actors increasingly tout CTE (sometimes in opposition to a college-preparatory education, as will be discussed below), stronger knowledge about parents' opinions about CTE can allow for greater parent voice in this ongoing policy conversation.

While CTE at the secondary level fell largely out of favor among American educators and policymakers in the 1990s and 2000s due to concerns that it limited opportunity and equitable outcomes for students of color, low-income students, and those with disabilities (Bowles & Gintis, 1976; Grubb & Lazerson, 1982; Rosenbaum, 2001; Tyack, 1974, among others), CTE has experienced a strong resurgence in policy and political prominence in recent years (DeVos, 2018; Lee, 2018; Obama, 2011; Raimondo, 2018). The U.S. Department of Education estimates that between 85% and 92% of students earn credit from at least one CTE course during high school (Hudson, 2014; Levesque et al., 2008), and over 98% of public high school districts offered CTE courses (Gray & Lewis, 2018).

While CTE may be reemerging in America's high schools and in policy conversations, public attitudes toward CTE remain relatively understudied. Most recent research suggests strong public support for CTE, but is mostly conducted by CTE advocacy groups (Advance CTE, 2017; Cohen & Besharov, 2012; Herian, 2010; Phi Delta Kappan, 2017). While stronger evidence of public support for CTE exists in Europe (Busemeyer et al., 2018), the history and context for CTE is quite different than in an American setting.

Within the broader education literature, evidence from experimental work suggests that public opinion on education-related issues can often be changed by providing information or framing a subject or argument in a particular way (Clinton & Grissom, 2015; Schueler & West, 2016). While this study focuses on education, it also sits within a much broader literature on the importance of framing in influencing the ways people think about policy issues (see Chong & Druckman, 2017; Druckman, 2001; Kam & Simas, 2010; Kinder & Sanders, 1990; Nelson et al., 1997).

Opinions are especially susceptible to framing about topics (like CTE) that have not been particularly salient in public opinion. Moreover, attitudes about CTE may be especially changeable given the sometimes vague and changing way in which it is defined. The National Center for Education Statistics, for example, defines CTE as "courses (at the high school level) and programs (at the postsecondary/ sub baccalaureate level) that focus on the skills and knowledge required for specific jobs or fields of work" (NCES, 2023b). The lack of greater specificity in this definition reflects the broad diversity of programs that fall under the umbrella of CTE and evolving nature of CTE (Dougherty & Lombardi, 2016; Plasman et al., 2020). Moreover, given the heterogeneity of experiences and outcomes for CTE students (Ecton & Dougherty, 2023) in different programs and contexts, it seems plausible that opinions about CTE may be especially susceptible to the way in which CTE is framed.

This paper makes several contributions. First, drawing upon historical and contemporary discourse, I offer a new organizing framework to describe the ways CTE is framed in public debates and for the ways that parents might consider CTE. As a primary contribution of this work, I propose five frames that categorize and organize the different ways CTE can be presented by policymakers and advocates, both for and against CTE. Next, I describe an innovative approach to constructing a sample through an online marketplace in which respondents are recruited through online activity, including advertisements and rewards

club memberships. I then highlight several descriptive findings, including differential levels of support for CTE by respondent demographic group (race, education level, etc.), a novel contribution to the field. Next, I discuss the experimental results after respondents were randomized to one of the five frames (compared to a control group). While mostly null, these results do offer suggestive evidence that framing CTE as workforce development may be most successful for supporters of CTE. I also explore the ways that different demographic groups might react differently to different frames, finding suggestive evidence of different responsiveness, especially by respondents' political affiliation and educational level. Finally, I conclude with a discussion of the implications of this work for policy and future research in this area of study.

Organizing Framework

In considering the various ways that CTE might be framed in the public discourse, I draw upon a long history of debate over nature of public education and CTE specifically, as well as contemporary arguments by those arguing for and against the expansion of CTE coursework. I propose two value-based frames in which CTE can be discussed (inequality and individualism) and two economic-based frames (workforce alignment and narrow preparation). Additionally, I offer one frame that overlays both value-based and economic-based arguments, in which CTE is explicitly pitted against college access. While recent research and current policy efforts suggest that the framing of CTE in competition with college preparation may be outdated, this frame likely remains salient for some in the public discourse, especially given the long history of framing vocational education as a distinct track from a college preparatory curriculum. While these five frames (introduced here and highlighted in Figure 1) may often intersect and are not meant to be exhaustive of the ways in which CTE could be discussed and debated, the following provides a history and framework for why these frames are particularly relevant in the current policy landscape. I begin with two value-based frames (one in positive towards CTE and one negative), followed by two explicitly-workforce focused frames (again, with one supportive and one in opposition), and conclude with one oppositional frame that is rooted in both value-based and workforce-based arguments.

Individualism Frame

While reducing inequality has always played a prominent role in debates about the role of education in the United States, a counter-argument has also long existed that public schools' primary goal should be to prepare students for the workforce, or to "act as a transmitter between human supply and industrial demand" (Meyer, 1915). Given the broad range of occupations within the workforce, this approach to education required that different students would need substantially different educational preparation. Many scholars pointed to the "sorting function" of schools, in which schools sort students based on skill into different "tracks" where they could (at least in theory) receive the most appropriate training for the jobs they were best-suited to pursue (Bowles & Gintis, 1976; Grubb & Lazerson, 1982; Tyack, 1974). Under this sorting frame, education should be expected to meet individual students where they are, with different skills, interests and future career paths.

This frame for CTE can be seen from politicians like former Democratic Rhode Island governor (and current U.S. Secretary of Commerce), whose reelection campaign for governor highlighted students who got jobs after high school specifically tailored to their individual interests and goals. For example, one television commercial featured a student who took vocational courses because he was good with his hands and wanted a job after high school to put those skills and preferences to work (Raimondo, 2018).

Recent years have also seen increasing pushback against the monolithic nature of a “College for All” model, arguing that a college preparatory curriculum may not be the best fit for all students, pointing to low rates of college completion and high levels of debt among college dropouts (Caplan, 2018; Holzer & Baum, 2017; Rosenbaum, 2001; Schwartz, 2016). Several studies have found that different groups of students benefit differently from CTE, with evidence that men, students with disabilities, students not immediately continuing to college, and students struggling academically seeing especially strong payoffs to CTE (Ecton & Dougherty, 2023; Hemelt et al., 2019; Kemple & Willner, 2008; Plasman & Gottfried, 2018; Plasman et al., 2018). Indeed, CTE could be viewed as a way to allow for greater levels of individualism in education, to help individual students find the best fit for them.

Inequality Frame

Since universal schooling efforts began, American public education has grappled with several tensions over the desired goals and purpose of education. One of the most distinctive forms of American schooling has been a long-stated goal of equity; as early as 1848, the founder of America’s common school movement, Horace Mann, referred to education as a “Great Equalizer” (Mann, 1868, p. 669). Indeed, the American push towards universal public high school education was a revolutionary push for egalitarianism when compared to the historical norm that secondary education was solely the purview of the elite. In short, inequality and the role of schools in either combatting or perpetuating inequality has long played a central role in debates around education in the United States.

In the 1970s and 1980s, CTE, historically referred to as vocational education, became an especially prominent part of the national conversation about inequality in schools. With court-ordered school desegregation, vocational education was often used as a way to keep racial minorities separated from their white peers through vocational “tracks” (Anderson, 1982; Oakes, 1983). These vocational programs were often low-quality and limited students from access to more rigorous courses that would prepare them for high-status, high earning career paths. Because of this, vocational education and tracking became linked with inequality of educational opportunities in the minds of many in the education community, and was particularly linked to unequal opportunities for racially minoritized students and those with disabilities.

Workforce Alignment Frame

In recent years, policy conversations around education and workforce development have been especially prominent. Many economists have noted a “Middle Skills Gap,” and suggested that schools need to train more students in specific trades for jobs that are in-demand by local employers (Caplan, 2018; Holzer & Baum, 2017; etc.). The 2018 reauthorization of the federal Perkins Act also emphasized the importance of CTE reflecting the demands of the local labor market by working more closely with local industry to identify skills and training that are in-demand.

Some politicians have also seized on the framing argument that high schools should focus more on workforce development (and according to some, less on universal bachelor’s degree preparation). Republican senator Marco Rubio, for example, memorably said in a 2015 presidential debate, “We need more welders and less philosophers” (Kessler et al., 2015). The argument that education should focus more explicitly on workforce readiness is not limited to Republicans, with even Democrats like former Tennessee governor Phil Bredesen expressing that one of his biggest mistakes as governor “was to start focusing on college readiness as the goal of high school. I think I took that too far and should have focused more on other paths

besides college readiness in terms of making people prepared for careers in other fields that did not require that education” (Plazas, 2018). Also, in Tennessee, governor Bill Lee (2018) ran advertisements during his campaign in which he explicitly argued schools should be more directly focused on filling gaps in the local workforce, and that schools need to fundamentally change and offer more vocational education because “we still have a hard time filling jobs in the trades.”

Narrow Preparation Frame

While some politicians and scholars argue for more workforce development and training in schools, others have expressed concern that an education that only narrowly trains students for a specific skill set may limit opportunities down the road, particularly as technology and the economy evolve in ways that could make specific training obsolete (Hanushek et al., 2017). These concerns are particularly evident in Congress’ 2018 reauthorization of the federal law funding CTE (Perkins V), where “college and career readiness” was emphasized, arguing that even those students participating in CTE should also be fully prepared for college *in addition* to their career training (ACT, 2006; Cellini, 2006; Obama, 2011; Yettick, 2012). Alongside the shift in naming conventions from “vocational education” to “career and technical education” is an emphasis on STEM-related fields an attempt to align the types of learning needed for both college and career success. Still, while the last two decades have seen a shift in the types of programs included under the CTE umbrella, traditional vocational courses in areas like manufacturing, construction and cosmetology remain. Giving the rapidly-changing nature of work, students who are not prepared to adapt and meet changing workforce demands may face difficulty later in the careers (Autor, 2019).

College Preparation Frame

Following concerns about vocational education’s role in inequitable tracking, the 1990s and early 2000s saw several important policy and cultural changes that centered the role of college preparatory academics and college access in the role and mission of high schools. These changes increased the salience of a frame that vocational education limited access to college. During this period, the United States saw a dramatic rise in rates of college-going, with students who did not have access to a college-preparatory education increasingly left behind in a growing economy (Bowen & Bok, 1998). The rise of standards-based education and an accountability movement that centered the primacy of academic subjects such as English language arts and math also made vocational courses materially less important to policymakers and school leaders concerned about the measures against which they were held accountable. Many states during this period also aligned high school graduation requirements with 4-year college and university entry requirements (Mishkind, 2014). Increasingly, as high schools moved towards a “College for All” framework (Dougherty & Lombardi, 2016; Grubb & Lazerson, 2005; Hudson, 2014; Rosenbaum, 2001), vocationally education fell out of favor as it was increasingly pitted against college, particularly bachelors’ degree programs.

Moreover, a frame that pits CTE against “college” still persists in popular media, with news stories about CTE often featuring headlines like “You don’t need a college degree to earn \$70K your first year” and “Trade Schools Vs. Traditional College: What You Should Know” (Dowdy, 2016; Farrington, 2022). Indeed, popular news outlets regularly pushback against the “College for All” model, running pieces in *The New York Times* like “College May Not Be Worth It Anymore” (Shell, 2018). As an article in *The Chronicle of Higher Education* explains, “The question ‘Is college worth it?’ is a favorite of op-ed writers” (Zamudio-Suarez,

2018). In this discourse, it is notable that “college” is often discussed as synonymous with bachelor’s degree programs at colleges and universities, even though roughly one-third of American postsecondary students attend community and technical colleges, where CTE programs are especially common (NCES, 2020).

Over the past two decades, CTE policy has aimed to reduce this college vs. career divide, with an increased emphasis on CTE as preparatory for both “college and career” and an increased focus on high-rigor fields, especially in applied STEM (ACT, 2006). Evidence also suggests that CTE students today are not simply “CTE” or “Academic” students in ways that may have once been more clearly true (Stone & Aliaga, 2005; Yettick et al., 2012). Instead, today’s CTE may be more likely to shift the kind of postsecondary experience students have, with high school CTE students likelier to take postsecondary CTE classes (Plasman et al., 2019), and to enroll in community/technical colleges (Cellini, 2006; Ecton & Dougherty, 2023). Still, given the long history—as well as some of the more recent sentiments from politicians and the press—it seems possible that a frame that pits college preparation against CTE may continue to hold salience for some.

These frames and debates—often intertwined with each other—over the role of education and the ways to best prepare students for their place in the workforce are central to the ways that public discourse considers Career and Technical Education. Drawing on both historical and contemporary examples, Figure 1 presents a new organizing framework for how we might consider the different ways in which CTE can be framed. As the above discussion illustrates, CTE can be debated either through value-based arguments (with values such as inequality and individualism proving especially salient to CTE policy) or through economic-based arguments (like those who view CTE as a way to support workforce development, or those that caution CTE might narrowly prepare students in ways that could limit future career opportunities).

Figure 1

Frames for Discussing CTE

	Support	Oppose
Value-Based Arguments	Meet individual students’ <u>needs</u> & interests (“ INDIVIDUALISM ”)	Different educational tracks can increase inequality (“ INEQUALITY ”)
Workforce-Based Arguments	Prepare students for jobs currently in-demand (“ WORKFORCE ALIGNMENT ”)	Specific skills may not stay relevant in the future (“ NARROW PREPARATION ”)

Limit students’ ability to take college-prep classes (“**COLLEGE PREPARATION**”)

At the intersection of value-based and economic-based frame is a frame that suggests CTE prevents (or at least, limits) the ability of students to take college-preparatory classes and gain the skills needed for admissions into and success once in college. While value-based arguments may have been particularly salient during the 1970s and 1980s when vocational education was under attack, today's advocates (and opponents) seem to use economic-based arguments more frequently. Moreover, some research suggests that labor-market returns loom larger in the way the American public thinks about education than in the past (Herian, 2010, Phi Delta Kappan, 2017); as such, framing CTE around workforce preparation could be especially impactful.

Used by both supporters and opponents of CTE, these frames have the potential to set the tone for how the public considers and understand CTE. This study attempts to assess the effects of discussing CTE through these frames (Individualism, Inequality, Workforce Alignment, and Narrow Preparation, College Preparation) on parents' support for CTE. I also undertake exploratory analysis to better understand how and why different framing messages might resonate differently with different populations.

Research Questions

This study explores the extent to which different ways of framing CTE may impact public attitude towards CTE. In particular, I focus on a population which may be especially motivated to care about different models of education—parents and families.¹ Parents have the potential to play an especially large role in shaping policy debates about CTE and education more broadly, making them an especially important population to understand. First, in their dual roles as “citizen/consumers” of public education (Schneider, 1998), parents are more likely than other members of the public to receive and possess information and messages about education-related topics. This may make parents especially empowered to pressure decision-makers and to assert “bottom-up” pressure on elected officials and school and district leaders (Berry & Howell, 2007; Dorn, 1998). In their role as constituents, parents—especially upper-middle class and white parents - play an especially influential role in spreading information about schools within their communities, making their opinions particularly impactful on broader public opinion, and ultimately, public policy (Lareau & Munoz, 2012; Levin, 1974; Posey-Maddox et al., 2016; Welner, 2001).

Using a survey-based experiment with respondents gathered from an online marketplace, I ask three research questions:

Research Question 1: How supportive of CTE are parents, and how does this differ by parental characteristics?

Research Question 2: To what extent does exposure to different framing arguments about CTE lead to different levels of parental support for CTE?

Research Question 3: Among the five frames tested, which frames lead to the largest differences in parents' support for CTE (in both positive and negative directions) when compared to support among those parents receiving a neutral description of CTE?

I also collect demographic and other information about the respondents in order to consider who is more or less likely to express support for CTE, and to understand whether certain frames appeal

¹ Due to data limitations, this analysis uses survey respondents who self-identify as parents, which may not capture the full breadth of family members who make education-related decisions for their students.

more or less to respondents with certain characteristics. For example, given the legacy of race-based tracking of students into vocational courses that limited college opportunity, I might expect that Black parents would be less supportive of CTE, especially when CTE is framed around a message of inequality or college access/preparation. Drawing on Kinder and Sanders (1996), individuals who place particular weight on equality, Democrats, and more liberal parents might be especially uncomfortable with CTE when prompted to consider that CTE inherently introduces differentiation into schools. Conversely, those who believe in individualism (along with Republicans and more conservative parents) may be especially attracted to CTE when prompted with a frame about individualism and personal choice.² Given their own demonstrated commitment to education, parents with higher levels of education might have especially negative impressions of CTE when it is framed as something that limits preparation for and access to college. Moreover, lower-income parents may be especially sensitive to economic frames, while higher-income parents may have less concerns about their students' economic security and may have more leeway to be moved by value-based arguments. Research question 4 considers the existence of these relationships, among others:

Research Question 4: To what extent do parents with different personal characteristics (by gender, race/ethnicity, number of children, partisanship, ideology, education, urbanicity, and income) respond heterogeneously to different frames?

For policymakers, researchers, advocates and opponents of CTE, these questions allow for a stronger understanding of what parents are looking for from CTE (e.g., what makes CTE appealing or less appealing), how does the way CTE is presented impact support, and how do these relationships differ across different populations.

Data and Methods

In order to test these hypotheses, I conducted a survey-based experiment using Lucid Technologies in which respondents are randomly presented with different frames for considering CTE, and then asked a series of questions about CTE. This experimental approach, where everything about respondents should be equal on average—with the exception of the CTE frame they receive—allows for any differences in their opinions to be attributed to the frame they received.

In recent years, there has been an increase in research using online marketplaces to conduct experiments, particularly in political science. Researchers pay a small amount to subjects who participate in studies and are able to deploy experiments more quickly and at lower costs. There are a range of platforms that offer these services and have been widely used in market research and increasingly used in academic research (Coppock, 2019; Strange et al., 2019). By far the most prominent of these online marketplaces is Amazon's Mechanical Turk (MTurk) platform. Researchers post "jobs" with an expected time to complete and payment, which can then be selected and completed by MTurk participants (who can be anyone with an Amazon account and who meet the eligibility criteria laid out by the researcher). MTurk has been widely used in political science, and while there are open questions about the generalizability of results from MTurk to the broader population (MTurk participants are especially young, white, and highly-educated, for example), several studies have found that studies using MTurk and similar platforms have strong internal validity. Berinsky et al. (2012) and Strange et al. (2019), for example, replicate several classic social science experiments and find very similar results to the original studies using traditional samples.

² In U.S. politics, conservatives and Republicans have traditionally emphasized personal choice and a limited role for government in their political messaging, while liberals and Democrats tend to be more favorable towards collectivism and government intervention (Eriksson, 2018; Kinder & Sanders, 1996).

Meta-analyses conducted by Coppock (2019) also shows strong rates of replication, and Berinsky et al. (2012) shows that respondents recruited via MTurk are often more representative than convenience samples often used in public opinion studies.

While MTurk is the most commonly used platform, this study uses Lucid, which offers several advantages over MTurk. First, Lucid allows the researcher to obtain a sample that is representative to their population of interest according to select demographic characteristics; this avoids some of the unrepresentativeness seen in MTurk samples. Second, unlike MTurk, where all participants participate only after signing up through MTurk, Lucid aggregates participants through a variety of sources (for example, respondents might come to Lucid through a retail store to earn gift cards, or a credit card company to earn reward points). In 2015, more than 30 million unique individuals participated in at least one Lucid study (Coppock & McClellan, 2019). Finally, by using Lucid, I alleviate some of the concerns researchers have raised about “professional survey respondents” on MTurk (Chandler et al., 2015; Rand et al., 2014) since participants come from multiple sources (and are often unaware they are participants in Lucid studies)³. Finally, in studies comparing original, traditionally-collected samples, Lucid has been found to produce samples that more closely approximate national population estimates and more closely replicate experimental results than MTurk (Coppock & McClellan, 2019).

Survey Instrument

Before collecting data for this study, I first conducted strength of framing testing with 14 pre-pilot respondents where I asked respondents to rate (regardless of their own agreement or disagreement) how strong the language in each frame was, with the goal of creating frames that were relatively similar in both linguistic structure and comparability of treatment strength. After some slight modifications, I then conducted a pilot study in March 2019 with 244 respondents recruited via MTurk in order to gauge feasibility, help identify sample sizes that would be needed to obtain adequate statistical power, and identify any survey components that may have been interpreted by respondents differently than anticipated. After making slight changes, I then conducted six cognitive interviews in which I asked respondents to discuss their thought processes as they went through the survey, to ensure that respondents were interpreting the survey in the way I anticipated, without confusing or misleading language.

Respondents were recruited and compensated through Lucid clients (such as rewards point companies) for their time and participation (see an example of a recruitment message in Appendix A). Potential respondents were required to be a U.S. resident, above 18 years of age, parent to at least one child, and agree to participate in the study. After consent, each respondent was randomly assigned via simple random sampling into either a control condition or one of five treatment conditions. All respondents then received the following brief description about CTE that was designed to be objective and value-neutral:

One common category of courses in high schools today is known as "Career and Technical Education." Career and Technical Education courses (including Vocational Education courses) are designed to provide students with the knowledge, skills and training needed for specific career paths (such as Manufacturing, Health Sciences, Construction, and Information Technology (IT)).

³ For this study, participants were given information about the study prior to their participation and given the opportunity to provide informed consent, per Institutional Review Board guidelines.

Career and Technical Education typically has a hands-on component, as students often work with actual equipment, complete projects, and are trained by instructors with experience in the specific career.

Respondents who were assigned to the control group received no further information about CTE. Respondents assigned to one of the five treatment groups then received an additional framing argument at the end of the above paragraph:

Individualism: “Education experts say that Career and Technical Education can provide individual students with greater choice, as they are better able to take courses that meet their own unique needs, interests, and goals after high school.”

Inequality: “Education experts say that Career and Technical Education can create inequality in schools, as certain students may be tracked into different educational paths that set them up for different types of experiences after high school.”

Workforce Alignment: “Education experts say that Career and Technical Education can prepare students to get jobs after high school, and that it can train students to fill the types of careers that are in-demand in the workforce.”

Narrow Preparation: “Education experts say that Career and Technical Education can teach students a narrow set of technical skills that may become out-of-date or irrelevant as the economy and technology changes, which may limit students' job prospects later in life.”

College Access: “Education experts say that Career and Technical Education can take the place of some college-preparatory and academic classes for students participating in Career and Technical Education, and may make these students less likely to attend college.”

Following treatment assignment, respondents were presented with three questions, each a distinct measure of support for CTE that may capture attitudes towards CTE in different ways. The first question (referred to throughout this paper as “CTE Significance”) asked “How significant of a role should Career and Technical Education courses play in high school education?” and provided them with seven response options from “Not significant at all” to “Extremely significant.” This question was designed to have the cleanest face validity, as it is a relatively straightforward expression of the extent to which respondents believe CTE should play a role in high school, and also allows for respondents to rate their general feelings towards CTE broadly. The second question (“% School Hours in CTE”) asks respondents to weigh trade-offs within the high school curriculum, by dividing the percentage of hours “over the course of students’ time in high school” across three categories—Core Academic Courses (Math, English, Science, and Social Studies), CTE Courses, and Other Electives (such as Fine Arts, World Languages, Physical Education, and ROTC). The key variable of interest used in these analyses is the percentage of time respondents thought should be spent on CTE, weighing opportunity costs in other curricular areas. Finally, respondents are asked a third question (“Willingness to Pay for CTE”) that asks them for the maximum annual increase in taxes they would be willing to pay if the money was used to expand career and technical education in their school district, with options in \$50 increments from \$0 to \$300. This question asks respondents to consider the extent whether CTE is worthwhile enough that they would be willing to monetarily support its expansion, and may capture a somewhat different, more policy-focused dimension of support for CTE than the other two measures.

The three questions about CTE were the basis of the key dependent variables of interest and were followed by a set of demographic and attitudinal questions that I use to ensure balance in random assignment and to explore potential characteristics that might moderate the impact of the framing treatments or interact with treatments in different ways. Information was collected on respondents' gender, race, political party affiliation, ideology, urbanicity, education level, income, and age. Respondents were also asked to evaluate their child's performance in school relative to others.⁴ Finally, respondents were asked six questions each about their attitudes towards equality and individualism. These questions from the American National Election Studies ([ANES]; 2017) were used to compose a composite score for each of the two values for each respondent—allowing us to identify how strongly each respondent valued both equality and individualism (in order to consider whether the Equality and Individual frames were more impactful for respondents who scored highly in the related values). The full survey instrument can be seen in Appendix B.

Sample

Data were collected over 5 days in December 2020. A total of 2,433 respondents participated in the survey. Based on a power analyses using the PowerUp! tool (Dong & Maynard, 2013), I set a target sample size of 1890 respondents⁵, with an additional 5% (95 respondents) to provide a buffer in case some respondents had to be rejected due to failed attention checks or other concerns that might merit rejection from the sample. Assuming similar distributions and effect estimates from the pilot study hold, this would allow for 80% power to detect a one-fifth of a standard deviation or greater to be detectable for all three outcome variables. Assuming 1890 respondents, approximately 315 respondents would be randomly assigned into each of the control and five treatment arms via simple random assignment. The study sample was limited to U.S. residents over the age of 18 who are parents of students currently age 18 or under. Prior to randomization, I set initial demographic targets with Lucid that were developed to create a full sample that was representative of the U.S. population in terms of gender, race, educational attainment, partisanship, and region.⁶

In order to provide assurances that the respondents in the analytic sample participated with fidelity, several precautions were taken to enhance the quality of the analytic sample. First, Lucid automatically dropped respondents who were flagged as unlikely to be legitimate participants, including participants where multiple respondents used the same internet provider (IP) address, where participants completed the survey more quickly than plausible, or where participants failed one of the two attention checks I included in the portion of the survey where participants input their responses for the main outcomes in the study, following best practices to help identify participants who might not respond to online surveys with high levels of reliability (Aronow et al. 2020; Strange et al., 2019). All told, these security checks screened out 325 respondents from the initial pool, leaving an analytic sample of 1984. The remaining respondents spent an average of 6.9

⁴ If respondents had multiple children, they were asked to consider their child who most recently attended high school. If none of their children attended high school, they were instructed to consider their oldest child.

⁵ During the survey administration, a greater number of respondents completed the survey before the study was closed, so the actual sample size was slightly larger.

⁶ Late in the survey administration as certain demographic quotas were met, I slightly relaxed demographic targets. For example, demographic targets for respondents who were female and those who were highly-educated were met before those who were males and less educated. To reduce concerns that the male sample population would be disproportionately less-educated, I lifted education-level quotas for males. As such, while the sample is relatively similar on key characteristics, the sample is not perfectly representative of the U.S. population; in particular, it is somewhat more-educated than the population as a whole.

minutes on the survey, just under my predicted 8 minutes, alleviating concerns that respondents may have simply clicked through without reading the survey questions.

I also included two additional attention checks later in the survey to addressing concerns about growing rates of respondent inattentiveness in online surveys (Aronow et al., 2020). I found that 95.6% answered both correctly, and only 1.3% answered both incorrectly (26 respondents). Based on analyses of the time spent, I retained responses from those who failed only one attention check, but excluded those 26 who failed both. This helps provide additional assurance that respondents included in the sample read and participated with fidelity. In addition to the analyses presented here, I also performed analyses where I excluded respondents that failed only one attention check, but this did not substantively impact the results. Moreover, the time spent on the survey was similar for those who failed one attention check to those who did not, suggesting that they simply may have made an error on those questions.

In order to assess the representativeness of the sample, and to check for balance across the treatment groups, Table 1 presents descriptive characteristics for respondents randomized into each of the treatment conditions (control and the five treatment groups). As seen in the final column, the sample is similar to estimates of the U.S. parent population as a whole.⁷ Table 1 does show that the respondents are slightly younger, more educated, higher-earning, and have more children than parents nationwide. There are also differences in urbanicity and Latino/a identification, although these differences may be especially sensitive to differences in question wording and response options (Viano & Baker, 2020). While these modest differences do not pose a threat to the internal validity of the study, it should be kept in mind when considering how the results may or may not generalize.

Also evident in Table 1 is that each treatment group is similar on observable characteristics. I conducted *t*-tests to highlight where there is a statistically significant difference between a treatment arm and the control group. While there are some minor differences, on the whole, though, the treatment groups are relatively well balanced, lending support to the expectation that differences in outcomes across conditions should be attributable to treatment. As an additional balance test, I fit a set of five models for each treatment status (individualism, inequality, workforce alignment, narrow preparation, and college access) to assess whether observable characteristics predict assignment to treatment:

$$\textit{Treatment Assignment}_i = \theta + \mathbf{X}'_i\boldsymbol{\gamma} + \epsilon_i$$

where *Treatment Assignment*_{*i*} is 1 if a respondent was assigned to the given treatment, and 0 if a respondent was assigned to the control group. \mathbf{X}'_i is a set of covariates (respondents' gender, race/ethnicity, age, number of children, perceptions of child performance, urbanicity, education level, income, party identification, ideology, and two composite scores for individualism and equality from the ANES). Assuming that randomization worked in creating balanced samples, these covariates should not significantly predict assignment to treatment compared to the control condition. This check, presented in Appendix C, finds only 3 factors out of 90 (18 factors across five treatment arms) predict treatment at the .05 level, which is less than would be expected by chance (indeed, after applying corrections for multiple hypotheses testing, no characteristics predict treatment status at even the 10% level). This provides additional evidence to ease serious concerns about imbalance, again lending support to the internal validity of the inferences raised from differences across treatment condition.

⁷ Note that for some data points, national estimates on parents were not available; in these cases, Table 1 uses population (i.e., not limited to parents). These are indicated in the notes for Table 1.

Table 1*Descriptive Characteristics by Treatment Status and Balance Check*

	Control	Individualism Frame	Inequality Frame	Workforce Alignment Frame	Narrow Preparation Frame	College Prep/Access Frame	U.S. Parent Population (For Reference)
Woman	0.589	0.600	0.509*	0.510*	0.545	0.552	0.555
White	0.667	0.710	0.729+	0.706	0.706	0.688	0.722
Black	0.145	0.136	0.123	0.144	0.153	0.155	0.115
Latino/a	0.109	0.094	0.082	0.073	0.059*	0.109	0.212
Asian	0.050	0.027	0.022+	0.032	0.028	0.024	0.680
Other and Multiple Races	0.029	0.030	0.044	0.045	0.054	0.024	0.085
Age	38.065	39.308+	38.360	37.805	38.116	38.542	41.4
Number of Children	3.124	3.299+	3.338*	3.230	3.274	3.373**	2.4
Child Performance (5-pt scale)	3.725	3.737	3.791	3.747	3.831	3.761	-
Urban	0.327	0.335	0.290	0.335	0.263+	0.376	0.27
Suburban	0.383	0.384	0.397	0.444	0.441	0.397	0.52
Rural	0.289	0.281	0.312	0.220*	0.297	0.227+	0.21
HS Grad or Less	0.307	0.296	0.322	0.278	0.291	0.285	0.329
Some College	0.363	0.405	0.341	0.403	0.367	0.364	0.300
Bachelor's Degree	0.171	0.175	0.196	0.173	0.209	0.218	0.223
Advanced Degree	0.159	0.124	0.142	0.147	0.133	0.133	0.147
Income	6.201	5.915	6.404	6.444	6.144	6.373	5.495
Partisan ID (Strong D=7)	4.230	4.204	3.990	4.328	4.140	4.182	4.183
Ideology (Most Conservative=7)	4.044	3.891	4.151	3.933	4.068	4.064	4.142
Individualism Score (5-pt scale)	3.281	3.188	3.394+	3.331	3.270	3.339	-
Equality Score (5-pt scale)	3.253	3.324	3.291	3.253	3.227	3.233	-
Observations	339	331	317	313	354	330	

Notes: Each column shows descriptive means of select characteristics for the samples assigned to each treatment group. Stars indicate significant differences from the control group from a two-sided t-test: + $p < .1$, * $p < .05$, ** $p < .01$, *** $p < .001$. Column 7 represents estimates of the full U.S. population of parents. For gender, race/ethnicity, age, number of children, education, and income, estimates are of parents with children enrolled in K-12 schools from 2015-2019, as estimated by the American Community Survey population and reported by the National Center for Education Statistics (NCES, 2023a). For urbanicity, estimates are of the full adult U.S. population in (**not** only parents), as estimated by the 2017 American Housing Survey (HUD, 2020). For Partisan ID and Ideology, estimates are of the full adult U.S. population (**not** only parents) and come from the 2016 American National Election Survey (ANES) data.

Results

Descriptive Evidence of Support for CTE (Research Question 1)

Before turning to the impact of different framing messages on support for CTE, I first present descriptive evidence about the nature of support for CTE found in this study. Given the relative dearth of evidence about public opinion of CTE, the findings for this section of the study (Research Question 1) offer a unique contribution, by providing an opportunity to learn more about general levels of support for CTE among parents, as well as how this support might differ across different parent populations.

While the sample is largely representative of the population on observable characteristics, the online, relatively tech-savvy nature of Lucid participants, may place some limits in our ability to generalize these findings to a general population. However, evidence that online marketplace samples have a strong history of replicating findings from other studies (Berinsky et al., 2012; Coppock & McClellan, 2019; Strange et al., 2019) suggest that it is still worthwhile to examine these findings, though perhaps with a degree of caution regarding generalizability.

Table 2 presents mean differences by demographics for the three measures of support for CTE. Across all demographic groups examined, respondents were quite consistent in the level of significance CTE should play in high school education. The average CTE Significance rating for all groups fell between 5 (“Moderately Significant”) and 6 (“Very Significant”). Respondents in all groups averaged between 31.89 and 35.40 in terms of the percentage of school hours that should be spent on CTE. While these averages are largely similar across populations, there are some differences worth noting. For example, given the historical legacy of race-based tracking, it might be notable that Black and Latino/a parents both rate CTE slightly higher in both metrics. Suburban parents rate CTE slightly lower than both Urban and Rural parents. Meanwhile, parents with higher levels of education rate CTE as more significant, but those with less education believe more hours in high school should be spent on CTE. This suggests that the CTE significance and the percentage of time on CTE measures may be interpreted somewhat differently by respondents. For example, trade-offs between time spent on academic and CTE courses may be more concerning for more-educated parents, even if they abstractly value the significance of CTE. One other possibility is that the wording in the percentage hours question asks respondents to explicitly consider schools “in your state”, which may feel more directly related to policies affecting their own children.

Looking at the average willingness to pay across the different populations, Table 2 displays more substantial differences. Here, white and Asian parents were willing to pay the greatest increase in taxes. Comparing respondents by urbanicity, parents from urban settings willing to pay \$30.34 more than those from rural settings (with suburban parents in between). Differences are most stark when considering parents’ educational attainment, with those holding advanced degrees willing to pay \$86.54 more than those with a high school degree or less. While these differences in willingness to pay across educational attainment may largely reflect a greater degree of financial stability, it is worth noting that support for taxes to pay for CTE is especially strong among those with higher education.

Next, in Table 3, I present predictors of support for CTE from the following models:

$$(2) \text{ CTE Significance}_i = \theta + \mathbf{X}'_i\boldsymbol{\gamma} + \epsilon_i$$

$$(3) \text{ CTE Percent Hours}_i = \theta + \mathbf{X}'_i\boldsymbol{\gamma} + \epsilon_i$$

$$(4) \text{ CTE Taxes}_i = \theta + \mathbf{X}'_i\boldsymbol{\gamma} + \epsilon_i$$

In these models, support for CTE (again using the three measures from the survey—CTE Significance, CTE Percentage Hours, and CTE Taxes) is a function of respondents' gender, race/ethnicity, age, number of children, their perceived school performance of their children, urbanicity, level of education, and income. Given that multiple hypotheses are being tested, I employ corrections to limit concerns that significant findings are simply due to chance (type 1 error) by using Romano-Wolf stepdown p-values (Clarke, 2021; Romano & Wolf, 2016). In Table 3, coefficients that are bolded and underlined represent predictors that are significant using conventional p-values, while coefficients with stars also meet the more conservative test with multiple hypothesis corrections.

Table 2*Average Support by Demographic Group*

	CTE Significance (7-pt scale)	CTE % of School Hours	CTE Willingness to Pay (\$)
Overall	5.59	33.88	90.10
Female	5.58	33.56	79.12
Male	5.61	34.27	103.83
White	5.59	33.81	93.17
Black	5.64	34.16	82.86
Latino/a	5.64	34.62	84.77
Asian	5.49	31.89	93.44
Multiple/Other Races	5.40	33.89	71.33
Urban	5.71	34.84	107.15
Suburban	5.47	32.12	85.54
Rural	5.64	35.40	76.81
HS Degree or Less	5.46	34.67	63.10
Some College	5.60	34.65	79.02
Bachelor's Degree	5.63	31.96	110.19
Advanced Degree	5.81	32.79	149.64
Low-Income	5.49	34.50	65.53
Middle-Income	5.62	34.26	90.59
High-Income	5.73	32.02	134.82
Democrats	5.64	33.95	100.00
Independents	5.56	33.87	83.96
Republicans	5.56	33.83	82.65
Liberals	5.66	33.57	110.35
Moderates	5.50	33.63	80.14
Conservatives	5.66	34.56	85.98
Observations	1984	1984	1984

Notes: Each column shows descriptive mean support for CTE using the three measures of support for CTE, by respondent characteristics.

As with Table 2, Table 3 highlights some consistently predictive factors, while also adding evidence that the three measures may be picking up somewhat different dimensions of support. Living in an urban area, for example, appears to positively predict support for CTE across all measures, even when controlling for other measures, including as education and income. Similarly, living in a rural area positively predicts both CTE significance and CTE time in school, but not a greater willingness to pay increased taxes for CTE.

Table 3

Predicting Support for CTE by Respondent Characteristics (Regardless of Treatment)

	CTE Significance	CTE % of School Hours	Willingness to Pay for CTE (\$)
Women	0.048 (0.062)	-1.682 (0.691)	-5.474 (4.060)
Black	0.103 (0.086)	-0.114 (0.953)	1.344 (5.605)
Latino/a	0.090 (0.103)	0.212 (1.147)	-0.366 (6.743)
Asian	-0.080 (0.167)	-0.445 (1.851)	-7.424 (10.882)
Other and Multiple Races	-0.178 (0.151)	-0.188 (1.678)	-12.668 (9.868)
Age	-0.004 (0.003)	-0.136** (0.037)	-1.069** (0.217)
Number of Children	0.010 (0.024)	-0.164 (0.262)	-0.074 (1.538)
Child Performance (5-pt scale)	0.049 (0.031)	-0.205 (0.341)	1.457 (2.003)
Urban	0.201 (0.069)	2.410+ (0.765)	14.798+ (4.495)
Rural	0.223+ (0.073)	3.003* (0.807)	5.683 (4.747)
Some College	0.138 (0.071)	0.482 (0.794)	12.288 (4.667)
Bachelor's Degree	0.140 (0.096)	-1.985 (1.065)	28.800** (6.264)
Advanced Degree	0.267 (0.113)	-1.566 (1.259)	57.456** (7.402)
Income (12-pt scale)	0.019 (0.011)	-0.000 (0.122)	4.686** (0.716)
Constant	5.156*** (0.203)	40.182*** (2.251)	77.140*** (13.237)
Observations	1984	1984	1984

Notes: Each column represents the coefficients and standard errors associated with each respondent characteristic, from being Ordinary Least Squares regression, in which each of the specified outcomes of interest (CTE Significance Rating [1-7], % of School Hours that should be CTE-focused, and Support for Proposal to increase CTE spending [1-7]) is the outcome. These models include all respondents, without regard to treatment status. Coefficients that are bolded and underlined indicate characteristics that significantly predict (at a 5% significance level) support for the given CTE support measure. Stars represent statistical significance at the following levels after correcting for multiple comparisons, using Romano-Wolf step-down adjusted p-values: + $p < .1$, * $p < .05$, ** $p < .01$.

Table 3 also shows that older parents believe that students should spend less time in CTE, and are less willing to pay additional taxes for CTE. While it is beyond the scope of this paper to understand *why* older adults are less supportive, one potential hypothesis is that older adults might be more influenced by previous iterations of “vocational” education, prior to the more recent re-branding to “CTE” and the accompanying focus on academic rigor, STEM, and preparation for both career and college in more recent years.

Perhaps most interesting is education; having higher levels of education predicts greater willingness to pay for CTE and suggestively predicts higher CTE significance levels, but more education does *not* predict the amount of time in school. One potential explanation is that some respondents might view the “CTE Significance” and the “Willingness to Pay for CTE” measures as support for CTE as a *policy*, while the “CTE % of School Hours” measure might induce some respondents to consider their own children and school more specifically. In other words, having an advanced degree might predict higher levels of support and willingness to pay for CTE, but might not predict how parents with higher levels of education think CTE should be administered in their children’s schools.

Results from Experiment (Research Questions 2 and 3)

Panels A, B, and C in Figure 2 show the average responses for each of the three measures of support for CTE, by treatment condition (Research Questions 2 and 3). Each bar includes a 95% confidence interval, and the scale of the y-axis represents a half standard deviation in either direction from the overall mean for that measure.

Panel A (Figure 2) shows that while differences between treatment groups are mainly in the expected direction (with those receiving positive frames saying CTE is more significant than the control group, and those receiving negative frames saying CTE is less significant than the control group), none of these differences are statistically significant, even at the .10 level. One curious finding is that those receiving a frame that CTE might reduce college access for some groups actually rated CTE the most significant of any group, although again, this difference was not significant.

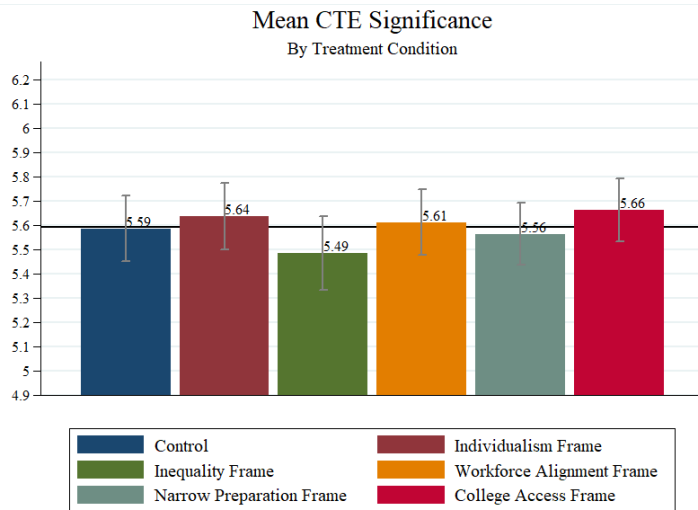
Panel B (Figure 2), examining the percentage of hours students should spend in CTE, illustrates similar findings as Panel A, with small differences in the expected direction, but no significant differences. Interestingly, with this potentially more proximal measure, the college access frame no longer shows the highest support, as in the potentially more abstract measure in Panel A.

Panel C (Figure 2) presents differences in willingness to pay taxes for CTE by treatment group, and shows quite different results from Panel A & Panel B. Here, respondents assigned to the “Workforce Alignment” treatment are willing to pay \$16.40 more than the control group, with all other treatment groups essentially the same as the control. Simple t-test differences of means suggest that the difference is suggestively significant at the .10 level.

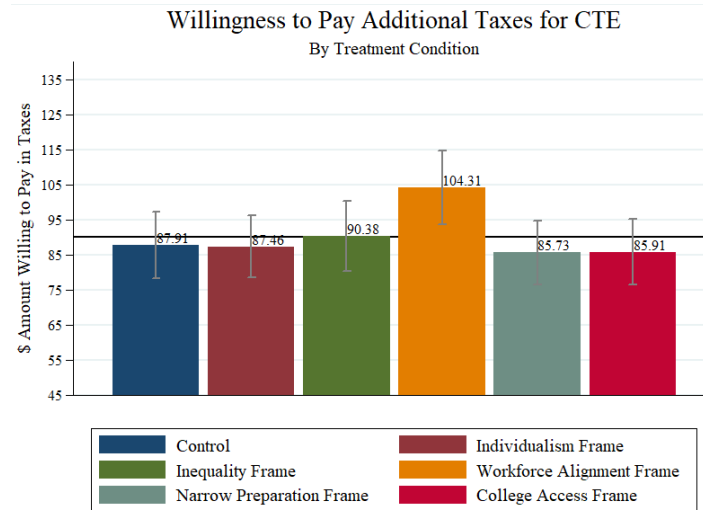
Figure 2

Support for CTE by Measure of Support and Treatment Condition

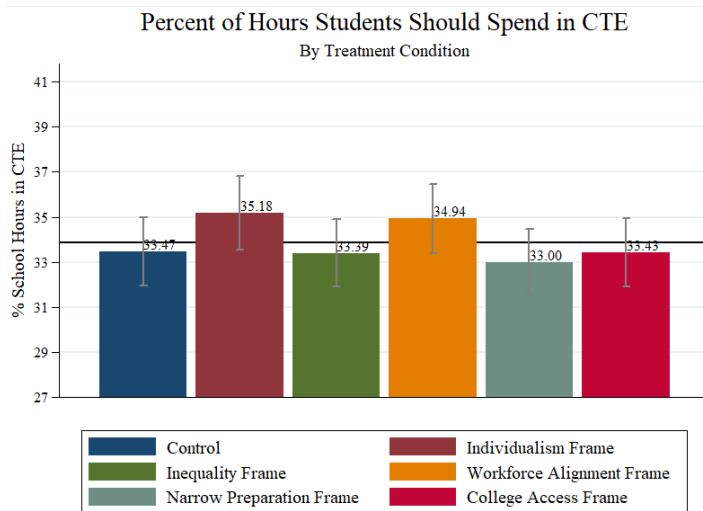
Panel A



Panel C



Panel B



Notes: Each bar represents the mean response for the measure of CTE support (CTE significance in Panel A, Percentage hours CTE in Panel B, and Willingness to pay in Panel C), as reported for each treatment group. Bars represent 95% confidence intervals. The y-axis ranges shown here represents approximately 1 standard deviation among all respondents. The thick black horizontal line represents the mean across all respondents.

In addition to comparing mean differences in outcomes, I also present results in Appendix D from a regression-based framework:

$$(5) \text{ CTE Significance}_i \\ = \beta_0 + \beta_1 \text{Individualism}_i + \beta_2 \text{Inequality}_i + \beta_3 \text{Workforce}_i \\ + \beta_4 \text{NarrowPrep}_i + \beta_5 \text{College} + \epsilon_i$$

$$(6) \text{ CTE Percent Hours}_i \\ = \beta_0 + \beta_1 \text{Individualism}_i + \beta_2 \text{Inequality}_i + \beta_3 \text{Workforce}_i \\ + \beta_4 \text{NarrowPrep}_i + \beta_5 \text{College} + \epsilon_i$$

$$(7) \text{ CTE Taxes}_i \\ = \beta_0 + \beta_1 \text{Individualism}_i + \beta_2 \text{Inequality}_i + \beta_3 \text{Workforce}_i \\ + \beta_4 \text{NarrowPrep}_i + \beta_5 \text{College} + \epsilon_i$$

For each model, support for CTE (for each of the three measures) is a function of a set of indicators for treatment that are equal to 1 if respondent i was selected for that treatment and 0 if they were not. β_0 represents the average support for CTE among respondents assigned to the control group, and ϵ_i represents residual error. In these models, $\beta_1 - \beta_5$ are the coefficients of interest and represent the effect of being assigned to each treatment group. Columns I-III display the results from these models. Given the minor imbalance in observable characteristics seen in Table 1 and Appendix C, I also fit models identical to models 5-7 except with the addition of a vector $\mathbf{X}'_i\boldsymbol{\gamma}$ of observed covariates (gender, race/ethnicity, age, number of children, their perceived school performance of their children, urbanicity, level of education, and income) as controls. These models, displayed in columns IV-VI, serve as an additional check of the robustness of the findings to any potential concerns of imbalance among treatment groups. While there are small differences across the two sets of estimates, results from columns I-III and IV-VI are very similar, as expected.

Appendix D again highlights the strongest evidence of a treatment effect when considering the impact of workforce alignment frame on respondents' willingness to pay, with respondents receiving this frame expected to pay \$14.93-\$16.41 more than those in the control (suggestively significant at the .10 level).

Heterogeneity Analysis (Research Question 4)

Finally, Appendix E presents results from exploratory moderator analysis meant to help uncover potential personal characteristics that may make respondents more inclined to react—either positively or negatively to a given frame (Research Question 4). For this analysis, I leverage all the data collected in the survey instrument, all of which were characteristics I collected because history or theory suggested the characteristics may provide relevant information about how a parent might consider CTE or engage in distinct ways to the different frames. For example, I might expect that respondents scoring highly on the composite score for inequality might be even more likely to lose support for CTE when provided with an argument that CTE could exacerbate inequality. Similarly, parents from racially minoritized backgrounds who have been subject to race-based tracking might also be especially sensitive to frames about inequality or limits to college access.

I fit a series of models similar to models 5-7 in which the three measures of CTE support are a function of a given personal characteristic \mathbf{X} of respondent i , a series of treatment indicators equal to 1 if a respondent was assigned that treatment and 0 if not, and the interaction between the personal characteristic and treatment indicator. In order to consider the possibility that a given treatment was differentially impactful for respondents with a given characteristic, the coefficient of interest is attached to the interaction term. I fit these models for all characteristics listed in Table 2,

though I only show those with statistical significance of at least $p < .10$ in Appendix E. As this portion of the analysis more exploratory, I do not report significance levels adjusted for multiple hypotheses testing here, and instead report unadjusted significance levels here. As such, the findings in this section should be treated as simply suggestive, given that some statistically significance relationships may be identified by chance, given the very large number of hypotheses tested.

The results in Appendix E, while exploratory in nature, raise several interesting suggestive findings worth highlighting, with interaction terms in bold. For example, looking first at Section A, we see that while Republican parents say CTE is more significant when it is framed as a policy that may limit college access/preparation. In fact, this is the only frame that significantly interacts with Republican status; this may be especially noteworthy given some of the previously discussed Republican politicians' messaging that explicitly pits CTE as an alternative to college. Moreover, the seeming success of an anti-college frame among Republicans may speak to increasingly negative attitudes towards higher education among the Republicans (Pew, 2017). Conversely, the college access frame was received especially negatively by Democrats (Section C). Interestingly, in both of these cases, the interaction between these frames and partisan identification was only significant for the most symbolic of the measures, with no significant evidence of differential impact on the more tangible measures of how to allocate time in school and how much to pay in taxes.

Sections D-G highlight the frames that interacted in significant ways with parents' educational attainment. Perhaps indicating a population likely to be especially sensitive to labor market trends, those with only some college education were especially positively inclined when CTE was presented as something that could prepare students for in-demand jobs; meanwhile, those with advanced degrees responded especially negatively to this frame, perhaps indicating that parents with different levels of education may be looking for something different from high schools. Similarly, those with advanced degrees responded especially negatively when CTE was presented as something that could limit college access; this negative interaction was especially stark in the percentage of hours highly-educated parents felt should be spent on CTE in schools in their state. However, this negative interaction (also seen among high income parents in Section J) did not occur with the willingness to pay measure, adding to the suggestive evidence about how highly-educated may consider CTE differently when thinking about it as fiscal policy, rather than something happening in schools.

Combining the findings by partisanship and by education level, these findings suggest that Democrats, those with advanced degrees, and higher income parents might be especially susceptible to critiques about CTE when CTE is framed around workforce development and/or in explicit opposition to college, while a college-based frame may be less resonant for Republicans, lower-income, and less-educated parents.

Sections K and L highlight interesting differences in how men and women responded to different frames. Though Table 3 shows that men were descriptively willing to pay more in taxes, this gap is tightened substantially by three frames, in particular the two value-based frames and the frame warning about long-term concerns from narrow preparation and skill development in CTE.

I also find notable difference by race in Sections M and N. For example, white parents respond less favorably to framing CTE around individualism, concerns about inequality, or narrow preparation than non-white parents. Perhaps counterintuitively given concerns about negative tracking, Latino/a parents actually respond especially favorably to a frame that says CTE will lead to different opportunities for different students. The individualism frame was received especially positively by parents who identified with multiple races or self-identified another race. Also notable is that Black respondents did not interact significantly differently to any of the respondents; given a legacy of tracking and racial inequities, one might expect that inequality or college access frames

might be particularly powerful for Black parents; however, I find no evidence to support that hypothesis.

Finally, Sections Q through T assess the degree to which respondents with certain values were differentially impacted by these frames. Sections Q and R illustrate that those who highly value individualism are especially favorable to CTE when it is presented through a workforce alignment frame. The frame explicitly focused on individualism did not see any significantly different response from this group, however. Sections S and T, meanwhile, highlight that the extent to which respondents valuing equality seems to be a strong predictor of how parents responded to several of the frames, including the inequality frame.

Conclusions and Discussion

This article provides a new framework (Figure 1) to organize the different ways in which CTE can be discussed in the public sphere by policymakers, advocates, and opponents of CTE. CTE can be framed in terms of values (inequality or individualism), economics (workforce alignment and narrow preparation), or can be directly related to college access and preparation, which has come to play a central role in high school. Descriptively (see Tables 2 and 3), I find high levels of support from parents, regardless of the ways in which CTE is framed. Given the historical legacy of race-based tracking, I find surprisingly little evidence of different levels of support for CTE by race, though some evidence of stronger support among urban parents and those with advanced levels of education. It is important to note that CTE today (at the national level) is no longer primarily populated by racially minoritized students, with White and rural students actually overrepresented (Ecton, 2023). Judging by the similar levels of support for CTE across racial groups found here, this may also suggest that race-based stigma about CTE may not be present at the same levels as in previous eras.

CTE has worked hard to shed connotations from previous eras about low-quality vocational education, is more STEM-focused than in past eras, and emphasizes that CTE should prepare students for both career and college (Dougherty & Lombardi, 2016; Malkus, 2019). Moreover, recent evidence suggests that outcomes for CTE students differ widely across CTE programs and in different settings (Ecton & Dougherty, 2023), so parents might have quite different frames of reference when thinking about what CTE is and what it means for students. As CTE aims to increase its quality and level of rigor, it is worth further study to understand how parents might view different types of CTE differently (for example, how would parents respond differently when prompted to think only about traditional trades like manufacturing and construction, compared to information technology and healthcare).

While the experiment yielded primarily null results (see Figure 2 and Appendix D), these findings do provide some suggestive evidence that the ways high school CTE is framed might play a role in impacting parents' attitudes, including about their willingness to pay additional taxes for CTE. Of all the framing messages tested, only the frame focused on workforce alignment showed a significant impact, and even then, only in connection to respondents' willingness to pay higher taxes.

It is notable that support for taxes encountered the most support when CTE was framed as explicitly linked to jobs and workforce development in the local area. This frame presented CTE as an economic policy lever, rather than just an educational one. However, this workforce development frame did not result in increased support for the other two measures in which support for CTE was placed more explicitly within the confines of school policy. This finding could have several implications. First, supporters of CTE might expect to find policy success when connecting CTE to workforce outcomes and to labor market needs in local communities. This seems to align with the

messaging campaigns of many politicians of both parties in recent years (Lee, 2018; Raimondo, 2018; among others). Second, detractors of CTE have sometimes argued that people who support CTE often do so when framed as a broader societal policy, but are less likely to support CTE for their own children. This finding suggests that there may be some truth to that, at least when CTE is framed as a workforce development program meant to connect students to jobs. Given CTE history of tracking students in ways that limited opportunity for certain groups (particularly racially minoritized students, students with disabilities, and female students), this is an important topic that deserves more attention from future research.

Although most treatment effects were not significant, there is still something to be learned from comparing results for the different frames. Compared to the workforce alignment frame, it is worth noting that the more value-based frames (around inequality and individualism) were less effective in moving support for CTE. There was some suggestive evidence that the individualism frame may have modestly increased the percentage of school hours parents wanted to spend on CTE, but all told, there was little evidence that these value-based frames impacted support. Similarly, the narrow preparation frame showed no signs that the argument that skills becoming obsolete was especially resonate.

Next, perhaps the most commonly raised critique of CTE has long been that it can limit access to college preparatory classes and impede access to college. It comes as somewhat of a surprise, then, that this frame showed no sign of any impact. Setting aside questions of statistical significance, even directional results did not point to the frame leading to a decline in support. In fact, respondents receiving this frame actually gave CTE the *highest* significance rating (though, again, this difference was not significant). For detractors of CTE, this finding (combined with the lack of negative movement from the inequality frame) might raise questions about whether longstanding arguments that frame CTE as promoting inequity and unequal access to college preparation still hold the greatest potential for turning parents against CTE.

There could be several potential reasons that these frames were less impactful than anticipated. One is that the argument that paints CTE in opposition to equality and college-going could already be baked in, to a certain extent. Parents may already be familiar with the idea of school-based tracking and exposure to different pathways (both from their own experiences in school and from their children's experiences), and so this frame may not provide a new argument that re-shapes their thinking about CTE. However, if this is the case, it suggests that parents, on the whole, accept some degree of sorting and unequal access to college preparation in high school, given the high overall levels of support for CTE found in this study. Another possible reason that the college access frame and inequality frame did not negatively impact support could be that some parents may actually view a degree of inequality and different levels of college preparation as acceptable or even positive. This could be for many reasons, ranging from some parents' support for a meritocratic or signaling role that education can play in society, to parents' experiences with different children having different needs (indeed, those parents with more children *do* appear more supportive of CTE), to more pernicious motivations, like a desire to keep students separated by race or disability status. While inequality may have a very specific and negative connotation among many especially in the research and education communities, it may be that parents are more comfortable with some degree of differentiation in students' curriculum, though this is worth more exploration.

Moreover, additional exploratory moderator analyses (see Appendix E) showed that certain framing messages were particularly impactful for certain populations of parents. One particularly interesting finding was that Democrats and those with advanced degrees responded especially negatively to the frame about CTE as an obstacle to college preparation and access. While Democrats and those with higher levels of education were generally quite supportive of CTE, the college access frame was especially likely to give them pause. Although this frame did not negatively

impact support for CTE among the *full* sample, it did among Democrats and those with more education, making the college access frame a potentially powerful message among certain populations likely to be highly-engaged in Democratic politics and policy debates.

Finally, while this study aimed to test the impact of different framing messages, the descriptive findings in Tables 2 and 3 are still notable. Given the historic legacy of negative race-based tracking and CTE, it might be surprising to see such strong support for CTE among racially minoritized, particularly Black, parents, with levels of support similar to that among white parents. Similarly, support for CTE is especially high in both urban and rural settings, with lower levels of support among suburban parents. I do find some descriptive evidence to support the hypothesis that higher-income and more educated parents might support CTE as a general policy, but might be less likely to support CTE at their own students' schools. In other words, the descriptive findings in this study do not contradict the notion that some highly-educated parents might support CTE "for other people's kids." However, this pattern appears to be largely concentrated among the most educated parents, and should not be interpreted to mean that *all* parents exhibit support for CTE, but not at their own children's school.

While more investigation needs to be done, this study provides some of the strongest evidence to date about parents' level of support for CTE in a modern U.S. context, while also highlighting the relative similarly support across a wide swath of parent characteristics. Moreover, this study provides initial evidence that economic frames can impact parents' attitudes about CTE more than value-based frames. This would be especially useful to advocates and opponents of CTE as they craft their policy narratives and messaging campaigns, as well as policymakers engaging with the topic. Furthermore, qualitative research would help uncover nuance and complexity in how and why various frames make people think differently about CTE. Ultimately, a better understanding of parents' attitudes about CTE will help policymakers to offer CTE programming that is more responsive to parents' goals for their children's education.

More broadly, this research speaks to ongoing debates about the role of education within American society, and the sometimes-conflicting forces of equity in a capitalist and increasingly diversified economy. By tracing historical and contemporary public discourse about CTE, I offer a framework for the ways in which high school CTE might be discussed by supporters and opponents, and explore the ways this might matter in shaping public opinion. As Career and Technical Education rises in prominence within contemporary education policy agendas, the ensuing debates ultimately have wide-reaching implications for the ways we prepare students for adulthood, and will shed light on the values and principles that we employ to mold the future of our workforce and society.

References

- ACT. (2006). *Ready for college and ready for work: Same or different?* Retrieved from <https://files.eric.ed.gov/fulltext/ED491591.pdf>
- Advance CTE. (2017). *The value and promise of career and technical education: Results from a National Survey of Parents and Students*. https://cte.careertech.org/sites/default/files/files/resources/The_Value_Promise_Career_Technical_Education_2017.pdf
- American National Election Studies. (2017). *ANES 2016 Time Series Study*. Inter-university Consortium for Political and Social Research. <https://electionstudies.org/data-center/2016-time-series-study/>

- Anderson, J. (1982). The historical development of Black vocational education. In H. Kantor & D. B. Tyack (Eds.), *Work, youth and schooling: Historical perspectives on vocational education* (pp. 180-222). Stanford University Press.
- Aronow, P., Kalla, J., Orr, L., & Ternovski, J. (2020). *Evidence of rising rates of inattentiveness on Lucid in 2020*. [Paper]. SocArXiv. <https://doi.org/10.31235/osf.io/8sbe4>
- Autor, D. (2019). *Work of the past, work of the future* (Vol. 109). National Bureau of Economic Research. <https://doi.org/10.3386/w25588>
- Berinsky, A., Huber, G., & Lenz, G. (2012). Evaluating online labor markets for experimental research: Amazon.com's Mechanical Turk. *Political Analysis*, 20, 351-368. <https://doi.org/10.1093/pan/mpr057>
- Berry, C., & Howell, W. (2007) Accountability and local elections: Rethinking retrospective voting. *Journal of Politics*, 69(3), 844–858. <https://doi.org/10.1111/j.1468-2508.2007.00579.x>
- Bowles, S., & Gintis, H. (1976). *Schooling in capitalist America*. Basic Books.
- Caplan, B. (2018). *The case against education: Why the education system is a waste of time and money*. Princeton University Press.
- Cellini, S. (2006). Smoothing the transition to college? The effect of tech-ed programs on educational attainment. *Economics of Education Review*, 25, 304-411. <https://doi.org/10.1016/j.econedurev.2005.07.006>
- Chandler, J., Paolacci G., Peer E., Mueller, P., & Ratliff, K. (2015). Using nonnaive participants can reduce effect sizes. *Psychological Science*, 26(7), 1131–1139. <https://doi.org/10.1177/0956797615585115>
- Chong, D., & Druckman, J. N. (2007). A theory of framing and opinion formation in competitive elite environments. *Journal of Communication*, 57(1), 99-118. <https://doi.org/10.1111/j.1460-2466.2006.00331.x>
- Clarke, D. (2021). *RWOLF2: Stata module to calculate Romano-Wolf stepdown p-values for multiple hypothesis testing*. Statistical Software Components S458970, Boston College Department of Economics.
- Clinton, J., & Grissom, J. (2015). Public information, public learning and public opinion: Democratic accountability in education policy. *Journal of Public Policy*, 35(3), 358-385. <https://doi.org/10.1017/S0143814X14000312>
- Cohen, M., & Besharov, D. (2002). *The role of career and technical education: Implications for the federal government*. Office of Vocational and Adult Education, U.S. Department of Education. <https://www.govinfo.gov/app/details/ERIC-ED466939>
- Coppock, A. (2019). Generalizing from survey experiments conducted on Mechanical Turk: A replication approach. *Political Science Research and Methods*, 7(3), 613-628. <https://doi.org/10.1017/psrm.2018.10>
- Coppock, A., & McClellan, O. (2019). Validating the demographic, political, psychological, and experimental results obtained from a new source of online survey respondents. *Research and Politics*, 2019(1), 1-14. <https://doi.org/10.1177/2053168018822174>
- DeVos, B. (2018, May 22). *Statement of Betsy DeVos, Secretary of Education before the Committee on Education and the Workforce*. United States House of Representatives. https://edworkforce.house.gov/uploadedfiles/testimony_devos_5.22.18.pdf
- Dong, N., & Maynard, R. (2013) PowerUp! A tool for calculating minimum detectable effect sizes and minimum required sample sizes for experimental and quasi-experimental design studies. *Journal of Research on Educational Effectiveness*, 6(1), 24-67. <https://doi.org/10.1080/19345747.2012.673143>
- Dorn, S. (1998). The political legacy of school accountability systems. *Education Policy Analysis Archives*, 6(1), 1–33. <https://doi.org/10.14507/epaa.v6n1.1998>

- Dougherty, S., & Lombardi, A. (2016). From vocational education to career readiness: The ongoing work of linking education and the labor market. *Review of Research in Higher Education, 40*, 326-355. <https://doi.org/10.3102/0091732X16678602>
- Dowdy, L. (2016, March 15). *You don't need a college degree to earn \$70K in your first year*. CNBC.com. <https://www.cnbc.com/2016/02/02/you-dont-need-a-college-degree-to-earn-a-living.html>
- Druckman, J. (2001). Evaluating framing effects. *Journal of Economic Psychology, 22*(1), 91-101. [https://doi.org/10.1016/S0167-4870\(00\)00032-5](https://doi.org/10.1016/S0167-4870(00)00032-5)
- Ecton, W. (2023). Career, technical, and higher-education opportunities for traditionally underserved students. In G. Brown & C. Makridis (Eds.), *The economics of equity in K-12 education: Connecting financial investments with effective programming* (pp. 69-96). Rowman & Littlefield.
- Ecton, W., & Dougherty, S. (2023). Heterogeneity in high school career and technical education outcomes. *Educational Evaluation and Policy Analysis, 45*(1), 157-181. <https://doi.org/10.3102/01623737221103842>
- Eriksson, K. (2018). Republicans value agency, Democrats value communion. *Social Psychology Quarterly, 81*(2), 173-184. <https://www.jstor.org/stable/48588659>
- Farrington, R. (2022, February 22). Trade schools vs. traditional college: What you should know. *Forbes*. <https://www.forbes.com/sites/robertfarrington/2022/02/21/trade-schools-vs-traditional-college-what-you-should-know/?sh=42d6098c7638>
- Fishman, R., Nguyen, S., & Woodhouse, L. (2022). *Varying degrees 2022: New America's Sixth Annual Survey on Higher Education*. New America. <https://www.newamerica.org/education-policy/reports/varying-degrees2022/>
- Grubb, W., & Lazerson, M. (1982). Education and the labor market: Recycling the youth problem. In H. Kantor & D. B. Tyack (Eds.), *Work, youth and schooling: Historical perspectives on vocational education* (pp. 110-141). Stanford University Press.
- Grubb, W., & Lazerson, M. (2005). Vocationalism in higher education: The triumph of the Education Gospel. *Journal of Higher Education, 76*, 1-25. <https://www.jstor.org/stable/3838750>
- Hanushek, E., Schwerdt, G., Woessmann, L., & Zhang, L. (2017). General education, vocational education, and labor-market outcomes over the lifecycle. *Journal of Human Resources, 52*(1), 48-87. <https://doi.org/10.3368/jhr.52.1.0415-7074R>
- Hemelt, S., Lenard, M., & Paepflow, C. (2019). Building bridges to life after high school: Contemporary career academies and student outcomes. *Economics of Education Review, 68*, 161-178. <https://doi.org/10.1016/j.econedurev.2018.08.005>
- Herian, M. (2010). *Examining public perceptions of career and technical education in Nebraska*. University of Nebraska Public Policy Center. <https://digitalcommons.unl.edu/publicpolicypublications/35>
- Holzer, H., & Baum, S. (2107). *Making college work: Pathways to success beyond high school*. Brookings Institution Press.
- Housing and Urban Development (HUD) Office of Policy Development and Research. (2020). *The 2017 AHS neighborhood description Study*. <https://www.huduser.gov/portal/AHS-neighborhood-description-study-2017.html>
- Hudson, L. (2014). *Trends in CTE coursetaking*. [NCES Report, No. 2014-901]. National Center for Education Statistics, Institute of Education Sciences, US Department of Education. <https://files.eric.ed.gov/fulltext/ED544453.pdf>
- Kam, C., & Simas, E. (2010). Risk orientations and policy frames. *The Journal of Politics, 72*(2), 381-396. <https://doi.org/10.1017/S0022381609990806>

- Kemple, J. J., & Willner, C. J. (2008). *Career academies: Long-term impacts on labor market outcomes, educational attainment, and transitions to adulthood*. MDRC.
https://www.mdrc.org/sites/default/files/full_50.pdf
- Kessler, G., & Ye Hee Lee, M. (2015, November 10). Fact checking the fourth round of GOP debates. *The Washington Post*. <https://www.washingtonpost.com/news/fact-checker/wp/2015/11/11/fact-checking-the-fourth-round-of-gop-debates/>
- Kinder, D., & Sanders, L. (1990). Mimicking political debate with survey questions: The case of white opinion on affirmative action for blacks. *Social Cognition*, 8(1), 73-103.
<https://doi.org/10.1521/soco.1990.8.1.73>
- Kinder, D., & Sanders, L. (1996). *Divided by color: Racial politics and democratic ideals*. University of Chicago Press.
- Lareau, A., & Muñoz, V. (2012). “You’re Not Going to Call the Shots”: Structural Conflict between the Principal and the PTO in a Suburban Public Elementary School. *Sociology of Education*, 85: 201–218. <https://doi.org/10.1177/0038040711435855>
- Lee, B. (Campaign for Governor of Tennessee). (2018, October 18). *Schools*. [Campaign video].
<https://www.youtube.com/watch?v=Dhiu4if7PvA>
- Levesque, K., Laird, J., Hensley, E., Choy, S., Cataldi, E., & Hudson, L. (2008). *Career and technical education in the United States: 1990 to 2005*. [NCES Report, No. 2008-029]. National Center for Education Statistics, Institute of Education Sciences, US Department of Education.
<https://nces.ed.gov/pubs2008/2008035.pdf>
- Levin, H. (1974). A conceptual framework for accountability in education. *The School Review*, 82(3), 363-391. <https://www.jstor.org/stable/1084068>
- Mann, H. (1868). Twelfth Annual Report to the Massachusetts State Board of Education, 1848. In M. Mann (Ed.), *Life and works of Horace Mann* (Vol. 3, p. 669). Walker, Fuller & Co.
- Malkus, N. (2019). *The evolution of career and technical education, 1982-2013*. American Enterprise Institute. <https://www.aei.org/wp-content/uploads/2019/04/The-Evolution-of-Career-and-Technical-Education.pdf?x91208>
- Meyer, B. (1915). Committee on high schools and training schools, Board of Education, New York City, 1914. In *Readings in Vocational Guidance* (p. 307). Ginn & Co.
- Nelson, T., Clawson, R., & Oxley, Z. (1997). Media framing of a civil liberties conflict and its effect on tolerance. *American Political Science Review*, 91(3), 567–83.
<https://doi.org/10.2307/2952075>
- National Center for Education Statistics (NCES). (2020). *Integrated Postsecondary Education Data System (IPEDS), 12-month Enrollment component 2019-20 provisional data*.
<https://nces.ed.gov/ipeds/TrendGenerator/app/build-table/2/2?rid=1&cid=9>
- National Center for Education Statistics (NCES). (2023a). *American Community Survey—Parents*.
<https://nces.ed.gov/programs/edge/Demographic/ACS>
- National Center for Education Statistics (NCES). (2023b). *About CTE statistics*.
<https://nces.ed.gov/surveys/ctes/about.asp#a>
- Oakes, J. (1983). Limiting opportunity: Student race and curricular differences in secondary vocational education. *American Journal of Education*, 91, 328-355.
<https://www.jstor.org/stable/1085026>
- Obama, B. (2011). *President Obama calls on Congress to fix No Child Left Behind before the start of the next school year*. Retrieved from <https://obamawhitehouse.archives.gov/realitycheck/the-press-office/2011/03/14/president-obama-calls-congress-fix-no-child-left-behind-start-next-school>

- Pew Research Center. (2017). *Sharp partisan divisions in views of national institutions*.
<https://www.pewresearch.org/politics/2017/07/10/sharp-partisan-divisions-in-views-of-national-institutions/>
- Phi Delta Kappan. (2017). *The 49th Annual PDK Poll of the Public Attitudes Toward the Public Schools*.
http://pdkpoll.org/assets/downloads/PDKnational_poll_2017.pdf
- Plasman, J., & Gottfried, M. (2018) Applied STEM coursework, high school dropout rates, and students with learning disabilities. *Educational Policy*, 32(5), 664–696.
<https://doi.org/10.1177/0895904816673738>
- Plasman, J., Gottfried, M., & Sublett, C. (2019). Is there a career and technical education coursetaking pipeline between high school and college? *Teachers College Record*, 121(3), 1-32.
<https://doi.org/10.1177/016146811912100303>
- Plasman, J., Gottfried, M., & Klasik, D. (2020). Trending up: A cross-cohort exploration of STEM career and technical education participation by low-income students. *Journal of Education for Students Placed at Risk*, 25(1), 55-78.
- Plasman, J. S., Gottfried, M., Freeman, J., & Dougherty, S. (2022). Promoting persistence: Can computer science career and technical education courses support educational advancement for students with learning disabilities? *Policy Futures in Education*.
<https://doi.org/10.1177/14782103211049913>
- Plazas, D. (2018, October 8). Tennessee U.S. Senate election: Meet Phil Bredesen. *The Tennessean*.
<https://www.tennessean.com/story/opinion/2018/10/08/tennessee-u-s-senate-election-meet-phil-bredesen/1548466002/>
- Posey-Maddox, L., Kimelberg S. M., & Cucchiara, M. (2016). Seeking a ‘critical mass’: Middle-class parents’ collective engagement in city public schooling. *British Journal of Sociology of Education*, 37(7), 905-927. <https://doi.org/10.1080/01425692.2014.986564>
- Raimondo, G. (Campaign for Governor). (2018, July 7). *Pipefitter*. [Campaign video].
<https://www.youtube.com/watch?v=9TDLGu8uCy8>
- Rand, D., Peysakhovich, A., Kraft-Todd, G., Newman, G., Wurzbacher, O., Nowak, M., & Greene, J. (2014). Social heuristics shape intuitive cooperation. *Nature Communications*.
<https://doi.org/10.1038/ncomms4677>
- Romano, J., & Wolf, M. (2016). Efficient computation of adjusted *p*-values for resampling-based stepdown multiple testing, *Statistics and Probability Letters*, 113, 38-40.
<https://doi.org/10.1016/j.spl.2016.02.012>
- Rosenbaum, J. (2001). *Beyond college for all: Career paths for the forgotten half*. Russell Sage Foundation.
- Schneider, M., Marschall, M., Teske, P., & Roch, C. (1998). School choice and culture wars in the classroom: What different parents seek from education. *Social Science Quarterly*, 489-501.
<https://www.jstor.org/stable/42863813>
- Schueler, B., & West, M. (2016). Sticker shock: How information affects citizen support for public school funding. *Public Opinion Quarterly*, 80(1), 90-113.
<https://www.jstor.org/stable/44015376>
- Schwartz, R. (2016). *Memo: Career and technical education*. Brookings Institute.
<https://www.brookings.edu/articles/memo-career-and-technical-education/>
- Shell, E. (2018, May 16). College may not be worth it anymore. *The New York Times*.
<https://www.nytimes.com/2018/05/16/opinion/college-useful-cost-jobs.html>
- Stone, J., & Aliaga, O. (2005). Career and technical education and school-to-work at the end of the 20th century: Participation and outcomes. *Career and Technical Education Research*, 30(2), 123-142. <https://doi.org/10.5328/CTER30.2.125>

- Strange, A. M., Enos, R. D., Hill, M., & Lakeman, A. (2019). Online volunteer laboratories for human subjects research. *PloS One*, 14(8), e0221676.
<https://doi.org/10.1371/journal.pone.0221676>
- Tyack, D. (1974). *The one best system: A history of American urban education*. Harvard University Press.
- Viano, S., & Baker, D. J. (2020). How administrative data collection and analysis can better reflect racial and ethnic identities. *Review of Research in Education*, 44(1), 301-331.
<https://doi.org/10.3102/0091732X20903321>
- Welner, K. G. (2001). *Legal rights, local wrongs: When community control collides with educational equity*. SUNY Press.
- Yettick, H., Cline, F., & Young, J. (2012). Dual goals: The academic achievement of college prep students with career majors. *Journal of Career and Technical Education*, 27(2), 120-142.
<https://journalcte.org/articles/10.21061/jcte.v27i2.564>
- Zamudio-Suarez, F. (2018, May 17). Yes, college is 'worth it,' one researcher says. It's just worth more if you're rich. *The Chronicle of Higher Education*. <https://www.chronicle.com/article/Yes-College-Is-Worth/243450>

About the Author

Walter G. Ecton

Florida State University

wecton@fsu.edu

<https://orcid.org/0000-0001-7452-5609>

Walter G. Ecton is an assistant professor of education policy at Florida State University. His research focuses on the intersections between high school, higher education, and the workforce, with a specific focus on career and technical education in both the K–12 and higher education spaces. He is particularly interested in pathways through education and into early career for students who are historically and currently marginalized in traditional academic settings.

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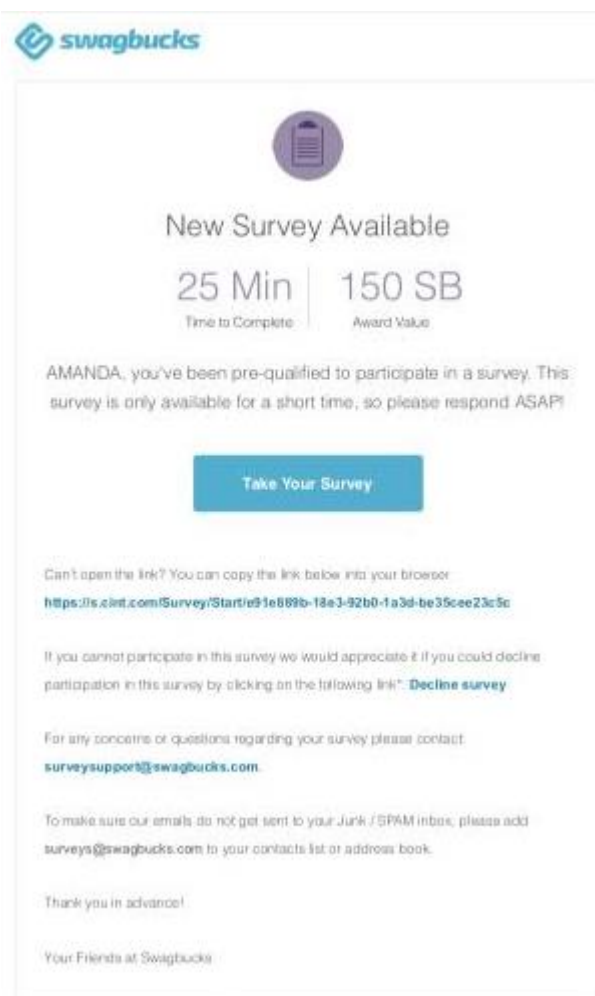
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Appendices

Appendix A

Example Recruitment Message from Lucid Client



Appendix B

Survey Instrument

CONSENT MESSAGE: This study is being conducted by researchers at the Department of Leadership and Policy Studies at Vanderbilt University. This study is strictly for research purposes. The researchers are not affiliated in any way with any organization other than Vanderbilt University. Your participation in this study is completely voluntary, and it should take 9-10 minutes of your

time. By consenting, you acknowledge that you may be unaware of the true purposes of the research and agree to participate under this condition. You may discontinue the study at any time.

CONTACTS FOR QUESTIONS OR PROBLEMS: Contact Information: If you should have any questions about this research study, please contact [[Author](#)] at [e-mail]. For additional information about your rights as a research participant in this study, please feel free to contact the Vanderbilt University Institutional Review Board Office at (615) 322-2918 or toll free at (866) 224-8273

In consideration of all of the above, I give my consent to participate in this research study. By selecting "I agree to participate in this study" you signify consent. If you select "I do NOT agree to participate in this study" you will be taken to the final screen [Options: I agree to participate in this study., I do NOT agree to participate in this study.]

-
1. What is your age?
 2. How many children do you have? [Options: 1, 2, 3, 4, 5, 6, 7, 8, 9, 10+, I do NOT have any children.]

3. PARTICIPANTS RANOMLY SELECTED TO RECEIVE ONE OF THE FOLLOWING SIX MESSAGES:]

- a. Please read the following: One common category of courses in high schools today is known as "Career and Technical Education." Career and Technical Education courses (including Vocational Education courses) are designed to provide students with the knowledge, skills and training needed for specific career paths (such as Manufacturing, Health Sciences, Construction, and Information Technology (IT) Career and Technical Education typically has a hands-on component, as students often work with actual equipment, complete projects, and are trained by instructors with experience in the specific career.

X Click here to confirm that you have read the above statement.

-
- b. Please read the following: One common category of courses in high schools today is known as "Career and Technical Education." Career and Technical Education courses (including Vocational Education courses) are designed to provide students with the knowledge, skills and training needed for specific career paths (such as Manufacturing, Health Sciences, Construction, and Information Technology (IT)). Career and Technical Education typically has a hands-on component, as students often work with actual equipment, complete projects, and are trained by instructors with experience in the specific career.

Education experts say that Career and Technical Education can provide individual students with greater choice, as they are better able to take courses that meet their own unique needs, interests, and goals after high school.

X Click here to confirm that you have read the above statement.

-
- c. Please read the following: One common category of courses in high schools today is known as "Career and Technical Education." Career and Technical Education courses (including Vocational Education courses) are designed to provide students with the knowledge, skills and training needed for specific career paths (such as Manufacturing, Health Sciences, Construction, and Information Technology (IT)). Career and Technical Education typically has a hands-on component, as students often work with actual

equipment, complete projects, and are trained by instructors with experience in the specific career.

Education experts say that Career and Technical Education can create inequality in schools, as certain students may be tracked into different educational paths that set them up for different types of experiences after high school.

X Click here to confirm that you have read the above statement.

- d. Please read the following: One common category of courses in high schools today is known as "Career and Technical Education." Career and Technical Education courses (including Vocational Education courses) are designed to provide students with the knowledge, skills and training needed for specific career paths (such as Manufacturing, Health Sciences, Construction, and Information Technology (IT)). Career and Technical Education typically has a hands-on component, as students often work with actual equipment, complete projects, and are trained by instructors with experience in the specific career.

Education experts say that Career and Technical Education can prepare students to get jobs after high school, and that it can train students to fill the types of careers that are in-demand in the workforce.

X Click here to confirm that you have read the above statement.

- e. Please read the following: One common category of courses in high schools today is known as "Career and Technical Education." Career and Technical Education courses (including Vocational Education courses) are designed to provide students with the knowledge, skills and training needed for specific career paths (such as Manufacturing, Health Sciences, Construction, and Information Technology (IT)). Career and Technical Education typically has a hands-on component, as students often work with actual equipment, complete projects, and are trained by instructors with experience in the specific career.

Education experts say that Career and Technical Education can teach students a narrow set of technical skills that may become out-of-date or irrelevant as the economy and technology changes, which may limit students' job prospects later in life.

X Click here to confirm that you have read the above statement.

- f. Please read the following: One common category of courses in high schools today is known as "Career and Technical Education." Career and Technical Education courses (including Vocational Education courses) are designed to provide students with the knowledge, skills and training needed for specific career paths (such as Manufacturing, Health Sciences, Construction, and Information Technology (IT)). Career and Technical Education typically has a hands-on component, as students often work with actual

equipment, complete projects, and are trained by instructors with experience in the specific career.

Education experts say that Career and Technical Education can take the place of some college-preparatory and academic classes for students participating in Career and Technical Education, and may make these students less likely to attend college.

X Click here to confirm that you have read the above statement.

4. How significant of a role should Career and Technical Education courses play in high school education? [Options: Not significant at all, Very low significance, Slightly significant, Neutral, Moderately significant, Very significant, Extremely significant]
5. Imagine you are in charge of high schools in your state and that you are able to decide how much schools should emphasize each of the following types of classes. Over the course of students' time in high school, what percentage of time do you think should be spent in each of the following types of classes (Total must add to 100):
 - Core Academic Courses (Math, English, Science, Social Studies) : _____
 - Career and Technical Education : _____
 - Other Electives (such as Fine Arts, World Languages, Physical Education, and ROTC) : _____
6. We know that sometimes people might fill out an online survey without reading the questions, which can make our results unreliable. Just so we can know you're paying attention, please select Mostly disagree for this question. Thank you for your attention! [Options: Very strongly agree, Mostly agree, Somewhat agree, Neither agree nor disagree, Somewhat disagree, Mostly disagree, Very strongly disagree]
7. What is the maximum annual increase in taxes you would be willing to pay if the money was used to expand Career and Technical Education in your school district? [\$0 (I would not be willing to pay an annual tax increase), \$50, \$100, \$150, \$200, \$250, \$300]

Next, we'd like to ask you a few questions about yourself.

8. What is your gender? [Options: Woman, Man, Non-binary or some other gender (please specify): _____]
9. Think about your oldest child. Relative to other children their age, how would you rank your child's performance in school? [Options: Far below average, Somewhat below average, Average, Somewhat above average, Far above average, N/A - None of my children have been in school.]
10. What is the highest level of school you have completed or the highest degree you have received? [Options: Less than high school degree, High school graduate (high school diploma or equivalent including GED), Some college but no degree, Associate degree in college (2-year), Bachelor's degree in college (4-year), Master's degree, Professional or Doctoral degree (such as JD, MD, PhD)]
11. Please indicate the income level that includes your entire household income last year before taxes: [Options: Less than \$10,000, \$10,000 to \$19,999, \$20,000 to \$29,999, \$30,000 to \$39,999, \$40,000 to \$49,999, \$50,000 to \$59,999, \$60,000 to \$69,999, \$70,000 to \$79,999, \$80,000 to \$89,999, \$90,000 to \$99,999, \$100,000 to \$149,999, \$150,000 or more]
12. Which of these most closely fits how you identify yourself? [Options: American Indian or Alaska Native, Asian, Black or African American, Hispanic or Latino/a, Middle Eastern or

North African, Native Hawaiian or Pacific Islander, White, Something else (please specify): _____]

13. Which of the following best describes the area where you live? [Options: Urban, Suburban, Rural]
14. Generally speaking, do you think of yourself as a Republican, a Democrat, an Independent, or what? [Options: Republican, Democrat, Independent, Other (please specify): _____]
15. [If selected Democrat in Question 14]: Would you call yourself a strong Democrat or a not very strong Democrat? [Options: Strong Democrat, Not Very Strong Democrat]
16. [If selected Republican in Question 14]: Would you call yourself a strong Republican or a not very strong Republican? [Options: Strong Republican, Not Very Strong Republican]
17. [If selected Independent in Question 14]: Do you think of yourself as closer to the Republican Party or the Democratic party? [Options: Republican Party, Democratic Party, Neither]
18. Here is a 7-point scale on which the political views that people might hold are arranged from extremely liberal to extremely conservative. Where would you place yourself on this scale? [Options: Extremely liberal, Somewhat liberal, Slightly liberal, Moderate, Slightly conservative, Somewhat conservative, Extremely conservative]

Finally, we're going to ask for your opinion on several questions about the way you think about things. In each, we'll ask you how much you disagree or agree with a statement. [Options: Disagree strongly, Disagree somewhat, Neither agree nor disagree, Agree somewhat, Agree strongly]

19. Our society should do whatever is necessary to make sure that everyone has an equal opportunity to succeed.
20. We have gone too far in pushing equal rights in this country.
21. Please select Agree strongly for this question.
22. One of the big problems in this country is that we don't give everyone an equal chance.
23. This country would be better off if we worry less about how equal people are.
24. It is not really that big of a problem if some people have more of a chance in life than others.
25. If people were treated more equally in this country we would have many fewer problems.
26. Please select Disagree somewhat for this question.
27. Most people who don't get ahead should not blame the system; they have only themselves to blame.
28. Hard work offers little guarantee of success.
29. If people work hard they almost always get what they want.
30. Most people who do not get ahead in life probably work as hard as people who do.
31. Any person who is willing to work hard has a good chance at succeeding.
32. Even if people try hard they often cannot reach their goals.

Appendix C

Predicting Treatment Status with other Surveyed Characteristics (Balance Check)

	Individualism Frame	Inequality Frame	Workforce Alignment Frame	Narrow Preparation Frame	College Prep/Access Frame
Women	0.001 (0.03)	-0.092 (-2.14)	-0.083 (-1.92)	-0.059 (-1.39)	-0.021 (-0.47)
Black	-0.062 (-0.97)	-0.072 (-1.10)	-0.055 (-0.87)	0.004 (0.07)	-0.026 (-0.43)
Latino/a	-0.061 (-0.90)	-0.061 (-0.88)	-0.132 (-1.83)	-0.141 (-1.95)	-0.021 (-0.32)
Asian	-0.177 (-1.71)	-0.207 (-1.95)	-0.139 (-1.36)	-0.160 (-1.59)	-0.201 (-1.92)
Other/Multiple Races	-0.056 (-0.48)	0.091 (0.86)	0.078 (0.72)	0.141 (1.44)	-0.071 (-0.58)
Age	0.004 (1.67)	-0.000 (-0.19)	-0.002 (-0.88)	-0.001 (-0.58)	0.001 (0.52)
Number of Children	0.033 (1.92)	0.034 (1.91)	0.020 (1.21)	0.028 (1.72)	0.044 (2.63)
Child Performance (5-pt scale)	0.012 (0.54)	0.012 (0.55)	0.001 (0.04)	0.035 (1.63)	0.000 (0.01)
Urban	0.027 (0.55)	-0.031 (-0.63)	-0.032 (-0.66)	-0.100 (-2.08)	0.032 (0.68)
Rural	-0.029 (-0.57)	-0.004 (-0.07)	-0.102 (-1.95)	-0.046 (-0.94)	-0.082 (-1.59)
Some College	0.039 (0.80)	-0.038 (-0.77)	0.035 (0.70)	0.026 (0.52)	0.005 (0.09)
Bachelor's Degree	0.067 (0.97)	0.004 (0.06)	-0.006 (-0.09)	0.088 (1.36)	0.060 (0.93)
Advanced Degree	-0.028 (-0.37)	-0.063 (-0.81)	-0.056 (-0.72)	0.009 (0.12)	-0.067 (-0.86)
Income (12-pt scale)	-0.008 (-1.05)	0.004 (0.46)	0.003 (0.36)	-0.008 (-0.99)	0.001 (0.14)
Party ID (Strong D=7)	-0.011 (-0.95)	-0.009 (-0.76)	0.003 (0.30)	-0.000 (-0.03)	0.000 (0.01)
Conservatism (7-pt scale)	-0.017 (-1.19)	-0.001 (-0.08)	-0.012 (-0.87)	-0.006 (-0.42)	-0.003 (-0.22)
Individualism Score (5-pt scale)	-0.033 (-1.18)	0.041 (1.49)	0.023 (0.81)	-0.005 (-0.21)	0.019 (0.66)
Equality Score (5-pt scale)	0.017 (0.53)	0.054 (1.76)	-0.005 (-0.14)	-0.021 (-0.69)	-0.001 (-0.02)
Constant	0.403	0.152	0.552	0.550	0.285

	<i>(1.75)</i>	<i>(0.68)</i>	<i>(2.44)</i>	<i>(2.58)</i>	<i>(1.28)</i>
Observations	670	656	652	693	669

Notes: Each column represents the coefficients and standard errors of OLS regression with the specified treatment status as the dependent variable. For each, the control condition is the comparison group. Coefficients that are bolded and underlined indicate characteristics that significantly predict (at a 5% significance level) treatment status. Stars represent statistical significance at the following levels after correcting for multiple comparisons, using Romano-Wolf step-down adjusted p-values: + $p < .1$, * $p < .05$, ** $p < .01$.

Appendix D

Ordinary Least Squares Results from Framing Treatments for Measures of CTE Support

	Models with No Controls			Models with Controls		
	CTE Significance	CTE % of School Hours	Willingness to Pay for CTE (\$)	CTE Significance	CTE % of School Hours	Willingness to Pay for CTE (\$)
Individualism Frame	0.050 (0.098)	1.712 (1.089)	-0.443 (6.832)	0.065 (0.098)	1.917 ⁺ (1.086)	2.810 (6.302)
Inequality Frame	-0.101 (0.099)	-0.081 (1.101)	2.473 (6.908)	-0.106 (0.099)	-0.034 (1.100)	1.635 (6.382)
Workforce Alignment Frame	0.026 (0.099)	1.468 (1.104)	<u>16.407</u> (6.931)	0.041 (0.099)	1.522 (1.102)	<u>14.932</u> ⁺ (6.395)
Narrow Preparation Frame	-0.022 (0.096)	-0.468 (1.071)	-2.171 (6.719)	0.000 (0.096)	-0.314 (1.071)	-0.122 (6.214)
College Prep/Access Frame	0.077 (0.098)	-0.041 (1.090)	-1.997 (6.837)	0.074 (0.098)	0.131 (1.087)	-2.871 (6.308)
Constant	5.587 (0.069)	33.469 (0.765)	87.906 (4.802)	4.381 (0.325)	40.773 (3.623)	19.107 (21.028)
Controls				X	X	X
Observations	1984	1984	1984	1984	1984	1984

Notes: Each column represents the coefficients and standard errors associated with assignment to each treatment, where the control group is omitted. In columns 1-3, no controls are included, meaning the constant can be interpreted as the mean for the control group, with coefficients on the other treatment arms showing deviations from the control group mean. Each column represents a different measure of CTE support: CTE Significance Rating (1-7), % of School Hours that should be CTE-focused, and Support for Proposal to increase CTE spending (1-7). Columns 4-6 include all characteristic listed in Table 2 as controls. Coefficients that are bolded and underlined indicate characteristics that significantly predict (at a 5% significance level) support for CTE. Stars represent statistical significance at the following levels after correcting for multiple comparisons, using Romano-Wolf step-down adjusted p-values: + $p < .1$, * $p < .05$, ** $p < .01$.

Appendix E

Moderator Analysis:

*Exploring Statistically Significant Interactions between Respondent Characteristics and Treatment Status
(only significant coefficients on interactions and their associated treatments shown)*

<i>a. Republicans</i>			
	CTE Significance	CTE % of School Hours	Willingness to Pay for CTE
Republicans	-0.215		
College Prep/Access Frame	-0.105		
College Prep/Access Frame X Republicans	0.443*		
Constant	5.678***		
Observations	1582		
<i>b. Political Independents (No Partisan Lean)</i>			
	CTE Significance	CTE % of School Hours	Willingness to Pay for CTE
Independent		2.579	
Workforce Alignment Frame		2.629*	
Workforce Align. Frame X Independent		-5.585+	
Constant		32.911***	
Observations		1984	
<i>c. Democrats</i>			
	CTE Significance	CTE % of School Hours	Willingness to Pay for CTE
Democrats	0.215		
College Prep/Access Frame	0.338*		
College Prep/Access Frame X Democrats	-0.443*		
Constant	5.462***		
Observations	1582		
<i>d. HS Graduate or Less</i>			
	CTE Significance	CTE % of School Hours	Willingness to Pay for CTE
HS Grad or Less	-0.347*		
Narrow Preparation Frame	-0.172		
Narrow Prep. Frame X HS Grad/Less	0.495*		
Constant	5.694***		
Observations	1984		

e. Some College

	CTE Significance	CTE % of School Hours	Willingness to Pay for CTE
Some College	-0.079	-0.468	-23.126*
Workforce Alignment Frame	-0.145		3.704
Workforce Align. Frame X Some College	0.434*		33.840*
College Prep/Access Frame		-1.496	
College Prep/Access Frame X Some College		4.003+	
Constant	5.616***	33.639***	96.296***
Observations	1984	1984	1984

f. Bachelor's Degree

	CTE Significance	CTE % of School Hours	Willingness to Pay for CTE
Bachelor's Degree		0.079	
Narrow Preparation Frame		0.559	
Narrow Prep. Frame X Bach. Degree		-4.927+	
Constant		33.456***	
Observations		1984	

g. Advanced Degree

	CTE Significance	CTE % of School Hours	Willingness to Pay for CTE
Advanced Degree	0.601**	1.336	88.177***
Individualism Frame	0.136		
Individ. Frame X Adv. Degree	-0.522+		
Workforce Alignment Frame	0.108	2.292+	22.208**
Workforce Align. Frame X Adv. Degree	-0.505+	-5.493+	-32.071+
College Prep/Access Frame	0.163	0.864	
College Prep/Access Frame X Adv. Degree	-0.528+	-6.525*	
Constant	5.491***	33.256***	73.860***
Observations	1984	1984	1984

h. Low Income

	CTE Significance	CTE % of School Hours	Willingness to Pay for CTE
Low Income			-53.710***
Narrow Preparation Frame			-13.213
Narrow Prep. Frame X Low Income			32.316*
Constant			107.710***
Observations			1984

i. Middle Income

	CTE Significance	CTE % of School Hours	Willingness to Pay for CTE
Middle Income			11.619
Narrow Preparation Frame			10.085
Narrow Prep. Frame X Midd Income			-30.921*
Constant			82.902***
Observations			1984

j. High Income

	CTE Significance	CTE % of School Hours	Willingness to Pay for CTE
High Income		0.457	
Workforce Alignment Frame		2.667*	
Workforce Align. Frame X High Income		-5.715*	
College Prep/Access Frame		0.992	
College Prep/Access Frame X High Income		-4.443+	
Constant		33.379***	
Observations		1984	

k. Women

	CTE Significance	CTE % of School Hours	Willingness to Pay for CTE
Woman		-2.586 ⁺	-40.873***
Individualism Frame			-14.503
Individualism Frame X Woman			23.702⁺
Inequality Frame		-2.530	-16.424
Inequality Frame X Woman		4.521*	30.781*
Narrow Preparation Frame			-16.889 ⁺
Narrow Prep. Frame X Woman			23.252⁺
Constant		34.942***	112.230***
Observations		1984	1984

l. Men

	CTE Significance	CTE % of School Hours	Willingness to Pay for CTE
Man		2.586 ⁺	40.873***
Individualism Frame			9.199
Individualism Frame X Man			-23.702⁺
Inequality Frame		1.991	14.358

	CTE Significance	CTE % of School Hours	Willingness to Pay for CTE
Inequality Frame X Man		-4.521*	-30.781*
Narrow Preparation Frame			6.363
Narrow Prep. Frame X Man			-23.252+
Constant		32.357***	71.357***
Observations		1984	1984

m. White

	CTE Significance	CTE % of School Hours	Willingness to Pay for CTE
White	0.217		
Individualism Frame	0.401*		
Individualism Frame X White	-0.507*		
Inequality Frame	0.313+		
Inequality Frame X White	-0.587**		
Narrow Preparation Frame	0.269		
Narrow Prep. Frame X White	-0.424*		
Constant	5.442***		
Observations	1984		

n. Latino/a

	CTE Significance	CTE % of School Hours	Willingness to Pay for CTE
Latino/a	-0.143	-12.211	
Inequality Frame	-0.177+		-1.781
Inequality Frame X Latino/a	0.871*		47.831*
Constant	5.603***		89.238***
Observations	1984		1984

o. Other and Multiple Races

	CTE Significance	CTE % of School Hours	Willingness to Pay for CTE
Other and Multiple Races	-0.811*		
Individualism Frame	0.009		
Individ. Frame X Other/Mult. Races	1.391*		
Constant	5.611***		
Observations	1984		

p. Rural

	CTE Significance	CTE % of School Hours	Willingness to Pay for CTE
Rural	-0.094		

	CTE Significance	CTE % of School Hours	Willingness to Pay for CTE
Individualism Frame	-0.059		
Individualism Frame X Rural	0.389⁺		
Constant	5.614 ^{***}		
Observations	1984		

q. Respondents who value Individualism most (top 25% composite score)

	CTE Significance	CTE % of School Hours	Willingness to Pay for CTE
High Indiv Score	-0.154		
Workforce Alignment Frame	-0.229		
Workforce Align. Frame X High Indiv Score	0.565[*]		
Constant	5.717 ^{***}		
Observations	1121		

r. Respondents who value Individualism least (bottom 25% composite score)

	CTE Significance	CTE % of School Hours	Willingness to Pay for CTE
Low Indiv Score	0.154		
Workforce Alignment Frame	0.336 ⁺		
Workforce Align. Frame X Low Indiv. Score	-0.565[*]		
Constant	5.563 ^{***}		
Observations	1121		

s. Respondents who value Equality most (top 25% composite score)

	CTE Significance	CTE % of School Hours	Willingness to Pay for CTE
High Equality Score		-2.598	-11.553
Inequality Frame		-2.045	-0.388
Inequality Frame X High Equal Score		6.056[*]	19.274
Workforce Alignment Frame		0.510	-7.812
Workforce Align. Frame X High Equal Score			49.047[*]
Narrow Preparation Frame		0.948	-13.449
Narrow Prep. Frame X High Equal Score			33.862⁺
College Prep/Access Frame		0.228	-17.778
College Prep/Access Frame X High Equal Score			44.074[*]
Constant		33.917 ^{***}	91.667 ^{***}
Observations		1101	1101

t. Respondents who value Equality least (bottom 25% composite score)

	CTE Significance	CTE % of School Hours	Willingness to Pay for CTE
Low Equality Score		2.598	11.553
Inequality Frame		4.012 ⁺	
Inequality Frame X Low Equal Score		-6.056*	
Workforce Alignment Frame			41.235**
Workforce Align. Frame X Low Equal Score			-49.047*
Narrow Preparation Frame			20.413
Narrow Prep. Frame X Low Equal Score			-33.862⁺
College Prep/Access Frame			26.297 ⁺
College Prep/Access Frame X Low Equal Score			-44.074*
Constant		31.318***	80.114***
Observations		1101	1101

Notes: Each section shows the coefficients and significance levels associated with the specified characteristics, the interaction between that characteristic and assignment to any treatment that was statistically significant, along with the coefficient associated with that treatment, compared to the control group. The following symbols represent statistical significance: + $p < .1$, * $p < .05$, ** $p < .01$, *** $p < .00$.