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Development of Coordinated Reasoning About Purposes of Education

by

Deborah Wong Powers

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in

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University of California, Berkeley

Committee in charge:

Professor Larry Nucci, Co-chair
Professor Chunyan Yang, Co-chair
Professor Mahesh Srinivasan

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Abstract

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This study investigates how high school and college students reason about commonly accepted purposes of education. The introduction chapter presents a history of purposes of education and scholarly opinions about general purposes and concepts of education in the United States. Guided by social cognitive domain theory (SCDT; also called social domain theory), it captures how students prioritize and coordinate these competing purposes. SCDT recognizes four domains of reasoning about human experience: moral, social conventional, personal, and prudential/pragmatic. This study expands concepts of three SCDT domains to include purposes from educational models of Human Capital and Human Potential (also referred to as Human Capabilities) and extended aspects of socialization. Human capital is integrated with the pragmatic domain; human potential/capabilities is integrated with the personal domain; and socialization processes are integrated with the social-conventional domain. The resulting domains for educational purposes are labeled "HCPragmatic," "HPPersonal," "Moral," and "Socialization."

The study used mixed methods (quantitative and qualitative). The survey instrument constructed for data collection asked students for demographic information, ratings of 20 commonly recognized purposes of education, and explanations for the most and least rated purposes. This was administered to diverse samples of 451 undergraduate college students from a selective West Coast public university and to 131 high school students from public schools in the West Coast and Southeastern United States.

Both college and high school students categorized and prioritized purposes of education in terms of domains, generally in the following order: HPPersonal, Moral, Socialization, and HCPragmatic. The survey instrument also captured participant domain coordination: the capacity to employ knowledge from more than one domain to reason about and evaluate purposes of education. Students who prioritized HCPragmatic purposes over others displayed significantly less coordination among all purposes of education. Developmentally, younger high school students tended to prefer HCPragmatic purposes and to coordinate among conflicting purposes less than older students. Beginning in older adolescence, females prioritized moral educational purposes more than did males. Race and ethnicity were not significantly related to prioritization

and coordination of educational purposes; however, there were significant differences by family income and parent education (two measures of socioeconomic status). College students from higher-income families showed greater preference for HPPersonal purposes, and those whose parents have higher levels of education gave less priority to HCPragmatic items. High school students whose parents have higher levels of education prioritized HPPersonal purposes more and engaged in more coordination of purposes than did students whose parents have lower levels of education.

Many students expressed beliefs that education should address multiple purposes without having them sacrifice personal growth to pursue human capital accumulation (e.g., having to choose between goals of liberal arts and STEM). The students' preferences and justifications demonstrate a need for pursuit of education for multiple purposes despite a perceived push by educational institutions and policymakers to restrict educational purposes to social status concerns and economic competition.

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Dedication

This dissertation is dedicated to previous generations of my family, especially my maternal grandmother and my paternal grandfather. They both yearned for and were denied opportunities for more education, opportunities that I have had. And finally, this is dedicated to all the students who seek a more meaningful education experience.

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Chapter 1: Introduction

1.1 Problem and Purpose of Study

The "human capital" approach to education expresses a prominent current viewpoint about the purpose of education: Education, considered capital, offers an economic return on investment. Its purpose is economic (Klees, 2016, pp. 644–645). Educator Ron Scapp, while discussing with Gloria Jean Watkins (pen name: bell hooks) how they became college professors, made the following statement about how common people view the purpose of education:

> . . . my parents, working class, saw education as really a means to an end, not the end point, so that as one got a university education, one went on to be a lawyer or a doctor. For them it was a means to enhance your economic status. . . . One got educated to earn money, a living, and start a family. (hooks, *Teaching to Transgress*, 1994, p. 133)

Human capital, according to American economist Gary Becker, ". . . refers to the abilities and qualities of people that make them productive" (D'Ubino, 2017, Aug. 3, *The Economist*). Human capital, unlike physical or financial capital, cannot be separated from the person that has it as a part of his or her knowledge (Becker, 1993, p. 16). This perspective on education has been adopted by many in the American political establishment. For example, during a U.S. presidential debate, one candidate expressed a prevalent opinion: "We need more welders and less philosophers" (Gray, November 2015, *USA Today*). According to this viewpoint, education is most important as an economic investment. However, as discussed further below, formal education has generally addressed more purposes than economic prosperity.

In addition to concerns with the purpose of career preparation, students may have concerns about other purposes such as personal growth, socialization, and matters of fairness. According to some authors, such as Toffler (1970), this is important because of the increasingly complex world for which students have to prepare. Are schools preparing students for a world in which self-fulfillment requires more than work and career? And, more importantly, are students expecting school to do all this?

The problem addressed by this dissertation is that the single-minded pursuit of education for accumulating human capital is not the only worthwhile purpose of education, especially in students' views. One main problem addressed by this dissertation is that the single-minded pursuit of education for accumulating human capital results in incomplete human beings (Nussbaum, 2016). As discussed in more detail later in the background literature review section, education has been considered important for instilling democratic and moral values in the American population since colonial times (Cuban, 2015; Jefferson, 1779; Kantor, 2015; Rury, 2005). Education has also been considered an important path for fostering psychological well-being (Nucci, 2019) and full development of human capabilities (Walker, 2008).

The debate about education as training for gainful employment versus education for cultivating minds of free citizens has a long history (Hofstadter, 1963; Roth, 2014; Zakaria, 2015). Although the human-capital attitude is perhaps common among business and economic thinkers (and working-class families), it is not the predominant opinion of the American public. A Gallup poll in 2016 showed that only 25 percent of Americans think that the purpose of education is to prepare students for work. Forty-five percent think that the purpose is to prepare students academically, and 26 percent think it is to prepare students to be good citizens (Phi Delta Kappa (PDK)/Gallup Poll, September 2016). In this random sampling, however, the prompt only offered a selection of one of the three choices just listed. Public-opinion polls fail to capture exactly how respondents reason about and come to prioritize these fixed-framed choices

about the main purpose of education. This dissertation study seeks to ameliorate this gap in empirical knowledge for the research community, educational establishments, and the wider public.

No longer just a concern of specialists and educational leaders, the purpose of education has become a political concern of the general public (Labaree, 1972, 1997). Writing in the 1960s, Bruner (1960) remarked, "We have reached a level of public education in America where a considerable portion of our population has become interested in a question that until recently was the concern of specialists: 'What shall we teach and to what end?'" (p. 1). Bruner was writing for a 1959 conference on improving science education, an endeavor influenced partly by the National Defense Education Act (U.S. Congress, 1958), a result of "Sputnik" in 1957, and concerns about national security (pp. xvii, 76). Since then, especially since the publication of A Nation at Risk (National Commission on Excellence in Education, 1983), which bemoaned our failure to ensure that future generations were at least as well educated as their parents, the nation has been in prolonged engagement and argument about these questions—constant concerns about the "crisis" in education. These same kinds of concerns have been addressed again in the No Child Left Behind Act of 2001 and Every Student Succeeds Act of 2015, both reauthorizations of the Elementary and Secondary Education Act of 1965. Apparently overall, heavy interest already exists historically and currently in multiple arenas regarding what the main purposes of education are and should be (hence national directives and creation of task forces such as those just mentioned). Yet there has been and still are potential "blind spots" about educational purposes in need of being further scrutinized and addressed through coordinated efforts involving research, policy, and practice.

The purpose of this dissertation is to examine how high school and college age students view the purposes of education. Do students share the single-minded view of people focused on human capital or do they include other purposes? Which purpose(s) do they prioritize? The primary research method employed a survey measure to collect participants' ratings and comments about commonly accepted but sometimes conflicting purposes. In addition to identifying potential demographic influences and related interests (i.e., academic major in college students), the research also explored potential underlying developmental trends in students' views. The developmental analysis along with the conceptual framing of core purposes of education was informed by basic tenets of Social Cognitive Domain Theory (SCDT). The research design used mixed-methods, mostly quantitative methods with qualitative portions for interpretation of free-response items to broaden and deepen understandings of quantitative results. This gives a fuller picture of how students reason about purposes of education.

1.1.1 Clarification and Definitions

The meaning and use of the word "purpose" here generally matches that of the standard Merriam-Webster definition: "the reason why something is done or used: the aim or intention of something" (https://www.merriam-webster.com/dictionary/purpose). Although researchers of life purpose such as Bundick (2009) and Moran (2009) do not consider purpose a goal in itself (as cited by Arantes et al., 2017, p. 249), people commonly use the word as a synonym for "goal." A purpose either implies or is a goal—a desired future outcome of an activity. Humans are goal- and purpose-oriented organisms for whom effective learning (both cognitive and motivational) is expectation based (Seligman et al., 2013, pp. 126, 136). As the term is used here, motivation is a related term to purpose, the difference being that a motive tends to be a push reason while a purpose is a pull reason for doing something.

When used to describe an aspect of education, as in the phrase "purpose of education," it usually implies that education is an activity instrumental to other purposes. That is, one pursues an education in order to accomplish some other goal—for example, to acquire skills and information that will help one to become wealthy. Of course, some expressed purposes imply other purposes. For example, in the minds of many individuals, the purpose of "academic achievement" in the above-mentioned Gallup Poll is likely instrumental to achieving career and/or material success later. One could even pursue an incremental chain of purposes, the achievement of one purpose leading to pursuit of another, the achievement of which leads to yet another pursuit. There are self-oriented and potentially self-transcendent dimensions of these purposes, of both education and life (e.g., Damon et al., 2003, which will be discussed later in the section on psychological frameworks).

Educational purposes are both social and personal. Societies and social groups that provide educational opportunities expect results beneficial to the group or society. For Solomon Asch (1952), even individual purposes are socially determined (p. 16). Social forces cause a change in human awareness that lead to purposiveness. Impulses are suppressed in favor of interests and concerns for desired consequences, concerns for what should or might be instead of what is. This becomes a new psychological force, a transcendence of individual limitations through social interaction. This force also leads to moral concerns (Asch, 1952, pp. 134–135). Humans are individuals only in relation to society (Durkheim, 1925/1961). (For a related conception of individual<=>context relations, please see work in Relational Dynamic Systems Theory [RDST]; e.g., Overton, 2013; Lerner & Callina, 2014; and Witherington, 2007). Much of the concern historically about purposes of education has been the result of civic and moral concerns. Unfortunately, according to Harvey Kantor (2015):

> …the civic and moral concerns have been subordinated to the belief that the chief purpose of education is both to equip students with the skills they need to compete in what has become an increasingly precarious labor market and to make the nation more prosperous and economically secure and that the public schools are not doing a very good job meeting either of those goals. (p. 1)

1.1.2 Multiple Perspectives and Purposes

Arguably, the emphasis on human capital is overshadowing the broader goals of school systems and perhaps negatively influencing human development (see Nussbaum, 2016; Robeyns, 2006; Sen, 1997; Tomasevski, 1999; Trujillo & Howe, 2015; and Walker, 2012). People need to satisfy multiple purposes through education. Most schools in the United States do identify and at least superficially espouse different purposes of education even if, in reality, they do not equally emphasize and achieve them for all students.

Education professionals have identified needs to increase the number of the purposive themes offered in secondary schools. From a study of mission statements of 50 Massachusetts high schools from 2001 to 2006, Stemler et al. (2011) found that schools significantly increased their endorsement in the number of educational themes and that they shifted their emphasis from civic development to cognitive development. In a second study of 500 secondary school mission statements from ten geographically and politically diverse states, they found that urban schools and schools failing on criteria for No Child Left Behind (2001) endorse significantly more educational themes, suggesting that they are trying to teach to a broader set of aims than just cognitive development. Their research has revealed three major purposive themes in K-12 mission statements: civic development, emotional development, and cognitive development (Stemler et al., 2011). Stemler et al.'s research, however, fails to capture adequately the common

norms of beliefs about purposes of education. Their work targets only positions and perspectives around the purposes of school held by educational leaders, not other education stakeholders (including students, parents, and other practicing professional educators).

None of these studies investigated respondents' reasoning about their beliefs, attitudes, and values regarding those purposes of education. Respondents merely identified preferred purposes which were later tabulated into simple reports by researchers. There is generally a paucity of reporting about the average person's opinion on the purposes of education. There is an even greater paucity in reporting on the average person's *reasoning* about this. The other studies generally do not ask respondents for explanations or analyze why they choose certain purposes over others. This is where selected psychological perspectives and different empirical approaches can fill in gaps for our understandings of more fully fleshed-out, complex pictures of public perspectives on purposes of education. It would answer not only what the purposes are, but also why those purposes are chosen, how they are thought about, and what they mean.

1.2 Background Literature Review

Americans have a history of struggle over priorities for different and changing perceived purposes of education and the means to achieve them. David Tyack (1976) noted that different academic persons and groups explain historical events in the field of education through "different lenses," applying different facts and interpretations to the same historical event. He does not advocate adding different perspectives together, but he thinks that considering different perspectives does offer "the possibility of self-correction" (pp. 355–356). He illustrates his thesis with example explanations of the history of compulsory schooling in the United States. Some of the explanations, like the human-capital explanation for compulsory schooling, may be partially discredited by further research and consideration, but all contributed to a wider understanding of the phenomenon being studied.

1.2.1 Historical Purposes of Education in the United States

Colonial Education (17th and 18th Centuries)—Religion and Morality. During colonial times, the main purpose for education was religious. People "had to be able to read and interpret Holy Scripture, catechisms, and other religious materials. This required literacy and the ability to reason from principles conveyed through a variety of socially sanctioned texts." Southern plantation owners hired tutors to teach their children to read (Rury, 2005, pp. 31–39). Vocational education, the colonial equivalent of human-capital education, was provided by one's family or through apprenticeships (Bowles & Gintis, 1976, p. 103).

Post-Colonial Education (19th and Early 20th Centuries)—Democratic Equality. Formal education took on a new purpose after the American Revolution. The leaders of the new republic were of the opinion that popular education was an essential institution for ensuring democratic citizenship (Rury, 2005, pp. 51–52). Thomas Jefferson, in the "Bill for the General Diffusion of Knowledge," mindful of the tendency of the ambitions of the powerful towards tyranny, advocated a universal education that enables people to know and defeat the purposes of those ambitions (Labaree, 2012). This would also be an education that would educate one to liberty (autonomy) and the pursuit of happiness—a life of virtue resulting in eudaimonia or human flourishing (Conklin, 2015).

As commerce grew and industrialization began, and as immigration increased in the early 19th century, Horace Mann argued that moral education was the most important element of popular schooling and that it would bridge the gap between wealthy and laboring classes (Rury, 2005, pp. 58–77). The dominant goal of the common schools in the mid-19th century was

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democratic equality and preservation of the commonwealth against capitalist social and economic relations (Tyack & Cuban, 1995; Labaree, 1997, p. 58).

The Progressive Era (1890 to 1920)—Individual Development Versus Social Efficiency. During the Progressive Era, the purposes of education became divided into two major foci: education that allowed children to develop their natural interests and abilities (pedagogical progressivism) and education according to the capitalist factory model (administrative progressivism). Pedagogical progressives such as John Dewey promoted schooling as a refuge from factories and commercial life, "a place for children to learn essential values of democracy and principles of reasoning" (Rury, 2005, p. 151). Their educational objectives were to make education responsive to the needs of children and to integrate schools with their immediate communities. Administrative progressives, on the other hand, aimed to make education more rationally organized, efficient, and cost effective (pp. 146–147). To accomplish these goals, they adopted an ethos of differentiation, establishing education tracks for students according to their measurable abilities as shown by achievement and intelligence tests. This led to the establishment of high schools throughout the nation run by professional education administrators. It also increased social stratification. Women, Blacks, and Hispanics were given schooling designed to fit them into subservient social roles through development of vocational education, home economics, and manual-arts classes (pp. 156–175).

By the end of the Progressive Era, the popularity of administrative progressivism eclipsed that of pedagogical progressivism. However, it also led to a great increase in the number of high schools and colleges. Secondary education became a significant factor in the national economy, setting the stage for the "human-capital revolution" later in the century (Rury, 2005, p. 166).

The Human-Capital Revolution (Late 20th Century). The purposes of education reverted somewhat in the direction of democratic equality in the 1960s and 70s. The federal government adopted policies to address problems of inequality through laws for equal access to education (Rury, 2005, pp. 196–199; Labaree, 1997, p. 58). In spite of this, the 1980s saw the cresting of the human-capital revolution (Rury, 2005, p. 213).

The Standards Movement and Privatization. The movement for educational standards also began in the 1980s and 1990s (Labaree, 1997, pp. 58–59). As the 20th century ended, citizens and government officials became alarmed at the levels of educational attainment compared to those of other countries. Another "social efficiency" method, high-stakes testing, was introduced for schools (Rury, 2005, p. 234). Now the schools were held accountable for student achievement; teachers could lose their jobs, and schools could be closed. Charter schools were taking over school systems. Education was viewed as an economic resource, "a factor of production subject to measurement and improvement like sources of energy, new machinery, raw material, and waste management" (Rury, 2005, p. 236).

As can be seen in this cursory review, there have been shifts in the views about the major purposes of US education from the 17th century to the 21st century: religion and morality, democratic equality, individual development, and social efficiency. What this reveals is that not only are there many perceived education purposes but also that they change to accommodate changing social conditions. The next section presents an overview of the major education frameworks that are being employed to support current social concerns.

1.2.2 Educational Frameworks

Human Capital. Education creates skills and knowledge that serve as an investment in the productivity of humans as economic production factors (i.e., workers). The theory by itself does not deal extensively with issues of culture, gender, identity, emotions, or history. Humans

act for economic reasons only (Robeyns, 2006, p. 72). Although this is considered a modern economic theory, its beginnings can be traced back at least to the 18th century. Adam Smith (1776/2000) asserted that the talents a person acquires during education, study, or apprenticeship can be considered "capital fixed and realized"—like a machine that is used to facilitate labor to produce a profit (Book II, Ch. 1, pp. 200–201). Horace Mann, arguing in the 1860s from a questionnaire he sent to businessmen, (although he personally believed that the main purpose of education was moral and civic development) proclaimed that schooling not only "made workers punctual, industrious, frugal, and too rational to cause trouble for their employers, . . . it produced a rate of return to society of about 50 percent" (Tyack, 1976, p. 378; quoting Vinovskis, 1970).

  According to Steven Klees (2016), human capital theory (HCT) began in the early 1960s as a way to replace sociological approaches to explaining labor economics. "HCT changed all that by developing a way that labor could be analyzed as if it were like any other commodity, through its supply and demand." Education viewed as a capital investment with measurable rates of return fit with neoclassical economics. Investment in education, like physical capital investment, had payoffs (rate of return, ROR) for both the individual and society (Klees, 2016, pp. 645–646). The influence of economic theory on educational psychology is apparent in Herbert Walberg's "psychological theory of educational productivity." Walberg (1981) used economic productivity models to relate student characteristics to educational productivity on achievement tests.

  The three frameworks discussed below (Human Rights, Human Capabilities, and Human Agency) argue against the human-capital approach to education. For example, Katarina Tomasevski (1999), Special Rapporteur to the UN Human Rights Council, held that "the notion of human-capital questions the inherent worth of each human being. . . . turning upside-down the idea that the economy should serve people rather than the other way around." She adamantly proclaimed that it is only one out of many purposes of education.

  In comparing and contrasting these three approaches to education (human rights, human capabilities, and human capital), Melanie Walker (2012) and Ingrid Robeyns (2006) advocate a human-capabilities approach to education that includes human-capital considerations but keeps the purpose it implies in better perspective.

  Human Rights. Human rights advocates stress that a decent education is a right of every human being regardless of its instrumental value. Humans are the ultimate ends of moral and political concerns (Robeyns, 2006, p. 75). For human-rights proponents, governments have a duty to provide all citizens with a quality education (Robeyns, 2006, p. 75). This implies that education is a second-generation right, a positive, socioeconomic right as opposed to negative first-generation rights to be free from government interference (Sen, 1999).

  The most influential advocacy of education for human rights has been and is still currently found in Article 26 of the United Nations Declaration of Human Rights:

> Education shall be directed to the full development of the human personality and to the strengthening of respect for human rights and fundamental freedoms. It shall promote understanding, tolerance and friendship among all nations, racial or religious groups, and shall further the activities of the United Nations for the maintenance of peace (United Nations, 1948).

Developmental psychologist Jean Piaget (1948/1975) interpreted the phrase "full development of the human personality" to mean intellectual and moral autonomy. Education should "create individuals capable of intellectual and moral autonomy and of respecting this

autonomy in others by applying the rule of reciprocity that makes it legitimate for themselves" (p. 91).

Another way to phrase this interpretation is that rights to education should be for purposes of developing human capabilities and encouraging human flourishing (eudaimonia). Human flourishing (Greek: *eudaimonia*, also translated as happiness and well-being) is usually presented in terms of Greek virtue ethics—also interpretations of flourishing by Locke and Blackstone (Conklin, 2015). Briefly, eudaimonia as described in Aristotelian philosophy is the goal of human life, an end for its own sake versus being a means to another end. It is beyond the scope of this paper to discuss further the centuries-old scholarship on this subject. It is worth noting here that the concepts of *flourishing* and *eudaimonia* are so powerful that it should be expected for them to persist as an influence on people's opinions of the purpose of education.

Human Capabilities. The human-capabilities approach is a view that human rights must be considered in the context of what individuals are capable of realizing for themselves with help from the societies and world in which they live. (This was also called the "human development approach," but use of that term by advocates of the human-capital approach led to use of the term "human capabilities" [Mehrotra, 2005, p. 300]). Its major advocates are Amartya Sen and Martha Nussbaum. According to this view, individuals must be able to choose their own ideals of what they want to become. Education should help people to flourish (in the eudaimonic sense). According to Walker (2012), "Education contributes to what Sen and Nussbaum call "opportunities which enable us to choose and to live in ways we find meaningful, productive and rewarding individually and collectively to the good of society" (p. 388). Martha Nussbaum (1997) considers the power of reasoning a basic capability, generally understood as moral reasoning and the power of moral choice, necessary to expressing human rights (p. 293).

In the capabilities approach, education should enable individuals to perceive and choose from possibilities in their life path. In turn, it should give the individual the capability of formulating one's own purpose in life and to choose the kind of education that suits that purpose. According to Amartya Sen and Martha Nussbaum, education should provide opportunities to achieve functionings that a person can attain (Nussbaum, 2011; Robeyns, 2005; Sen, 2005). Education is necessary to realize other capabilities. It includes both the human-capital and the human-rights roles of education (Robeyns, 2006, p. 78). Thus, the human-capabilities perspective is more inclusive, comprehensive, and open-ended compared to the other educational perspectives regarding purposes of education.

Human Agency. The term "human agency" refers to the capacity for individual and collective action to challenge oppressive structures like capitalism, patriarchy, racism, ableism, and heterosexism. A major purpose of education is to instill awareness of unjust sociocultural conditions in both privileged and oppressed people and to teach them how to overcome inequalities. Proponents of this approach to education generally view human rights and human-capabilities approaches as lacking attention to issues of oppressive power structures, and this position makes their perspective notable both historically and currently. Its proponents include Marxists, feminists, environmentalists, and antiracists (Klees, 2016, p. 662). Supporters include educators like Paolo Freire, Michael Apple, and bell hooks. It is what Paolo Freire terms "education for liberation" (Freire, 1972).

1.2.3 Concerns about Human Capital Theory in Education from Different Perspectives

The following subsections present critical discussions from several philosophical and social-scientific perspectives. They generally point out limitations and negative social aspects of the exclusive pursuit of human capital.

Model Limitations of Human Capital Theory. Economists and other scholars working within the HCT model often point out its limitations. Herbert Walberg, University of Illinois, and Steven Klees, University of Maryland, are two exemplars.

Herbert Walberg (1981), an educational psychologist, was concerned with the questions "What are the ends of education?" and "Do the educational means, that is, the manipulation of the environment, justify the ends?" (p. 81). He discussed adapting econometric production functions to identify causes of attaining educational goals (learning) in order to improve educational policy and practice. Economic production models generally measure output production as a function of capital and labor—$O = f(K,L)$. He proposed an analog of this for learning as a function of aptitude, environment, and age—$L = f(A,E,age)$—where A consists of variables for ability and motivation, and E consists of variables for quality and quantity of instruction, social class, and home environment. Learning would be measured by results of achievement tests.

This attempt to apply measurable economic factors to means and ends of education is perhaps an example of how people become distracted from considering the "purpose of education." Walberg (1981) himself noted a limit in the model that results of achievement tests did not predict "success in later life such as income, participation in community activities, self-concept, supervisor- and peer-related effectiveness, and number of prizes, written works, patents, and other accomplishments" (p. 105).

Klees (2016) has argued that besides the obsession with quantifying education at the expense of qualifying it, the internal logic of HCT is flawed:

> Almost all estimates of the social rates of return (ROR) to human capital investment assume that greater income is an exact proxy for greater productivity. These ROR estimates are fundamentally flawed for at least four reasons: the concept of economic efficiency that underlies them is unsound; earnings do not reflect productivity; even if it did, earnings, at best, is a partial and misleading measure of social benefits; and even if earnings were relevant, our ability to estimate the empirical effect of education on earnings is abysmal. (p. 647)

HCT measurement assumes that a positive ROR indicates an efficient economy, one that is perfectly competitive. There is no perfect competition in the labor market, and what economists call efficiency is not the same as equity. ROR analysis does not show social value (p. 648). Klees concludes, "The estimated impacts of education on earnings and associated rates of return are basically arbitrary, the result of ad hoc empiricism run rampant. . . . It should be noted that almost all these studies offer only some measure of the quantity of education, not its quality" (pp. 653–657). Klees concluded that education should be pursued according to one of the three approaches already discussed: human rights, human capabilities, and human agency (pp. 660–664).

Philosophical and Humanistic Concerns. Humans are much more than productivity machines. The comparison of human beings to machines or measurable factors of production is considered by many as inhumane, at best as a limited view of human beings. Robeyns (2006) complains that HCT considers that humans act for economic reasons only and that the overshadowing purpose of education is to create skills and knowledge that serve as investment in the productivity of humans primarily as economic production factors (i.e., workers likened to cogs in a machine). Amartya Sen (1997) argues that the benefits of education are more than its purposes for human capital for commodity production (p. 1959). He states that "human beings

are not merely means of production (even though they excel in that capacity), but also the end of the exercise" (p. 1960).

Human-agency and human-rights advocates object very much to the human-capital perspective and its enveloping paradigm of neo-liberal economic theory. To liberationist pedagogue Paulo Freire, the perspective "ignores the essence of human beings" (Espinoza, 2017, p. 441). Katarina Tomasevski (1999) believes that "the notion of human-capital questions the inherent worth of each human being." She related how The World Bank has used neo-liberal human-capital theory to require economic returns on investment from impoverished countries for loans for education purposes. This policy has sometimes involved such things as requiring privatization of schools and support for user fees in public schools that poor people could not afford (Mehrotra, 2005; Tomasevski, 2008). In the contemporary American public educational context, Kantor (2015) discusses how similar profit-oriented, market-based policies have produced damaging effects on low-income families and communities by exacerbating economic insecurity, educational inequality, and curtailing children's life chances.

Nussbaum (2016) points out that HCT's most common measure of economic well-being, GNP per capita, actually hides injustice and inequalities. In an obsession for measurement, "purposes" have become achievement-test "goals," and goals have become "outputs." Quantifiable marketable outputs and measuring schools with standardized tests cannot measure the ability to engage in Socratic reasoning (Nussbaum, 2016, p. 79). She considers learning this kind of reasoning a purpose of education, a necessary ability for attaining personal autonomy and maintaining a democracy.

Democratic and Societal Perspectives. The following objections relate to democracy and multiple needs of society. Sen points out that the human-capital purposes of education do not explicate the purposes of economic growth itself. However, he suggests that the expansion of human capital and human capabilities through education can lead to economic growth and should also lead to the expansion of human well-being and freedom so that people have "freer and more worthwhile lives" that they have "reason to value" (Sen, 1997, p. 1960). The human-capital perspective, therefore, he argues, need not be replaced completely by alternate perspectives but instead be broadened and incorporated into them. Education should serve the instrumental purpose of expanding capabilities beyond the skills for production capital. Education is for bringing about social change that goes beyond mere economic change.

The single-minded focus on human-capital education has, according to Martha Nussbaum (2016), produced a worldwide "silent crisis" in education (pp. 1–2). Scholars and informed writers (e.g., Roth, 2014; Zakaria, 2015) promote liberal arts education as a possible solution to the overfocused human-capital approach. This notion refers to an overarching purpose of education that should promote equitable expansion of individuals' human capabilities in concert with comprehensive visions of evolving societal demands and activities, including economic ones.

Nussbaum (2016) writes that the exclusive emphasis on education for profit will damage democracies and, in the end, will result in an inability to sustain strong economic growth. The rush to education for profit is diminishing people's capacity for critical thinking and reflection necessary to keeping democracies alive. For example, South Africa under apartheid was a model of strong economic development. Economic growth, when guided without a sense of morality, does not improve the human condition (Smith, 1759/2009).

Thomas Jefferson (1779) advocated a universal education that enables people to know and defeat the purposes of ambitions to tyranny. That is the way to ensure that people can

develop themselves to their full capacities without succumbing to threats from others. That is, universal education can ensure that people develop in a democracy as autonomous beings and can exercise the agency to perpetuate a democratic society for future generations. In other words, education that includes the purposes of "life, liberty and the pursuit of happiness" will ensure the liberty of free citizens in a fair society.

However, Larry Cuban (2015) reports that the "the language and ideas of democracy…have been marginalized over the past three decades in the rush for market-driven policies to public discussion of U.S. schools…"(p. 6). The actual survival of American democracy is not only a cause for great concern for today's scholars and citizens, but such trends would also likely bother historical founders of the nation if they were alive today.

Moral Dangers and Limitations of Human Capital Theory. A society may be judged as unjust if some members step over others through unfair means to gain advantages towards unequal levels of prosperity. This entails economic concerns that may be deemed morally problematic at its core. According to many, the human-capital approach to education encourages greed. This can result in a moral corruption that Adam Smith (1759/2009) wrote about in *The Theory of Moral Sentiments*:

> This disposition to admire, and almost to worship, the rich and the powerful, and to despise, or, at least, to neglect persons of poor and mean condition, though necessary both to establish and to maintain the distinction of ranks and the order of society, is, at the same time, the great and most universal cause of the corruption of our moral sentiments. That wealth and greatness are often regarded with the respect and admiration which are due only to wisdom and virtue; and that the contempt, of which vice and folly are the only proper objects, is often most unjustly bestowed upon poverty and weakness, has been the complaint of moralist in all ages. (Section III, Chapter III).

Such over-arching moral and ethical concerns of HCT-driven rationales for human activity, especially those intertwined with purposes of education, are beyond the scope of this dissertation but will be discussed in greater depth as part of the author's future work.

Furthermore, there is growing recognition that single-minded focus on technological education for short-term profit is self-defeating. Empirical studies on the relationship between development of human capital and development of other human factors may substantiate or serve to refute some of these theoretical perspectives and debates. There has been some research attempting to bridge economic human capital measures with individual psychological factors such as sense of well-being. For example, Kahneman and Deaton (2010) found that psychological well-being does not increase with income levels past $75,000. Studies like these can serve to support the capabilities approach while still attending to human capital dimensions instead of arbitrarily and recklessly throwing them out when applied to expanding *and tinkering with* existent purposes of education.

The next section focuses on selected psychological perspectives on the development of other human needs besides the development of human capital. They offer potential explanations and avenues for evidence that should also be considered in justifying purposes of education for more comprehensive development of individuals' functioning, inclusion, and contribution to the betterment of society.

1.2.4 Psychological-Development Theories and Frameworks for Understanding Fundamental Human Needs and Purposes of Education

Accumulating material wealth, a goal of Human Capital Theory, fails to fully represent students' basic socioemotional and higher-order cognitive needs. It does not adequately

contribute to development of a sense of autonomy and a sense of relatedness to others—both considered fundamental psychological needs for reaching and sustaining basic mental health and full, comprehensive functioning into adulthood. The elements of this essential point are explained by at least two major psychological theories with strong bodies of supportive research, Self-Determination Theory (SDT) and Social Cognitive Domain Theory (SCDT). These theories, compatible with the human capabilities perspective, will be explicated further in this section.

A sense of purpose is a major motivating factor for humans (Deci & Ryan, 2000; cf. Damon, 2008; Seligman et al., 2013). That is, purposes are drivers for motivation. Purposes should help to satisfy basic, intrinsic psychological needs, and educational purposes should address human psychological development. Among those psychological needs is our sense of relatedness to others, essential to a well-functioning society. Furthermore, our reasoning processes appear truncated in light of a limited purpose of education, and they often reappear in sociological problems—for example, massive socioeconomic inequality leading to violent social unrest. Further comprehensive research is necessary to build the bridge between individual developmental limitations and sociological issues.

The next subsection discusses educational purposes in the contexts of three mutually compatible human-development frameworks: Relational Dynamic Systems Metatheory, Self-Determination Theory, and Social Cognitive Domain Theory. They are frameworks for research into educational purposes. Besides frameworks for research into human psychological development, they can also be frameworks for researching into educational purposes. The theoretical frameworks and important constructs are presented first, followed by relevant research studies and discussions of implications for human capital and different purposes of education within the contexts of the theories.

Relational Dynamic Systems Metatheory. Public education may be a linchpin connecting society's values with the individuals upon which both depend for survival. This suggests that the process may be understood by the metatheoretical model of a *relational dynamic system* (RDS) of development by which individuals and context are continually influencing each other through transactional processes (Lerner & Callina, 2014; Overton, 2013; Witherington, 2007). Individuals and society both develop from interactions with each other. Rury (2005) discussed how Americans have consciously counted on and changed education systems to solve social problems. However, there are also unconscious changes to education systems.

An educational system does not just imprint societal ideas and values on students; those students also change the educational system as they learn and develop. The overall development consists of interactive, mutually influential processes called microgenesis (small changes in meaning as individuals accommodate to new situations), ontogenesis (development of the individual as a result of microgenesis and sociogenesis), and sociogenesis (development of the society as many individuals come to share new ideas—the result of collective ontogenesis) (Saxe & Esmonde, 2012; Nucci, 2017). A metaperspective as such may serve to organize multilevel, multidimensional understandings. It also helps to remind us that we, especially as educators in various contexts and scholars of divergent perspectives, sometimes tend to overlook how our environment, especially the education environment, adapts to and supports basic human needs and developmental processes. The following theories and constructs of this section can all be situated in an RDS metatheoretical explanatory model that makes for stronger analyses of existing theories and guidance of research.

Social Cognitive Domain Theory. Social Cognitive Domain Theory (SCDT) is a cognitive-developmental approach that suggests that children construct, differentiate, and coordinate their conceptualizations about the social world based upon their experiences. Development of these concepts and their progressive coordination include making gradual distinctions in reasoning among social domains of moral judgment, social conventions, and personal matters (Turiel, 2023). The moral domain involves matters of rights, welfare, principles of justice and fairness. The social-conventional domain involves social conventions dealing with authority, social hierarchy, customs, and norms of behavior in social groups and systems. This pertains to matters such as how to form and maintain social relations and how to participate in the regulation and maintenance of society. The personal domain involves matters of personal choice, autonomy, nonmoral justifications for breaking social rules, and being free of overly restrictive regulation by authorities (Nucci, 2008). As people mature, they experience not only interactions between themselves and their social environment but also among the social cognitive domains. This results in changes in their understandings and prioritization of judgments and decision making among the domains. The process could be compared to Piaget's concept of equilibration, a process of adapting one's internal schemata to environmental changes through assimilation and accommodation. The analogous process within SCDT is called domain coordination.

In addition, SCDT recognizes that people also make pragmatic judgments about what are the optimal or safest ways to act or plan for future action. Within SCDT this is referred to as prudential or pragmatic reasoning (Nucci, 1981; Smetana, 2011; Turiel, 1983a). Pragmatic judgments have been considered nonsocial in that they do not involve reasoning about persons or society. However, they can also be employed in order to prioritize one's own self-interest or self-preservation over other individuals and/or other domain considerations. For purposes of understanding how youth perceive the goals of education, this fourth prudential/pragmatic "domain" is included as part of the investigations. Pragmatic judgments would be central to the ways in which youths and adults reason about the factors emphasized by human capital theory.

These distinct and interacting domains of reasoning (moral, social-conventional, personal, and pragmatic) continue and transform through late adolescence and sometimes adulthood. It is in the personal domain of SCDT that a distinct self-identity develops, progressively built through assertions of self-determination and autonomy. The development of self is coordinated with and mediated by social interactions and moral considerations (Nucci, 2001). Personal-domain judgments are central to the ways in which youths and adults reason about the factors emphasized by human capabilities/potential theory.

Self-Determination Theory. Deci and Ryan (2000) developed Self Determination Theory (SDT) as a method for understanding fundamental human needs and motivation processes. It is expressly a eudaemonic (as opposed to hedonic) theory of psychological well-being (Ryan & Deci, 2001). SDT is an influential psychological theory of motivation upon which other psychologists and educational researchers have based a substantial body of research.

Central to it is distinguishing between *intrinsic* and *extrinsic* motives, or purposes, for learning and achieving things in education (Ryan & Deci, 2000a). An ideal situation would consist of educational tasks that are accomplished through intrinsic motivation: "doing something because it is inherently interesting or enjoyable." Extrinsic motivation, "doing something because it leads to a separable outcome," tends to be difficult (p. 55). Intrinsic and extrinsic motivational factors are involved in research on a related set of educational purpose-relevant constructs, such as *mastery and growth mindsets* or *achievement and task orientations*

(see Dweck, 2006; Nicholls, 1989). The achievement goals approach will be discussed more in Chapter 4. Students tend to have difficulty enjoying extrinsically motivated tasks. However, extrinsic motivation can be internalized and integrated with other values so that it is as effective as intrinsic motivation if purposes or goals of the activities involved are freely chosen. (Note that this is one of the goals of the capabilities approach.).

SDT, additionally supported by SCDT, asserts that humans have innate psychological needs for autonomy, competence, and relatedness. In other words, humans need to feel agentic, effective, and connected to other human beings (Ryan & Deci, 2000b).

Autonomy. Autonomy is one of the three basic psychological needs according SDT, and it is essential to development of the personal domain in SCDT. Operating in a complex society requiring the relation of self to others, autonomy functions as the primary mechanism through which individuals construct and negotiate our personal boundaries and desires. It requires agency, the ability to pursue self-chosen goals.

Competence. Competence refers to the need to feel effective. There is a large amount of research showing that people's well-being increases when they feel capable of influencing the world around them (Deci & Ryan, 2014; Ryan & Deci, 2000b; Nucci, 2001; Helwig, 2006).

Relatedness. The concept of relatedness is reflected in both moral reasoning and knowledge of social convention (Helwig, 2006). The coordination of personal-domain experience with moral and social-conventional domains allows one to become both autonomous and connected with others. In SDT, it is primarily seen through the need to feel connected to other human beings. In SCDT, there is a similar process where social interactions are coordinated with the progressively constructed personal domain. It becomes apparent between these two concepts that individuals have a need for interactions and relationships, and these relationships feed into the development and coordination of individuals' ideas of a self.

Self-Oriented and Self-Transcendent Purposes. Other research psychologists have built upon Deci & Ryan's work on SDT. For example, Damon & Colby (2015) building also on the work of Inhelder & Piaget (1958), delineated operational definitions of purpose based on the distinction between concern only for oneself and concern for something other than oneself (self-oriented vs. other-oriented). Meaningful purposes should contain "intention to accomplish something that is at once meaningful to the self and of consequence to the world beyond the self" (Damon et al., 2003, p. 121)—that is, purpose should have two dimensions: *self-oriented* and *self-transcendent*. Self-oriented purposes involve self-interest, including individuals' intrinsically motivated interest in a learning task. On the other hand, self-transcendent purposes involve service to others and social-justice causes (Yeager et al., 2014, p. 560).

Self-oriented purposes can be taken as selfish in promotion of oneself over others; self-transcendent purposes motivate one to accomplish things for other people or for other things. Both self-oriented and self-transcendent purposes can be equally motivating for a given individual. A boring task can be made more interesting and meaningful if given a prosocial meaning—for example, completing math homework may be necessary to become a scientist who helps to cure disease. Self-transcendent purposes are hypothesized by some to increase diligence and persistence; they may increase *grit* (for more on the construct of "grit," see Duckworth, 2016, and others). There are elements of intrinsic and extrinsic motivational components in both self-oriented and self-transcendent purposes.[1]

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[1] Although it is beyond the scope of this study, this author is of the opinion that some researchers oversimplify or overcomplicate factors involved in both sets of constructs.

Human Capital Theory (HCT) by itself cannot serve as the main set of rationales for educational purposes because it does not encourage many worthy purposes and optimal motivation processes. HCT often posits primarily a self-oriented purpose of education in order to improve productivity. This not only fails to address intrinsic goals for personal growth, it does little to foster prosocial goals—that is, educating oneself to help other people. This potentially limits sociomoral development of whole cohorts of students and possibly entire generations of adult members of communities in society.

1.2.5 Selected Research From Psychological Theories and Frameworks

One objective of this dissertation is to find out if and how educational systems address people's psychological needs for meaningful living. Theories (such as the ones explained above) supported by empirical research (presented below) on how people experience purpose is increasingly being linked to everyday educational pursuits. For example, how can students become more motivated to study in specific science, technology, engineering, and math (STEM) fields? Which life purposes will motivate students to work harder to understand difficult material? What are the fundamental psychological needs that should be addressed by the education system? How do sociomoral and cognitive processes develop alongside needs and purposes of education?

Motivations and Orientations of Educational Purposes. Research reveals that education for the sole purpose of competing for and accumulating human capital (a self-oriented purpose) can engender negative academic and psychological outcomes, including decreased self-regulation in performing academic tasks, compromised psychological well-being, and lowered life satisfaction. Yeager et al. (2014) compared students with self-transcendent purposes for learning to students with only self-oriented purposes for learning. Their findings were that self-transcendent students reported more self-regulation on boring academic tasks (possibly a desired skill thought to enhance productivity sought in the labor market), were less likely later to drop out of college, had higher science and math scores, attained deeper learning on boring test-review material, and sustained more engagement in boring tasks.

Later research supports the need to focus on multiple purposes and needs. In a study of adolescent purpose with Singaporean and Israeli moral education, Heng et al. (2017), using Damon's (2008) model of self- versus other-focused purposes, found that students with *both* self- and other-focused purposes were the most satisfied with life. Singaporean students, highly other-focused or focused on neither self nor other, were the most unsatisfied.

These studies do not support a solely human-capital approach to education as sufficient for overall positive psychological development. These studies reveal an incomplete understanding of purposes and motivation necessary for excelling in life pursuits. However, they do reveal that excelling in education and achieving life satisfaction requires more than selfish purposes.

Competence Building. Competence would seem to be a major objective of HCT's purpose of education. However, exclusive focus on HCT reflects an extremely limited view of competence, a view defined mainly as the ability to earn money and achieve educational outcomes believed to be linked to that goal. As discussed earlier, this reflects many of the earlier sociological objections about humans being considered exclusively as earning machines. Exclusive emphasis on human capital does not necessarily mean competence in participating in social relationships or understanding cultural matters. HCT-based education does not offer to foster a complete set of competencies for *full* human development.

Matters of Autonomy and Relatedness (Overlaps Between SCDT and SDT). As can be inferred from discussions above, Human Capital Theory may fail to foster a full sense of autonomy for many individuals. HCT primarily fosters the value and goal of accumulating wealth, which may, besides addressing concerns about material security, give a sense of high social status and approval. Beyond that, it offers limited purposes. Though this may foster a limited sense of autonomy, multiple venues of psychological research show that overcontrolled or limited goals undermine autonomy and diminish other indicators of functional mental health (cited in studies below). This is often true when the limited goal is wealth.

The human need for personal autonomy—and the self-identity and sense of agency to exercise it—has been shown by both SDT and SCDT lines of research. Citing Ryan and Deci (2001) and Nucci (2001), Helwig (2006) points out that agency and identity formation leading to autonomy are universal psychological needs. Although tempered and shaped by one's culture, autonomy is the basis of claims to rights and freedom in all cultures (p. 459). Piaget emphasized that intellectual and moral autonomy are necessary for the "full development of the human individual" and "maintenance of peace and promotion of goodwill among nations" (Piaget, 1948/1975; United Nations, 1948). Even in societies that highly restrict personal freedom, students seek personal autonomy and agency in choosing educational purposes. Nucci et al. (2005) demonstrated deleterious effects on mental health and overall well-being when personal autonomy was perceived to be limited or overcontrolled by others, by authoritative social rules, or by unequal societal structures.

Similarly, a study by Helwig et al. (2003) found that Chinese adolescents hold views that students should have input to school-related activities even if, in reality, they do not. Although from a culture generally considered "collectivistic," they were actually more likely to hold these beliefs than Canadian students that are generally considered to be from an "individualistic" culture. For the Chinese students, the presence of an overly hierarchical education system with a fixed curriculum and reliance on standardized examinations created a perception of loss of freedom, autonomy and motivation. This loss led to increased feelings of discontent (Helwig, 2006, p. 469). There is additional discussion of empirical studies of SDT/achievement goals approaches in conjunction with this dissertation study's SCDT-driven framework in Chapter 4.

Acquisition and accumulation of money as a life goal (especially for its own sake) leads to a loss of autonomy (Carver & Baird, 1998, as cited in Ryan & Deci, 2001). Ryan and Deci (2001) pointed out that several studies (including Kahneman & Deaton's, 2010) have shown that, once beyond living at the average U.S. middle-class income level, most people do not feel additional well-being from more wealth.

The social-mobility pursuit of human capital—that is, human capital accumulation as competition for social position—works against *relatedness*. Perhaps the strongest arguments for this may be seen in the earlier sections about philosophical and sociological objections to HCT. Sociomoral, political, and societal concerns often belie a lack of empathy. Human capital as the sole means for social mobility lacks allowance for warm feelings and shared, committed values of openness and inclusivity among competitors. A social-efficiency perspective on human capital accumulation, while perhaps allowing for relatedness among job holders, lessens opportunities for autonomy because workers are responding only to society's demands for production efficiency.

Returning to Nussbaum's (2016) focus on liberal arts education draws this concept into sharper focus. According to her:

Higher learning can offer individuals and societies a depth and breadth of vision absent from the inevitably myopic present. Human beings need meaning, understanding, and perspective as well as jobs. The question should not be whether we can afford to believe in such purposes in these times, but whether we can afford not to (p. 124).

She also states that people need to use critical thinking and flexible perspectives to "imagine the situation of another, a capacity that is essential for a successful democracy, a necessary cultivation of our 'inner eyes'" (Nussbaum, 2016, p. ix). These are also essential parts of relating to others and necessary to avoid the dangers of tyrannical ambition (also concerns expressed by Adam Smith and Thomas Jefferson as mentioned in earlier sections). A purpose of education is to foster students' intellectual and moral autonomy and relations to others in a way that cannot be overshadowed by one's own or another's callous selfish motivations in competitive endeavors. Returning to Piaget's (1948/1975) contribution to the UN Human Rights Declaration, the expressed purpose of education is to foster individuals' intellectual and moral autonomy and "…respecting this autonomy in others by applying the rule of reciprocity that makes it legitimate for themselves (p. 91)." In other words, autonomy and relatedness are interdependent.

1.3 Overall Framework, Research Questions, Hypotheses of Dissertation Research Study

The major theme of this introduction has been that educational purpose is multifaceted. Formal education has always been provided for multiple purposes, especially to integrate and satisfy both social and personal needs. Rather than being limited to the narrow goal of producing economic well-being, education should address broader goals of personal growth, self-fulfillment, and engagement within society as a moral citizen. My research aims to add to this literature by exploring how adolescent and college age students reason about the purposes of education.

The dissertation grounds this investigation of students' views of the diverse purposes of education to underlying fundamental categories of social cognitive development as outlined within social cognitive domain theory (SCDT). The educational goals of preparing for economic productivity, personal growth, societal and moral engagement correspond to the social cognitive domains of morality, social convention, the personal, and prudential/pragmatic. This multifaceted vision of education means that reasoning about the goals of education may involve coordinating conflicting and compatible issues among the different purposes corresponding to these social cognitive domains.

The research investigates whether students recognize multiple purposes of education. It also examines whether they evaluate and prioritize different educational purposes, and whether with age students' reasoning about educational purposes moves towards increasing coordination among personal, pragmatic, social/societal and moral educational purposes. This latter question emerges from prior SCDT research (Midgette et al., 2018; Nucci et al., 2015) indicating that reasoning about personal, societal and moral issues shifts toward increased capacity for cross-domain coordination from early to middle adolescence.

1.3.1 Guiding Research Questions

As noted above, Social Cognitive Domain Theory (SCDT) provides the basic theoretical framework for research questions and hypotheses. Statistical factor analysis of the pilot studies also grouped purposes into two major relational concepts (Human Capital and Human Capabilities). There are three main research questions:

- RQ1 (Prioritization of Purposes of Education). How do college and high-school students prioritize among different purposes of education, and are there developmental trends?
- RQ2 (Coordination of Purposes of Education). How do respondents understand educational purposes according to Human Capital/pragmatic, Human Potential/personal, moral, and social orientations and how are they coordinated according to SCDT? Are there developmental trends?
- RQ3 (Demographic Factors in Purposes of Education). What are the relationships between prioritizations and coordinations of purposes of education with demographic factors: gender, race/ethnicity, social class, and parent education?

1.3.2 Main Hypotheses

The following hypotheses correspond to the guiding research questions above:

- RQ1 (Prioritization). For both college and high-school students, ratings of Human Capital purposes of education correspond to reasoning and coordination patterns in the pragmatic domain. Ratings of Human Capabilities/Human Potential purposes correspond to reasoning and coordination in the personal domain. Most respondents will prioritize Human Potential/Personal purposes of education over purposes associated with other domains. A minority of respondents will prioritize Human Capital/Pragmatic purposes over other domains. A small number of respondents will show equal prioritization of various purposes of education across multiple domains. There are developmental differences between younger and older high-school students in how they recognize and judge educational purposes.
- RQ2 (Coordination). Respondents, with answers to a free-response questionnaire, will show coordination among different purposes of education. The way they differentially coordinate among domains will follow previous developmental findings (see Nucci, 2001; Nucci et al., 2015; Turiel, 1983b). For college students (at least 18 years old), respondents will show a capacity for coordinating among categories of purposes of education. Most will show at least a partial or fully comprehensive type of coordination. For high-school students (mostly ages 13 to 17), some respondents will show a capacity for coordinating among categories of purposes of education. Some will show at least a partial or fully comprehensive type of coordination. The degree of coordination among various purposes of education will vary by age. The proportion of older students will show more coordination than younger students.
- RQ3 (Demographics). In general, there will be no significant differences in response patterns related to demographic variables except, possibly, socioeconomic status (SES) as indicated by family income and/or parent education.

1.3.3 Discussion of Hypotheses

Main Hypotheses. Views, attitudes, and reasoning of both adults and children about purposes of education are significantly influenced by their understandings and judgements of structure and functions of society. Many may have intuitive theories about individual agency versus social determinism. Just as they do with social-cognitive domains, different age groups of students are generally at different levels of development in ability to coordinate conflicts among competing purposes.

Based on prior research studies, education purposes may be reasoned about differently at distinct age ranges: 13- to 14-year-olds (generally ninth graders) and 15- to 18-year-olds

(generally 12th graders). These two high-school age groups are chosen because it has generally been shown in previous studies (Nucci & Powers, 2014) that these two adolescent groups have distinct developmental differences in societal concepts and coordination. For example, as mentioned above in Hypothesis 2, many ninth graders are still in a phase of negation of convention while 12th graders tend to gain an understanding that social conventions are necessary to maintaining social systems (p. 133). Both groups have reasoning that is developed enough to address complexities in the topic of purposes of education. Furthermore, there has been general interest by the public in their ideas about the purpose of schooling and education (Slapik, 2017).

Developmental Hypotheses. Most high-school students (compared to middle-school students) have developed complex understandings of social systems and are able to coordinate complex, competing elements involved in multifaceted social and personal issues such as those relevant to reasoning about purposes of education. Therefore, all participants, even the youngest, should be able to respond to the research survey instruments without much difficulty. However, the three-year developmental span of adolescents between freshman and senior years is wide enough to investigate potential differences and trends in how they employ coordinated reasoning around the same areas of investigation. Between the 9th and the 12th grades, students will have developed a greater sense of autonomy and a more sophisticated understanding of social conventions and societal structure (Nucci & Powers, 2014, p.133). Thus, due to their socio-cognitive development and increased experiences in a high school environment, improvement should be expected in their abilities to coordinate moral, personal, social conventional (societal), and pragmatic (practical, prudential) purposes. This will also be reflected in their opinions about the purposes of education.

Consideration of purposes may be weighed according to different social-cognitive domains as students mature. That is, issues that are salient or subordinated to other issues at one point in development may be considered differently at another point in development. For example, 14-year-olds may subordinate practical purposes to moral purposes of education because they are constructing greater understandings of the injustices that appear in society. It is also possible that some 14-year-olds may subordinate other purposes (including moral) solely to personal preferences since they may be still in negation phases in which they question social norms while trying to develop a sense of autonomy and deeper sense of selfhood in relation to peer groups. This age group would likely be more concerned with using education for the purposes of developing personal identity and understandings of societal structure. Generally by the age of 17, students will reason about educational purposes and future goals with more coordinated concepts of self in relation to social systems, moral values, and pragmatic concerns.

Theoretical Sociomoral and Cognitive Hypotheses. An underlying assumption of the present research is that adolescents will not limit their views about the purposes of education solely to pragmatic, *human capital,* considerations*.* There should be evidence of educational goals that are directed at personal growth and moral considerations. Moreover, there should also be evidence of efforts by adolescents to prioritize and to coordinate seemingly contradictory goals. For example, there should be evidence of young people who combine their educational goals of preparation for a successful career and economic comfort with concerns for personal growth, self-fulfillment, and moral contributions toward society.

Demographic Hypotheses. Additional differentiated findings may appear due to variables such as gender, social class, generation, individual life histories, educational placement, academic achievement levels, and specific school-based variables (e.g., school climate and

culture). These variables will be correlated with categorized results of responses and coordinated reasoning measures in order to explain how some demographic information may be significant and warrant further attention and analyses. Other studies show that parents of lower SES may attempt to suppress assertions of autonomy in adolescents (Milnitsky-Sapiro et al., 2006). Nevertheless, even Chinese adolescents, generally considered subjects of authoritarianism, insist on having choice concerning school subjects (Helwig, 2006).

Influences of certain demographic variables (e.g., gender, race/ethnicity, cultural background, social class) may be more apparent in responses of older students. More differences might appear, not in relation to demographics, but in relation to individual opinions pertaining to practical matters, self-interested orientations toward human-capital purposes, and worldviews of competitive social systems. These may be evident from qualitative coding and analyses of free-response items that require respondents to explain why they rated the most and least important purposes of education.

1.3.4 Potential Contributions

This research, which explores how people conceive of and judge what education is and ought to be, will contribute to Nussbaum's (2016) call for more cross-field fertilization and collaborative efforts among developmental psychologists, philosophers, economists, and others in academia. It also addresses calls by Piaget (1965/1972) and Arsenio (2018) to investigate laypeople's reasoning.

In addition, the investigation instruments and findings from this study could provide evidence-based recommendations to help policymakers, practitioners, and other stakeholders to improve educational programs. This study could show paths to understanding students' orientations to various educational purposes during the process of development—and when and/or whether they are open to consideration of different purposes besides developing themselves in terms of human capital or social mobility. The theoretical frameworks discussed above will allow for answering the research questions listed and other relevant questions that may appear during the course of study.

Chapter 2: Study of College Students

2.1 Introduction

This chapter presents a study of the reasoning of college students about the purposes of education. It was conducted in three phases with undergraduates from a selective public university on the West Coast and was also used as a pilot study to prepare for proposed research on high-school students about the same subject (presented in Chapter 3). This study also serves to establish context for the later study of high-school students with developmental analyses. The final iteration of the study provides the results discussed in this chapter. Most of the methods of this chapter were the basis for methods used in the high-school study. (See also Appendix X for more information on earlier phases of the pilot study with college students.)

The general hypothesis for this study is that students generally reason about and pursue multiple purposes of education. That is, students do not limit their educational goals to preparation for future careers or view themselves solely as contributing factors to the general economy or wealth of society. In addition to these goals within a Human Capital (HC) vision of education, students also view education as a means for personal growth and personal fulfillment as envisioned within a Human Capabilities/Human Potential (HP) framework. Finally, the study hypothesizes that students view themselves as moral agents, and they view education as a means to further their socialization, moral growth, and capacity for moral and social change within a democratic society. (For more in-depth explanations of these educational frameworks, see Chapter 1, "Background Literature Review.")

These hypotheses rest on a set of related assumptions that the relevant social reasoning undergirding these views of educational purposes generally develops with age within distinct frameworks described by Social Cognitive Domain Theory (SCDT). Because of the current emphasis on the HC and HP frameworks and their correspondence to the Pragmatic and Personal SCDT domains, they are referred to as "HCPragmatic" and "HPPersonal." In this study, these labels are also referred to as "subscales" because they were identified as such through the development of a statistical factor-analysis model. (See page 9 for a fuller explanation of terminology and synonyms) Components of the subscales include different purposes of education referred to as "items." Also included in this model are two other subscales, "Moral" and "Socialization." The Moral subscale items all fall within the scope of the moral domain of SCDT. The Socialization subscale contains items that capture multifaceted elements of social conventions, social relations, sociability, and development of social skills necessary to engage with others in social groups and society. These subscales are referred to throughout the dissertation as "HCPrag," "HPPerson," "Moral," and "Social."

In the research described below, university undergraduates responded to a survey that asked them to rate different purposes of education and to explain their ratings of most and least preferred purposes. The survey items were designed to prompt reasoning across social cognitive domains in correspondence with the HC and HP frameworks of American educational policy. The purposes of education presented in the survey were based upon studies of education policy and history, sociological literature, and other surveys. An initial list of purposes of education was itemized into a list of twenty purposes characterized and refined according to social domains and framework dimensions (and, as will be discussed below, psychometric criteria). The selected purposes encompass underlying and competing considerations that motivate people in educational pursuits.

2.1.1 Guiding Research Questions

- RQ1 (Prioritization). How do college students prioritize different purposes of education according to Human Capital/Pragmatic, Human Potential/Personal, Moral, and Socialization orientations?
- RQ2 (Coordination). How do respondents coordinate and justify prioritizations of different purposes of education according to the theoretical framework of this study, especially when there are multiple considerations and potentially competing purposes?
- RQ3 (Demographics). Are there significant demographic differences or trends in how they reason about purposes of education?

2.1.2 Hypotheses

- RQ1 (Prioritization). Ratings of Human Capital purposes of education correspond to reasoning and coordination patterns in the pragmatic domain. Ratings of Human Capabilities/Human Potential purposes correspond to reasoning and coordination in the personal domain. Most respondents will prioritize Human Potential/Personal purposes of education over purposes associated with other domains. A minority of respondents will prioritize Human Capital/Pragmatic purposes over other domains. A small number of respondents will show equal prioritization of various purposes of education across multiple domains.
- RQ2 (Coordination). Respondents, with answers to a free-response questionnaire, will show coordination among different purposes of education. The way they differentially coordinate among domains will follow previous developmental findings (cf. Nucci, 2001; Nucci et al., 2015; Turiel, 1983a, 1983b). Because they are college students (at least 18 years old), respondents will show a capacity for coordinating among categories of purposes of education. Most will show at least a partial or fully comprehensive type of coordination.
- RQ3 (Demographics). There will be no significant differences in how subjects prioritize and coordinate purposes of education in relation to gender and race/ethnicity. There may be differential trends in prioritization, coordination, and justification of different educational purposes in relation to family-income level and parents' highest level of education (SES). For example, students from lower-income families may prioritize human-capital/pragmatic purposes more than students from higher-income families because of greater perceived material necessity.

2.2 Methods

The mixed methods (as first mentioned in Chapter 1) for surveying college students were developed in phases with the purpose of having a complete, refined set of methods for the subsequent study of high-school students. Thus, the methods described immediately below are generally the methods used for both groups of students.

2.2.1 Survey Part 1: Participants and Demographics

The study used the Research Participation Program (RPP) at a selective West Coast public university to obtain volunteer undergraduate students taking psychology courses during the Fall 2021 semester as participants in this study. All participants were at least 18 years old and had enough English-language proficiency to comprehend and respond to the survey tasks. The study employed Qualtrics to present an anonymous online survey that consisted of three parts.

The first part, Population and Demographics, focused on collecting participant demographics (See Tables 1 and 2 below.)

There were 451 respondents in total. Four respondents were removed from analyses based on not fitting within the categorical criteria of being a first, second, third, or fourth-year undergraduate (i.e., post-baccalaureate and fifth+ year students were removed). Respondents were mostly Asian and Caucasian females. The distribution of socioeconomic status (SES based on family income level) was skewed left, indicating a high average SES with additional representation on the lower side of the scale. The sample included students from a broad range of undergraduate majors. The ethnicity and gender characteristics of the sample reflect the available pool of subjects enrolled within the university during Fall 2021. These demographic data are presented in Tables 1 and 2.

Table 1

Demographic Breakdown of College Students (n = 451)

Category	Item	Number	Percentage
Gender	Female	321	71.20%
	Male	121	26.80%
	Non-Binary	9	2.00%
Family Income	Upper Class	29	6.40%
	Upper-Middle Class	171	37.90%
	Middle Class	126	27.90%
	Working Class	48	10.60%
	Low Income	65	14.40%
	No Answer	12	2.70%
Parents' Education	Doctorate	70	15.50%
	Professional degree	18	4.00%
	Master's degree	117	25.90%
	4 year degree	92	20.40%
	2 year degree (Associates)	17	3.80%
	Some College	41	9.10%
	High school graduate	55	12.20%
	Less than high school	37	8.20%
	No answer	4	0.90%
Race/Ethnicity	Asian	234	51.90%
	Black	7	1.60%
	Hispanic	58	12.90%
	Mixed	51	11.30%
	Native American	4	0.90%
	White	75	16.60%
	No answer	3	0.70%

Year in School			
Year in School	1st Year	100	22.20%
	2nd Year	51	11.30%
	3rd Year	173	38.40%
	4th Year	108	23.90%
	5th+ Year	19	4.20%

Table 2

Age Groups of College Students

Year in School	Count	Average Age	Median Age
1st Year	100	18.11	18
2nd Year	51	19.08	19
3rd Year	173	20.49	20
4th Year	108	21.78	21
5th+ Year	19	24.95	24
Total/Average/Median:	451	20.24	20

2.2.2 Survey Part 2: Ratings of Purposes of Education

The second part of the survey asked respondents to rate 20 commonly accepted purposes of education (commonly referred to as Q1 through Q20) on a sliding Likert-like scale from 0 to 10, with decimal intervals from .1 to .9 allowed. The Qualtrics survey platform did not allow items to be presented randomly for each individual respondent. Therefore, a random-number generator was used to determine the presentation order of the 20 items. The items were numbered 1 to 20 after the order was randomized. Table 3 lists the items.

Table 3

Purposes of Education

Item	Description
1	Help students socialize
2	Help students achieve their fullest potential
3	Develop students' ability to improve the well-being of others in need
4	Help students find and follow what they are interested in
5	Help students develop skills in the liberal arts (philosophy, history, language, art, music, etc.) to make the world a better place
6	Prepare students to compete for the best jobs
7	Help students learn how to learn for the rest of their lives
8	Help students develop into well-rounded individuals with many abilities
9	Help students achieve academic excellence
10	Help students develop skills in STEM (science, technology, engineering, and math) to get high-paying jobs
11	Help students to learn how to get along with others in the workplace

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12	Help students develop skills in the liberal arts (philosophy, history, language, art, music, etc.) because they enjoy the subject(s)
13	Help students to be good people in their personal and social lives
14	Prepare students to earn as much or more than their parents
15	Help students develop skills in STEM (science, technology, engineering, and math) because they enjoy the subject(s)
16	Develop students' trustworthiness and social credibility
17	Prepare students for work
18	Prepare students to be active in democratic decisions and group consensus building
19	Help students use good reasoning about unfair conditions in society
20	Prepare students to be good citizens

The responses to these questions were grouped into subscales that allow for an analysis of the basic study hypotheses. Confirmatory Factor Analysis (CFA) was employed to establish components to latent factors corresponding to selected educational frameworks and social-cognitive domains: Human-Capital/Pragmatic (HCPrag), Human-Potential/Personal (HPPerson), Moral, and Socialization (Social). CFA of the student responses identified composite groups of items (latent factors) behind reasoning and prioritization about purposes of education. The composites align with educational frameworks and social cognitive domains.

Human capital and pragmatic concerns are related to what has been termed the pragmatic domain—such as when practical concerns such as personal safety override other domain concerns. Human potential/personal concerns are related to the need to develop individual capabilities (e.g., self-identity, autonomy, and agency). The Moral and Socialization scales are expressions of the moral and expanded social domains discussed in Chapter 1.

CFA established which of the 20 subject-rated purposes (i.e., component items) comprise each subscale (also called a composite). For clarification, the terms "domain, factor, latent variable, subscale, and composite" are synonymous. Likewise, the terms "components, items, and purposes of education" are synonymous. To summarize, items (purposes of education) comprise composites (domains). (See Table 4 below.) The relationships between the measures identified in this part were further analyzed with the free responses of Part 3 for a fuller picture of how respondents coordinate different educational purposes.

Table 4

Purposes of Education by CFA Subscales/Domain Composites

Domain	Item	Description
HCPrag	Q6	Prepare students to compete for the best jobs
	Q9	Help students achieve academic excellence
	Q10	Help students develop skills in STEM (science, technology, engineering, and math) to get high-paying jobs
	Q14	Prepare students to earn as much or more than their parents
HPPerson	Q2	Help students achieve their fullest potential
	Q4	Help students find and follow what they are interested in
	Q7	Help students learn how to learn for the rest of their lives
	Q8	Help students develop into well-rounded individuals with many abilities
Moral	Q3	Develop students' ability to improve the well-being of others in need
	Q13	Help students to be good people in their personal and social lives
	Q19	Help students use good reasoning about unfair conditions in society
	Q20	Prepare students to be good citizens
Social	Q1	Help students socialize
	Q11	Help students to learn how to get along with others in the workplace
	Q16	Develop students' trustworthiness and social credibility
	Q18	Prepare students to be active in democratic decisions and group consensus building
Free Standing (Not Included in Composites Based on CFA)		
Moral	Q5	Help students develop skills in the liberal arts (philosophy, history, language, art, music, etc.) to make the world a better place
HPPerson	Q12	Help students develop skills in the liberal arts (philosophy, history, language, art, music, etc.) because they enjoy the subject(s)
HPPerson	Q15	Help students develop skills in STEM (science, technology, engineering, and math) because they enjoy the subject(s)
HCPrag	Q17	Prepare students for work

2.2.3 Part 3: Domain Coordination Types Base on Free-Response Questions

The survey also asked subjects to explain why they assigned their highest and lowest ratings to purposes in free form written replies. After subjects completed Part 2, they responded to two main free-response questions about their ratings in the prior task:

> *A. Please explain why you chose to rate the most important purposes of education the way you did just now. You may also like to consider where your ideas came from. (If necessary, you can use the back arrow at the bottom of the page to review your answers from before.); and*

> *B. Please explain why you chose to rate the least important purposes of education the way you did. You may also like to think about where your ideas came from. (If necessary, you can use the back arrow at the bottom of the page to review your answers.)*

Based on their answers to these two questions, respondents were scored for types of domain identification and coordination. (Further details of procedures and results of Part 3 are discussed below. Also, see coding scheme in Appendix.) Additional questions gave respondents opportunities to expand upon their answers to these two questions (see Appendix for additional questions).

These free-response data constitute a qualitative portion of the study. Analysis of these responses was used to clarify and expand the meaning of the quantitative ratings of purposes. Along with analyses of the numerical ratings and subscale composites, the analysis of free responses also indicated how participants coordinated among domains. Three coordination types were assigned: 1 for no coordination, 2 for partial coordination, and 3 for clear coordination. This allowed the research team to partially numericize the free response answers for numerical analysis with the Likert-like ratings of the purposes themselves.

2.2.4 Coding Coordination Types

Coder reliability was established between two trained research assistants. Overall coder reliability was .80. *Type 1* coordination (Domain Prioritization/Subordination) involves concerns in one domain take precedence over other domains involved in the issue. In other words, concerns in one or more domains are subordinated to one overriding/prevailing domain. A respondent who displays *Type 2* coordination (Partial Coordination) mentions elements from more than one domain, but they are not fully integrated with concepts involved in all domains at hand. Any proposed solutions meet concerns from multiple domains separately rather than in a fully integrative way. Finally, in *Type 3* coordination, elements from multiple domains are identified and taken into account in generating a resolution or judgment about the purpose(s). Solutions clearly acknowledge and attempt to integrate multiple-domain considerations. (See Appendix for the full coding scheme.)

2.3 Results

Results are presented in the following order: Confirmatory Factor Analysis (CFA) for Subscales, Analyses of Composites for Undergraduates, Analyses of Composites by Demographic Categories, and Analyses of Free Responses. Statistical analyses and reports within these subsections include descriptive statistics, analyses of variance (ANOVAs), t-tests, and linear regressions to address different questions and aspects of the study data. Significance levels throughout this study are based on an alpha value of .05.

2.3.1 Confirmatory Factor Analysis (CFA) for Subscales

A four-factor covariance CFA model was run with four subscales for each of the following latent variables/domains (including four component items for each): HCPrag, HPPerson, Moral, and Social. Outliers were removed from the total sample. These included 19 5th plus-year students and 32 multivariate response-pattern outliers. Cronbach's Alpha reliability coefficients were run for females and males separately as well as for the whole group. This was done for each of the four latent factors.

A 20-item, four-factor model from the Survey About Purposes of Education was used to assess students' self-reported ratings of purposes of education categorized by four covaried subscales as dealing with the four domains human-capital/pragmatic, human potential/personal, moral, and socialization. Each item within subscales was a 10-point Likert-like scale that allowed for one-decimal-place increments between whole numbers (1 = Not Important to 10 = Extremely Important). Results of the first CFA included all 20 items ($\chi2$ (164) = 643.250, p <.001, CFI = 0.887, TLI = 0.869, RMSEA = 0.0855, 90% CIs [0.0786, 0.09251], SRMR = .0775). Four items (two HPPerson, one HCPrag, and one Moral: Q5, Q12, Q15, and Q17) were not retained because of low factor loadings and subpar model fit indices. The CFA was then rerun with the four items removed. The subsequent results suggested that the four-factor model achieved acceptable model fit and reliability: ($\chi2$ (98) = 230.126, p <.001, CFI = 0.960, TLI = 0.951, RMSEA = 0.0581, 90% CIs [0.0484, 0.0678], SRMR = .0614). Table 5 presents the factor loadings of the CFA model before and after item deletions.

Table 5

Standardized Loadings for the Undergraduate CFA Model (n = 400)

Items	Descriptions	All Items	Retained Items
	HCPrag		
Q6	Prepare students to compete for the best jobs	0.83	0.79
Q9	Help students achieve academic excellence	0.61	0.62
Q10	Help students develop skills in STEM (science, technology, engineering, and math) to get high-paying jobs	0.66	0.7
Q14	Prepare students to earn as much or more than their parents	0.65	0.69
Q17	Prepare students for work	0.62	Not Retained
	HPPerson		
Q2	Help students achieve their fullest potential	0.83	0.85
Q4	Help students find and follow what they are interested in	0.77	0.77
Q7	Help students learn how to learn for the rest of their lives	0.69	0.7
Q8	Help students develop into well-rounded individuals with many abilities	0.8	0.81
Q12	Help students develop skills in the liberal arts (philosophy, history, language, art, music, etc.) because they enjoy the subject(s)	0.59	Not Retained
Q15	Help students develop skills in STEM (science, technology, engineering, and math) because they enjoy the subject(s)	0.59	Not Retained

	Moral		
Q3	Develop students' ability to improve the well-being of others in need	0.82	0.81
Q5	Help students develop skills in the liberal arts (philosophy, history, language, art, music, etc.) to make the world a better place	0.61	Not Retained
Q13	Help students to be good people in their personal and social lives	0.82	0.83
Q19	Help students use good reasoning about unfair conditions in society	0.75	0.73
Q20	Prepare students to be good citizens	0.82	0.84
	Social		
Q1	Help students socialize	0.65	0.66
Q11	Help students to learn how to get along with others in the workplace	0.72	0.72
Q16	Develop students' trustworthiness and social credibility	0.71	0.72
Q18	Prepare students to be active in democratic decisions and group consensus building	0.69	0.69

In this study, the Cronbach's alpha reliability coefficients of total subscale scores for the whole group, females, and males, were as follows:

HCPrag: Whole Group: $\alpha = 0.777$. Females: $\alpha = 0.759$. Males: $\alpha = 0.714$.

HPPerson: Whole Group: $\alpha = 0.846$. Females: $\alpha = 0.833$. Males: $\alpha = 0.849$.

Moral: Whole Group: $\alpha = 0.868$. Females: $\alpha = 0.868$. Males: $\alpha = 0.864$.

Social: Whole Group: $\alpha = 0.789$. Females: $\alpha = 0.793$. Males: $\alpha = 0.760$.

A composite mean was calculated for each four-item subscale (see Table 4 above and Table 6 below).

2.3.2 Analyses of Composites for Undergraduates

A repeated measures analysis of variance (ANOVA) with one within-subjects factor was conducted to determine whether significant differences existed among the four composites. The main effect for the within-subjects factor was significant, $F(3, 1350) = 116.02, p < .001$, indicating there were significant differences between the values of all four composites. Table 5 presents the ANOVA results. The means of the within-subjects factor are presented in Table 6 and Figure 1. This table shows the relative differences among the four domains of educational priorities. HPPerson composite means are the highest, and HCPrag composite means are the lowest.

Table 6

Composite Means and Standard Deviations for College Students

Domain Composite	M	SD
HPPerson	8	1.72
Moral	7.38	1.95
Social	6.79	1.77
HCPrag	6.46	1.91

Note. n = 451.

Figure 1

Composite Means for College Students
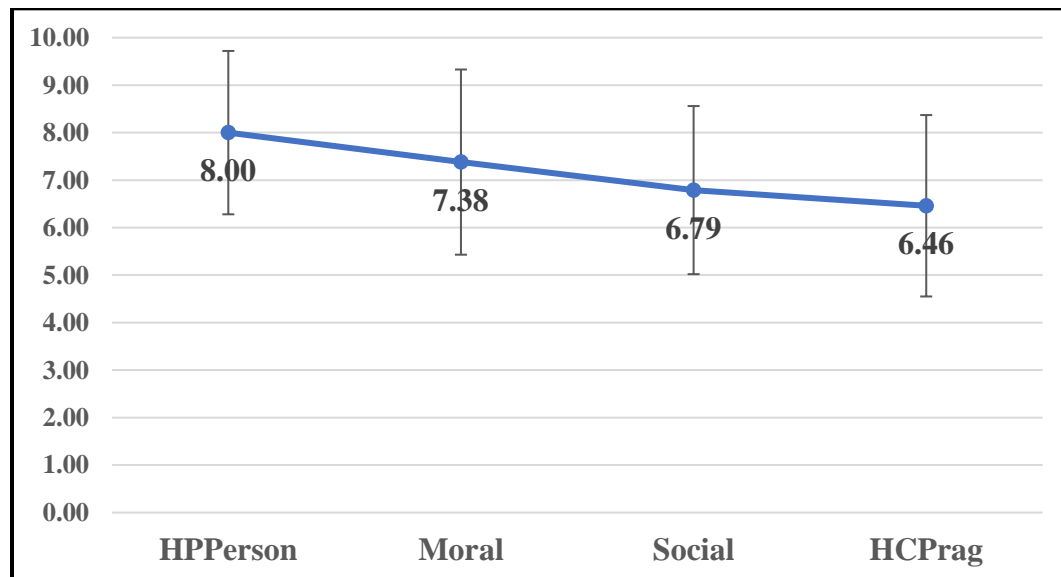
Post-hoc tests were conducted. The mean contrasts utilized Tukey comparisons based on an alpha of .05. Tukey comparisons were used to test the differences in the estimated marginal means for each combination of within-subject effects. Within effects showed that HCPrag was significantly less than HPPerson, $t(450) = -14.61, p < .001$, Moral, $t(450) = -8.05, p < .001$, and

Social, $t(450) = -3.44$, $p = .004$. HPPerson was significantly greater than Moral, $t(450) = 9.71$, $p < .001$, and Social, $t(450) = 16.06$, $p < .001$. Moral was significantly greater than Social, $t(450) = 8.94$, $p < .001$.

2.3.3 Analysis of Domain Coordination

The following Tables 7 and 8 present the distribution of undergraduate domain coordination types based on coding of free responses.

Table 7

Breakdown of Coordination Scores (Including Uncodable Responses)

Type	Count	Percent
0's Uncodable	17	4%
1's No Coordination	33	7%
2's Partial Coordination	213	47%
3's Full Coordination	188	42%
Total Count:	451	100%

Table 8

Breakdown of Coordination Scores (Codable Responses)

Type	Count	Percentage
1's No Coordination	33	8%
2's Partial Coordination	213	49%
3's Full Coordination	188	43%
Total Count:	434	100%

A Spearman correlation analysis was conducted between Domain Coordination types and each of the four domain composites. Cohen's standard was used to evaluate the strength of the relationships, where coefficients between .10 and .29 represent a small effect size, coefficients between .30 and .49 represent a moderate effect size, and coefficients above .50 indicate a large effect size (Cohen, 1988).

A significant negative correlation of -.15 was observed between Domain Coordination and HCPrag ($p = .004$, 95.00% CI = [-.24, -.06]). Domain Coordination increases as HCPrag decreases. A significant positive correlation was observed between Domain Coordination and HPPerson, with a correlation of .17 ($p = .001$, 95.00% CI = [.08, .26]). Domain Coordination increases as HPPerson increases. A significant positive correlation was also observed between Domain Coordination and Moral, with a correlation of .17 ($p = .001$, 95.00% CI = [.08, .26]). Domain Coordination increases as Moral increases. According to an additional Kendall correlation test, a significant positive correlation was observed between Domain Coordination and Social, with a correlation of .08 ($p = .046$, 95.00% CI = [-.02, .17]). To summarize, as HCPrag decreases, domain coordination increases (a negative correlation); as HPPerson, Moral, and Social increase, domain coordination also increase (positive correlations). Table 9 presents the results of the correlations.

Table 9

Spearman Correlations Between Domain Coordination and Composite Scores

Combination	r	95.00% CI	n	p
Domain Coordination-HCPrag	-0.15	[-.24, -.06]	434	0.004
Domain Coordination-HPPerson	0.17	[.08, .26]	434	0.001
Domain Coordination-Moral	0.17	[.08, .26]	434	0.001
Domain Coordination-Social	0.09	[-.00, .19]	434	0.05

In summary, as domain coordination moves from Type 1 (no coordination) to Type 2 (partial coordination) to Type 3 (full coordination), HCPrag composites scores tend to decrease and HPPerson and Moral composites scores tend to increase. The following figure displays these relationships.

Figure 2

College Composite Means by Coordination Type
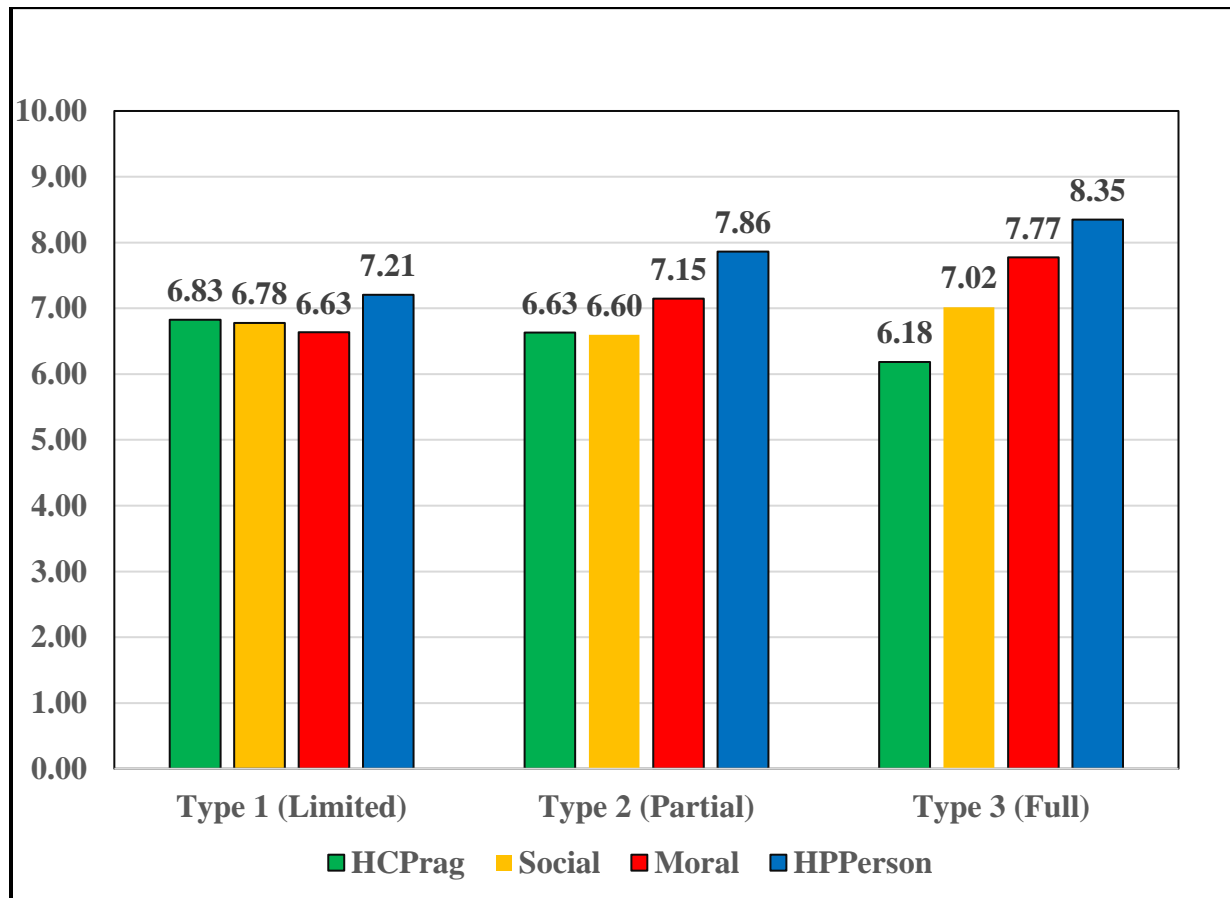
A linear regression analysis was also conducted to assess whether HCPrag, HPPerson, Moral, and Social significantly predicted Domain Coordination. All predictors in the regression model have VIFs less than 5; therefore, multicollinearity is not a concern. The results of the linear regression model were significant, $F(4,429) = 8.52$, $p < .001$, $R^2 = .07$, indicating that approximately 7.36% of the variance in Domain Coordination is explainable by HCPrag, HPPerson, Moral, and Social. HCPrag significantly predicted Domain Coordination, $B = -0.06$, $t(429) = -3.45$, $p < .001$. This indicates that on average, a one-unit increase of HCPrag will decrease the value of Domain Coordination by 0.06 units. HPPerson significantly predicted Domain Coordination, $B = 0.06$, $t(429) = 2.21$, $p = .027$. This indicates that on average, a one-unit increase of HPPerson will increase the value of Domain Coordination by 0.06 units. Moral did not significantly predict Domain Coordination, $B = 0.04$, $t(429) = 1.63$, $p = .105$. Based on this sample, a one-unit increase in Moral does not have a significant effect on Domain Coordination. Social did not significantly predict Domain Coordination, $B = -0.01$, $t(429) = -0.48$, $p = .634$. Based on this sample, a one-unit increase in Social does not have a significant effect on Domain Coordination. Table 10 summarizes the results of the regression model.

Table 10

Linear Regression With HCPrag, HPPerson, Moral, and Social Composites Predicting Domain Coordination

Variable	*B*	*SE*	95.00% CI	β	*t*	*p*
(Intercept)	2.04	0.15	[1.74, 2.34]	0	13.32	< .001
HCPrag	-0.06	0.02	[-0.09, -0.02]	-0.18	-3.45	< .001
HPPerson	0.06	0.03	[0.006, 0.10]	0.15	2.21	0.027
Moral	0.04	0.03	[-0.009, 0.09]	0.14	1.63	0.105
Social	-0.01	0.03	[-0.06, 0.04]	-0.03	-0.48	0.634

Note. Results: $F(4,429) = 8.52$, $p < .001$, $R^2 = .07$
Unstandardized Regression Equation: Domain Coordination = 2.04 - 0.06*HCPrag + 0.06*HPPerson + 0.04*Moral - 0.01*Social

Overall, HCPrag and HPPerson can partially predict the direction of change in domain coordination.

Additional Qualitative Analyses of Ratings and Free-Response Examples. Selected items and corresponding free responses were examined to get a clearer picture of how individuals prioritize and coordinate purposes of education. The following table shows college students' average ratings of all 20 purposes of education in order from highest to lowest and color-coded by domain. The highest rated item is Q4, "Help students find and follow what they are interested in" (HPPerson), and the lowest rated item is Q14, "Prepare students to earn as much or more than their parents" (HCPrag).

Students chose human potential and personal items as the most important purposes of education and moral items as the second most important. Examining the average ratings of the 20 items by ranking from highest to lowest indicates that personal and moral concerns are the dominant domains of purposes of education for these students. (See Table 11 below.) This mirrors the order of the undergraduate composite scores: HPPerson, Moral, Social, and HCPrag.

Table 11

College Student Rankings of Purposes by Average Score

Item	Domain	Description	Avg Score	Rank
Q4	HPPerson	Help students find and follow what they are interested in.	8.25	1
Q2	HPPerson	Help students achieve their fullest potential.	8.19	2
Q8	HPPerson	Help students develop into well-rounded individuals with many abilities.	7.89	3
Q7	HPPerson	Help students learn how to learn for the rest of their lives.	7.68	4
Q15	Unassigned HPPerson	Help students develop skills in STEM (science, technology, engineering, and math) because they enjoy the subject(s).	7.5	5
Q13	Moral	Help students to be good people in their personal and social lives.	7.5	6
Q19	Moral	Help students use good reasoning about unfair conditions in society.	7.46	7
Q3	Moral	Develop students' ability to improve the well-being of others in need.	7.45	8
Q9	HCPrag	Help students achieve academic excellence.	7.26	9
Q17	Unassigned HCPrag	Prepare students for work.	7.22	10
Q12	Unassigned HPPerson	Help students develop skills in the liberal arts (philosophy, history, language, art, music, etc.) because they enjoy the subject(s).	7.13	11
Q20	Moral	Prepare students to be good citizens.	7.11	12
Q11	Social	Help students to learn how to get along with others in the workplace.	6.94	13
Q5	Unassigned Moral	Help students develop skills in the liberal arts (philosophy, history, language, art, music, etc.) to make the world a better place.	6.92	14
Q1	Social	Help students socialize.	6.92	15
Q18	Social	Prepare students to be active in democratic decisions and group consensus building.	6.75	16
Q6	HCPrag	Prepare students to compete for the best jobs.	6.69	17
Q16	Social	Develop students' trustworthiness and social credibility.	6.58	18
Q10	HCPrag	Help students develop skills in STEM (science, technology, engineering, and math) to get high-paying jobs.	6.21	19
Q14	HCPrag	Prepare students to earn as much or more than their parents.	5.69	20

Selected Free Responses. Responses were scanned for informative and clear enough responses addressing items Q4 (HPPerson), *Help students find and follow what they are interested in* (highest rating) and Q14 (HCPrag), *Prepare students to earn as much or more than their parents* (lowest rating). Instead of choosing quotations at random, samples were chosen for clarity and representativeness of the answers as a whole for any particular item. Attempts were made to include all three types of domain coordination and different reasoning viewpoints for prioritization choices.

The first examination was for Q4. Analysis included summation of statements about Q4 and contrasts with each individual's minimum rating. Out of 115 answers with Q4 as the top rated item, there were 67 that were pulled out for review. Of those, 11 were selected for further analysis. Three representative responses at each coordination type for students that rated Q4 as their highest rating are shown in Table 12 below. Their responses to their minimum-rated item are also shown.

Table 12

Reasons for Maximum Ratings of Q4. Help students find and follow what they are interested in

Respondent 350	Coordination Type 1	High Composite: HPPerson
Max Rating (Q4, HPPerson)	I tried to put the purposes that I saw was missing in my own high school higher in the ratings, since now after I have graduated high school, I can see what I myself value and would have needed from my high school that was not offered	
Min Rating (Q9, HCPrag)	I tried to put the purposes that I saw as already implemented in the system lower in ranking. Since institutions are already providing it, it is not valued as high in my opinion.	

Respondent 27	Coordination Type 2	High Composite: HPPerson
Max Rating (Q4, HPPerson)	I believe students should be given the chance to explore their interests; the current education system doesn't really allow for that to happen. Learning should be an enjoyable experience, not a burden.	
Min Rating (Q6, HCPrag)	Learning for the intention of earning more is practical, but it is less genuine. It feels more robotic, and there is no deeper/passionate understanding of the subject.	

Respondent 8	Coordination Type 3	High Composite: Moral
Max Rating (Q4, HPPerson)	The purposes of education that I rated the most are finding interest and developing skills. We are given a lot of opportunities as well as resources at schools. Finding some that interest you and give it a shot, and you will earn some skills during your learning process. Those interests could be developed as your hobbies, your further career, or even a port of your life.	

Min Rating (Q14, HCPrag)	The one I rated the least important is 'Prepare students to earn as much or more than their parents.' Education allows us better prepare for entering the workplace and pursuing the field we are interested in. Sometimes what we are interested in might not lead us to high-paying jobs, and I think it is fine to stick to what you want to do instead of being what other people want you to do.

Although there were not very many respondents with coordination Type 1 who prioritized Q4 (HPPerson) the most, even Type-1 Respondent 350 is able to express reasoning as interpretable as do Types 2 and 3 about choosing Q4 as the highest educational priority. However, a handful of respondents rated Q4 as the lowest educational priority. Table 13 below shows one such respondent's reasoning.

Table 13

Contrary Rating of Q4

Respondent 35	Coordination Type 3	High Composite: HCPrag
Min Rating (Q4, HPPerson)	I think education can be important for personal, emotional, social, etc. growth. With that said, many (arguably most) well-paying jobs require a college degree, and/or there is an expectation of attending college placed upon students from their schools/family/culture. This puts more emphasis on graduating to get a good job than it is to just enjoy learning and partake in the types of growth I listed. Regardless of what seems the most ideal/moral (i.e. going just to learn how to learn) a college degree is used for getting a job or getting into post-grad school.	
Max Rating (Q10, HCPrag)	I think I chose those based on what I felt college is actually helpful with. I think socially there is a lot of growth and experiences in colleges (at least for me) that are important, but people don't always study things just because they are interested in them, it has to be 'worth it'. Their choice of study is heavily influenced by the pressure to get a job, be successful, have the money that went into a college degree be worth it. I've seen many people who chose to not major in the subject they were very interested in because it wouldn't be as helpful post-grad.	

In general, a plurality of students prioritized Q4 (HPPerson). Most of those prioritized HCPrag items the least. Although a minority prioritized Q4 the least, they nevertheless expressed personal preferences for Q4. This handful of students seemed to feel that it was their duty prioritize practical purposes over personal. In contrast to respondents in Table 12, the respondent in Table 13 scored according to a belief in what school *is for* instead of what school *ought to be for*.

The second set of responses was part of an examination of why Q14 (HCPrag), *Prepare students to earn as much as or more than their parents*, was the lowest-rated educational purpose. Table 14 shows contrasting coordinated responses about why Q14 was rated lowest in relation to other purposes and why some students rated it the highest.

Table 14

Reasons for Minimum and Maximum Ratings of Q14. Prepare students to earn as much as or more than their parents

Respondent 262	Coordination Type 3	High Composite: HPPerson
Min Rating (Q14, HCPrag)	I think that the purposes of education should not be linked to earning potential or surpassing the earnings of one's parents. I think that education goes beyond monetary values and it is about developing humans and well-rounded individuals, not creating money-driven workers.	
Max Rating (Q8, HPPerson)	I think that the most important purposes of education are to help socialize students and to make them into well-rounded thinkers. Social interaction is something that every student needs to learn, especially evidenced by the absence of social interaction during the covid-19 pandemic. Education should focus on providing opportunities for students to work together in group settings to learn interpersonal communication and working skills. I think this will have huge effects on our society as well. I also think education is about more than learning curriculum, but also about developing well-rounded individuals who can think on their own while maintaining others' perspectives. I think schools are a prime place to teach these skills and set students up for success in their futures, whatever work field they choose to enter.	
Respondent 404	Coordination Type 3	High Composite: HCPrag
Max Rating (Q14, HCPrag)	I grew up being reminded by my family that education is the most likely way to achieve a higher paying job than your parents. When being taught about the importance of education through my parents, financial security for both my own future and my extended family's future was always a prime concern. High paying jobs can be attained more easily with education and once a high paying job is secured, my family expects the children to give back to the family financially.	
Min Rating (Q1, Social)	Never thought that school was really meant for socializing as family always emphasized that while in school, studying should be the main focus. Also, going to class is a very different environment than going into a work office so I think it's more important to just get your feet wet and gain experience through working rather than hoping that school will teach you how to conduct yourself in a work environment.	

The differences in reasoning about and prioritization of Q14 may be attributable to differences in demographics. Also, there is the question of whether school is the place for coordinating attitudes due to sociodemographic and supporting certain developmental purposes that should be developed in other social environments (e.g., family, church, and other community organizations). Some students express this opinion about this and other purposes (especially socialization).

2.3.4 Analyses of Composites and Domain Coordination by Demographic Categories

Multiple tests were conducted to answer research questions about demographic effects on composite domain scores (HCPrag, HPPerson, Moral, and Social) and domain coordination types. Demographics included the following: gender, race/ethnicity, family-income level, and parents' level of education. Tests were also conducted to identify possible effects from academic areas on composites and domain coordination.

Race/ethnicity and academic areas did not show significant effects. However, there were significant differences in mean composite scores for gender, family-income, and parents' highest level of education. Finally, regressions controlling for selected independent variables were run to identify predictive effects on dependent composite and coordination variables.

Demographic groups that were too small for statistical power were excluded. Out of 451 subjects, they included the following 32 subjects: 9 gender non-binary; 1 race/ethnicity Native American; 6 race/ethnicity Black or African American; 4 race/ethnicity "no answer/unknown"; and 12 family income "no answer." Family Income groups were collapsed from five levels to three (lower, middle, upper); Parents' Highest Levels of Education (Parent Education) groups were collapsed from eight levels to three (lower, middle, upper); and Academic Majors were collapsed from 45 different majors to five academic areas: social sciences, natural and applied sciences, humanities, business, and undeclared/unknown (according to UNESCO/Lumen Learning, 2022).

Family income and parent education are considered the two main indicators of socioeconomic status (SES); however, there are disagreements about whether or not they should be combined into a composite SES variable or remain separate in analyses (National Center for Education Statistics, 2012; Oakes, 2012). Although they correlate with each other in this study ($r = .51$, $p < .001$, 95.00% CI = [.44, .58]), they are separated for analysis because they show differential results when analyzed with other variables. For example, HPPerson composites increased significantly according to higher levels of family income, while HCPrag composites significantly decreased according to higher levels of parent education. Further regression analyses were conducted that ruled out multicollinearity problems between these two demographic variables; however, they also showed that some of the significant results from the ANOVAs were no longer significant. Furthermore, regressions show that multicollinearity among these, race/ethnicity, and gender is insignificant (all VIFs < 5.0; see detailed results below).

Composites by Gender. Two-tailed independent-samples *t*-tests were conducted to examine whether the means of HCPrag, HPPerson, Moral, and Social composites were significantly different between females and males. The results were not significant for HCPrag and Social. However, the results of the two-tailed dependent samples *t*-tests for HPPerson ($t(440) = 2.02$, $p = .043$) and Moral ($t(440) = 2.79$, $p = .006$) were significant. These findings suggest that the means of HPPerson and Moral composites were significantly higher for females than for males.

Table 15

Two-Tailed Independent Samples t-Tests for Composites by Gender

Composite	Female		Male		t	p	d
	M	*SD*	*M*	*SD*			
HCPrag	6.57	1.92	6.24	1.84	1.64	0.101	0.18
*HPPerson	8.12	1.63	7.76	1.83	2.02	0.043*	0.21
*Moral	7.56	1.87	6.98	2.11	2.79	0.006*	0.29
Social	6.88	1.76	6.62	1.81	1.38	0.17	0.15

Note. N = 442. Degrees of Freedom for the *t*-statistic = 440. *d* represents Cohen's *d*. *Significant results are noted with an asterisk (*).*

To confirm the significant results of the t-tests, hierarchical regression analyses were run while controlling for effects of other variables and for assessing possible predictive effects of Gender on HPPerson and Moral. The results made the previous tests questionable. The other composites were entered at Step 1; Gender was added as a predictor variable into the models at Step 2; and the other demographic variables (Race/Ethnicity, Family Income, and Parent Education) were added at Step 3. All variables in the regression models have VIFs less than 5 (negligible multicollinearity). The F-tests for Step 1 were significant (HPPerson, $F (3, 417) =$ 165.14, $p < .001$, $\Delta R^2 = .54$; Moral, $F (3, 417) = 294.00$, $p < .001$, $\Delta R^2 = .68$), indicating that the other composites explained an additional variation in HPPerson and Moral. The F-tests for Step 2 were not significant, indicating that adding Gender did not explain additional variation in HPPerson or Moral. The F-tests for Step 3 were not significant, indicating that adding Race/Ethnicity, Family Income, and Parent Education did not account for significant amounts of additional variation in HPPerson or Moral. Overall, this indicates that Gender does not have a clear significant effect on HPPerson or Moral.

Composites by Race/Ethnicity. A multivariate analysis of variance (MANOVA) was conducted to assess if there were significant differences in the linear combination of composites HCPrag, HPPerson, Moral, and Social among the four categories of Race/Ethnicity (Asian, Hispanic, Mixed, and White). The main effect for Race/Ethnicity was not significant, $F(12, 1305) = 1.67$, $p = .067$, $\eta^2_p = 0.02$, suggesting the linear combination of HCPrag, HPPerson, Moral, and Social composites was similar for each level of Race/Ethnicity. Since there were no significant predictors, additional testing was not performed. Table 16 presents descriptive statistics of composite scores by Race/Ethnicity (including categories that were too small to include in the MANOVA).

Table 16

Means and Standard Deviations for Composites by Race/Ethnicity

HCPrag	*M*	*SD*	*n*
American Indian	7.92	N/A	1
Asian	6.56	1.77	238
Black	5.57	2.6	6
Hispanic	6.83	1.75	58
Mixed	6.05	2.14	56
White	6.26	2.16	88

HPPerson	*M*	*SD*	*n*
American Indian	6.7	N/A	1
Asian	8.01	1.58	238
Black	8.05	1.62	6
Hispanic	7.85	1.73	58
Mixed	7.79	2.11	56
White	8.24	1.82	88

Moral	*M*	*SD*	*n*
American Indian	4	N/A	1
Asian	7.42	1.86	238
Black	6.8	2.88	6
Hispanic	7.24	2.15	58
Mixed	7.3	2.11	56
White	7.53	1.93	88

Social	*M*	*SD*	*n*
American Indian	5.2	N/A	1
Asian	6.95	1.67	238
Black	7.09	1.19	6
Hispanic	6.41	2.21	58
Mixed	6.62	1.63	56
White	6.75	1.84	88

Composites by Family-Income Level. A MANOVA was conducted to assess if there were significant differences in the linear combination of all four composites between the levels of Family Income. The main effect for Family Income was significant, $F(8, 868) = 2.31$, $p = .019$, $\eta^2_p = 0.02$, suggesting the linear combination of HCPrag, HPPerson, Moral, and Social composites was significantly different among the levels of Family Income.

Posthocs were conducted. To further examine the effects of Family Income on the composites, analyses of variance (ANOVAs) were conducted for each composite. The results of

the ANOVAs were not significant for HCPrag, $F(2, 436) = 0.54$, $p = .585$, Moral, $F(2, 436) = 0.90$, $p = .409$, and Social, $F(2, 436) = 1.66$, $p = .192$, indicating that the differences in these three composites among the levels of Family Income are all similar. However, for the HPPerson composite, the results were significant, $F(2, 436) = 4.39$, $p = .013$. This indicates that prioritization of HPPerson purposes increases as family income increases. The means and standard deviations are presented in Table 17.

Table 17

Means and Standard Deviations for Composites by Family Income

HCPrag	*M*	*SD*	*n*
Lower	6.63	2.09	113
Middle	6.47	1.86	126
Upper	6.4	1.83	200

*HPPerson	*M*	*SD*	*n*
Lower	7.84	1.81	113
*Middle	7.73	1.95	126
*Upper	8.26	1.49	200

Moral	*M*	*SD*	*n*
Lower	7.36	2.03	113
Middle	7.21	2	126
Upper	7.5	1.83	200

Social	*M*	*SD*	*n*
Lower	6.6	2.06	113
Middle	6.7	1.84	126
Upper	6.95	1.56	200

Note. Significant results are noted with an asterisk (*).

To control for effects of other variables and for assessing possible predictive effects of Family Income on HPPerson, an additional hierarchical linear regression was conducted. The other composites were entered at Step 1; Family Income was added as a predictor variable into the model at Step 2; and the other demographic variables (Gender, Race/Ethnicity, and Parent Education) were added at Step 3. All variables in the regression models have VIFs less than 5 (negligible multicollinearity). The F-test for Step 1 was significant, $F(3, 417) = 165.14$, $p < .001$, $\Delta R^2 = .54$, indicating that the other composites explained an additional 54.30% of the variation in HPPerson. The F-test for Step 2 was significant, $F(2, 415) = 4.83$, $p = .008$, $\Delta R^2 = .01$. This model indicates that adding Family Income explained an additional 1.04% of the variation in HPPerson. The F-test for Step 3 was not significant, $F(6, 409) = 0.33$, $p = .921$, $\Delta R^2 = .00$, indicating that adding Gender, Race/Ethnicity, and Parent Education did not account for a significant amount of additional variation in HPPerson. Overall, this indicates that the higher the level of Family Income, the more students prioritize HPPerson items.

Parents' Highest Level of Education. A MANOVA was conducted to assess if there were significant differences in the linear combination of all four composites between the levels of Parent Education (Level 1: "Less than high school" and "High school graduate;" Level 2: "Some college," "2 year degree [Associates]," and "4 year degree;" and Level 3: "Master's degree," "Professional degree," and "Doctorate"). The main effect for Parent Education was significant, $F(8, 884) = 2.98$, $p = .003$, $\eta^2_p = 0.03$, suggesting the linear combination of all four composites was significantly different among the levels of Parent Education.

Posthocs were conducted. To further examine the effects of Parent Education on the composites, ANOVAs were conducted for each composite. The results of the ANOVAs were not significant for HPPerson, $F(2, 444) = 2.89$, $p = .057$, Moral, $F(2, 444) = 2.68$, $p = .070$, and Social, $F(2, 444) = 2.08$, $p = .126$. However, for HCPrag, the results were significant, $F(2, 444) = 3.15$, $p = .044$, indicating a significant inverse relationship between Parent Education and prioritization of HCPrag items (indicated in Figure 3). The means and standard deviations are presented in Table 18.

Table 18

Means and Standard Deviations for Composites by Parent Education

*HCPrag	M	SD	n
*Level 1 (≤ High School)	6.9	1.83	92
Level 2 (Some or = College)	6.45	1.84	150
*Level 3 (Graduate Education)	6.3	1.97	205

HPPerson	M	SD	n
Level 1 (≤ High School)	7.97	1.65	92
Level 2 (Some or = College)	7.78	1.86	150
Level 3 (Graduate Education)	8.21	1.58	205

Moral	M	SD	n
Level 1 (≤ High School)	7.58	1.89	92
Level 2 (Some or = College)	7.1	1.98	150
Level 3 (Graduate Education)	7.53	1.92	205

Social	M	SD	n
Level 1 (≤ High School)	6.75	1.98	92
Level 2 (Some or = College)	6.59	1.69	150
Level 3 (Graduate Education)	6.97	1.72	205

Note. Significant results are noted with an asterisk (*).

Figure 3

HCPrag by Parent Education
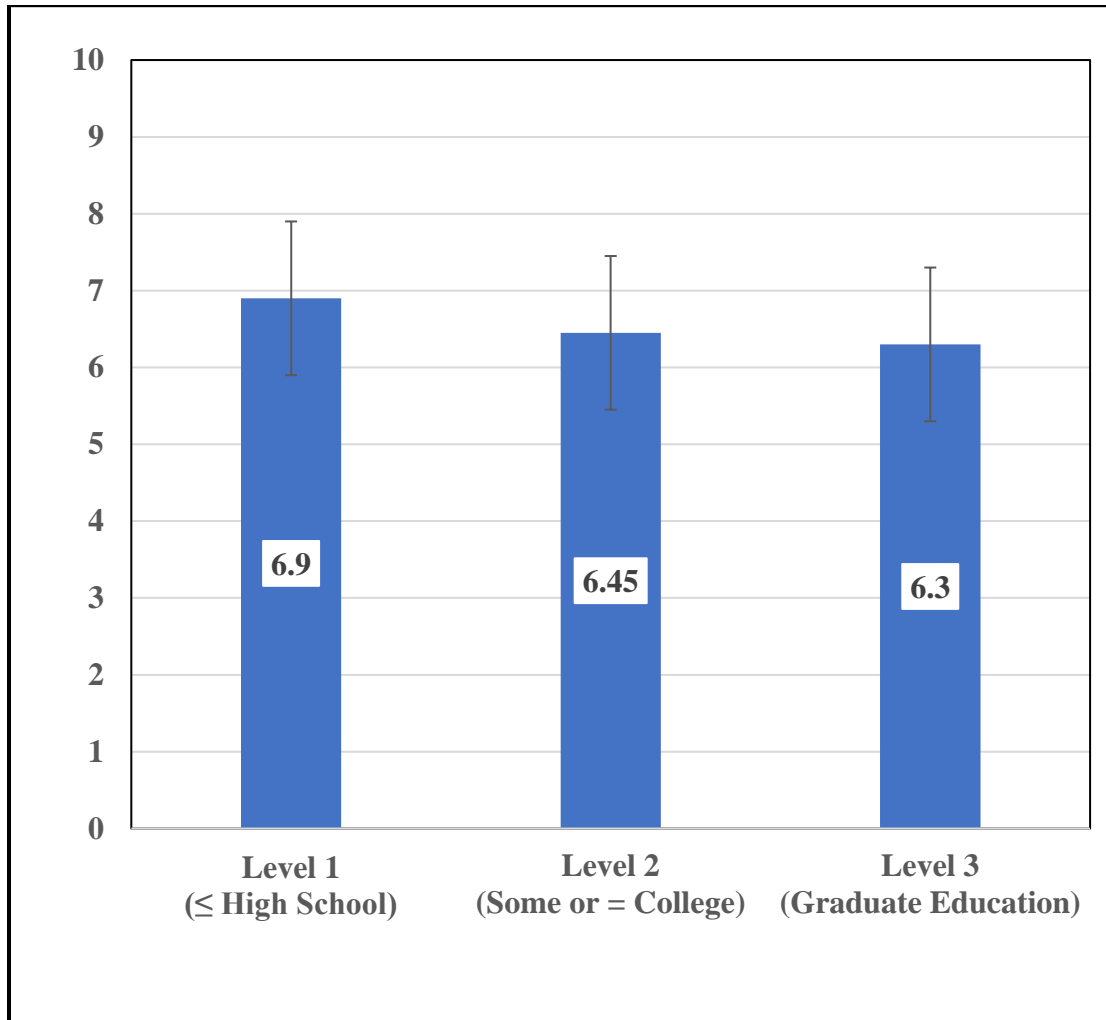
To control for effects of other variables and for assessing possible predictive effects of Parent Education on HCPrag, an additional hierarchical linear regression was conducted. The other composites were entered at Step 1; Parent Education was added as a predictor variable into the model at Step 2; and the other demographic variables (Family Income, Gender, and Race/Ethnicity) were added at Step 3. All variables in the regression models have VIFs less than 5 (negligible multicollinearity). The F-test for Step 1 was significant, $F(3, 417) = 27.76$, $p < .001$, $\Delta R^2 = .17$, indicating that the other composites explained an additional 16.65% of the variation in HCPrag. The F-test for Step 2 was significant, $F(2, 415) = 4.74$, $p = .009$, $\Delta R^2 = .02$. This model indicates that adding Parent Education explained an additional 1.86% of the variation in HCPrag. The F-test for Step 3 was not significant, $F(6, 409) = 1.03$, $p = .403$, $\Delta R^2 = .01$, indicating that adding Family Income, Gender, and Race/Ethnicity did not account for a significant amount of additional variation in HCPrag. Overall, this indicates that the higher the level of Parent Education, the less students prioritize HCPrag items.

Domain Coordination by Demographics. ANOVAs were conducted to determine whether there were significant differences in Domain Coordination by Gender, Race/Ethnicity, Family Income, Parent Education, and Academic Area. The results of the ANOVAs were not significant, indicating the differences in Domain Coordination among categories within these demographic variables were all similar (Gender, $F(1, 440) = 0.63$, $p = .429$; Race/Ethnicity, $F(3, 436) = 1.06$, $p = .367$; Family Income, $F(2, 436) = 0.14$, $p = .869$; Parent Education, $F(2, 444) = 1.35$, $p = .260$; and Academic Area, $F(4, 446) = 0.43$, $p = .788$).

A linear regression analysis was conducted to assess whether Gender, Race/Ethnicity, Family Income, and Parent Education significantly predicted Domain Coordination. All predictors in the regression model have VIFs less than 5. Table 19 presents the VIF for each predictor in the model.

Table 19

Variance Inflation Factors for Selected Demographics

Demographic Variable	VIF
Gender	1.03
Race/Ethnicity	1.33
Family Income	1.62
Parent Education	1.74

The results of the linear regression model were not significant, $F(8,399) = 1.31$, $p = .238$, $R^2 = .03$, indicating Gender, Race/Ethnicity, Family Income, and Parent Education did not explain a significant proportion of variation in Domain Coordination.

An additional linear regression analysis was conducted to assess whether Age significantly predicted Domain Coordination. The results of the linear regression model were not significant, $F(1,432) = 0.10$, $p = .754$, $R^2 = .00$, indicating that, for college students, Age does not explain a significant proportion of variation in Domain Coordination.

Academic Areas. A MANOVA was conducted to assess significant differences in HCPrag, HPPerson, Moral, and Social composites among academic areas. The main effect for Academic Area was not significant, $F(16, 1784) = 0.80$, $p = .686$, $\eta^2_p = 0.01$, suggesting the linear combination of HCPrag, HPPerson, Moral, and Social composites was similar for each academic area. Since there were no significant predictors, additional posthoc testing was not performed.

Although academia area does not predict domain priority, it does show some notable relationships. Generally, HPPerson is the highest priority for all students in every academic area. HCPrag is the second highest priority for business, humanities, and undeclared majors. See Table 20 for a complete breakdown of academic area group rankings.

Table 20

Domain Prioritization by Academic Area

Prioritized Purposes	All Majors			Social Sciences			Natural and Applied Sciences		
Domain	Rank	*n*	%	Rank	*n*	%	Rank	*n*	%
HPPerson	1	240	53%	1	131	54%	1	84	55%
Moral	2	86	19%	2	49	20%	2	30	20%
HCPrag	3	82	18%	3	42	17%	3	24	16%
Social	4	43	10%	4	22	9%	4	14	9%
Totals:		451	100%		244	100%		152	100%

	Business			Humanities			Undeclared		
Domain	Rank	*n*	%	Rank	*n*	%	Rank	*n*	%
HPPerson	1	13	43%	1	8	47%	1	4	50%
Moral	3	4	13%	4	2	12%	3	1	13%
HCPrag	2	10	33%	2	4	24%	2	2	25%
Social	4	3	10%	3	3	18%	3	1	13%
Totals:		30	100%		17	100%		8	100%

A linear regression analysis was also conducted to assess whether Academic Area significantly predicted Domain Coordination. The results of the linear regression model were not significant, $F(4,429) = 0.77$, $p = .542$, $R^2 = .01$. Academic Area does not explain variance in Domain Coordination.

2.4 Summary and Discussion of Results

There were significant results for composites concerning not only college students as a whole group but also for demographic categories of gender, family income, and parent education. There was a notable non-significance of influence from race/ethnicity. However, some regression analyses did not show significant predictive values of demographics on composites. For example, even though t-tests showed significant differences in HPPerson and Moral composite means according to gender, other analyses showed that gender does not significantly predict HPPerson or Moral priorities in education because other demographic variables were more controlled for in those models.

The results of the analyses discussed above generally support the hypotheses for college students:

Hypothesis for RQ1 (Prioritization) was supported by the CFA and respondents' ratings of the purpose-of-education items.

Hypothesis for RQ2 (Coordination) was for the most part confirmed. Most college students displayed Type 2 or Type 3 coordination; however, the plurality displayed Type 2 coordination.

Hypothesis for RQ3 (Demographics) was supported for race/ethnicity, family income, and parent education but not for gender.

(Refer to Section 2.1 for a description of all hypotheses.)

2.4.1 Factor Analysis and Whole-Group Composites

Results of the CFA suggested that the whole model achieved acceptable model fit. It also showed that the latent variables associated with the HC and HP educational frameworks corresponded with those in the pragmatic and personal domains. Human Capital purposes of education correspond with the pragmatic domain, and Human Potential purposes correspond with the personal domain. The same items comprising the domain subscales from the whole model were used for calculating four composite scores (HCPrag, HPPerson, Moral, and Social) for each respondent.

There were significant differences in the means of all four composite variables. Their relative prioritization was as follows: HPPerson was the highest (M = 8.00, SD = 1.72); Moral was the second highest (M = 7.38, SD = 1.95); Social was the second lowest (M = 6.79; SD = 1.77); and HCPrag was the lowest (M = 6.46, SD = 1.91). HPPerson scores increase as Moral and Social scores increase, and Moral scores decrease as HCPrag scores increase.

Overall, most of the college students prioritize human capital/pragmatic purposes of education lower than other categories of educational purposes. This is also generally the case for respondents from all demographic categories. What some might interpret as a rebellion against capitalist-driven purposes of education is perhaps due to the social-justice orientation of a highly selective, elite public university.

2.4.2 Domain Coordination

Whole-Group Distribution of Domain Coordination. Most college students display type 2 (partial) or type 3 (full) coordination. Although a plurality display type 2 coordination, almost as many subjects display type 3 coordination. Based on past domain research methods, if this had been an interactive interview study, further prompting would most likely have resulted in more type 3s.

Correlations between Domain Coordination and Composites. Composite scores were correlated with domain-coordination results. There is a significant negative correlation between the HCPrag composite and domain coordination. On the other hand, there are significant positive correlations between domain coordination and HPPerson, Moral, and Social composites. These findings help to illuminate understandings of Research Questions 1 (Prioritization) and 2 (Coordination).

2.4.3 Demographic Analyses

Demographic analyses of composite scores shows significant differences for three categories: gender, family income, and parents' level of education. However, only family income and parent education have significant predictive effects—respectively on HPPerson and HCPrag. There were no significant predictive relationships between demographics and coordination of purposes of education. In general, each category of each demographic shows the same relationships among composite scores in the same pattern as shown by Figure 1 (see page 15* of this chapter), Composite Means. The lowest score is for HCPrag; the next highest is for Social, then Moral, and then HPPerson. Analysis of Race/Ethnicity and Academic Major failed to show significant results. These demographic findings shed light into Research Question 3: Are there demographic differences or trends in how they identify and prioritize different, sometimes competing, purposes of education?

Gender. For gender, the means of HPPerson and Moral composites were significantly higher for females compared to males. However, gender did not significantly predict HPPerson or Moral. These findings will be subjects for further discussion in later chapters.

Race/Ethnicity. For race/ethnicity, there are no significant differences among mean composite scores, and it does not significantly predict composite prioritizations. These results follow findings of other domain-theory-based studies (Nucci et al., 2017). Race/ethnicity shows no significance in people's prioritization of purposes of education.

Family Income. The mean HPPerson composites were higher for the upper family income level than for middle and lower family income levels. A possible explanation of this tendency is that students, having been socialized to cultural norms in high school and whose parents are affluent enough to send them to a reasonably good college, are encouraged to individuate—to free themselves mentally from the bonds of social norms by recreating their selves (Rorty, 1999). These issues and possible implications will be discussed more in Chapters 3 and 4.

Parents' Level of Education. There is an inverse relationship between parent level of education and HCPrag—the lower the parents' level of education, the higher the HCPrag composite score. It is a common assumption that pursuing more education equates to higher earning power for the students, a method of achieving intergenerational upward social mobility (i.e., the "American Dream"). This may be a more salient purpose of education for students whose parents have lower levels of education, especially first-generation college students. This may be an example of Labaree's "social mobility" dimension of purposes of education (Labaree, 1997). This issue will also be discussed further in later chapters.

Domain Coordination by Demographics. As reported above, there were no significant differences in domain coordination by any demographic. Possible demographic effects will be discussed further in Chapter 3 Study of High School Students and Chapter 4 General Discussion.

Academic Majors. There were no significant relationships among composites scores and domain coordination by academic areas. This university may be non-representative in its mission and general student population in terms of individuals/mission statements that emphasize "social justice" concerns in all majors, including business and economics.

2.4.4 Conclusions

Most college students care more about developing their human potential, personal interests, moral understandings, and socialization concerns than pursuing pragmatic purposes of education related to the accumulation of wealth through human-capital paradigms. They expect to accomplish multiple purposes through formal education, and they coordinate their educational pursuits to enable accomplishing multiple purposes.

There are some demographic differences in prioritization of purposes of education related to gender and the socioeconomic indicators family income and parent education but not to race/ethnicity. The higher the income levels of parents, the more students prioritize educational pursuits that expand their human potential and personal development. The lower the parents' level of education, the higher the student's prioritization of human capital and pragmatic concerns of purposes of education. Even at an elite public university, not all students fully coordinate purposes of education. As expected, however, most displayed at least partial coordination.

The results of this study will be used to achieve a better understanding of adolescent reasoning about purposes of education. The outcomes of the research reported in this chapter provide an initial basis for identifying a trajectory of high school students' development of reasoning about purposes of education. That issue will be investigated further in Chapter 3, Study of High School Students and later chapters. Implications for educational policy that

emerge from the outcomes of both the present study with university students and the one for high school students will be taken up in the final chapter of the dissertation.

Chapter 3: Study of High School Students

3.1 Introduction

The purpose of this study is to contribute to greater understandings of adolescents' knowledge and reasoning about the purposes of education. Of particular interest was whether and how adolescents coordinate their educational pursuits with personal, socialization, economic, practical, and moral considerations. According to SCDT, they develop an increased ability to recognize the importance of and coordinate among domains in multifaceted situations and issues. The same would be expected with purposes of education. This entailed a study and analysis of high school students' conceptions about the purposes of education. Data collection for this study used the same survey as described for the college students in Chapter 2. Most of the procedures, methods, and data analyses were conducted the same way in both studies. Any differences or special considerations for the high school students are reported in the subsections of this chapter. Results from both studies will be discussed further in Chapter 4.

3.1.1 Guiding Research Questions

- RQ1 (Prioritization). How do high school students prioritize different purposes of education according to Human Capital/Pragmatic, Human Potential/Personal, Moral, and Socialization orientations? Are there developmental trends?
- RQ2 (Coordination)t. How do respondents coordinate and justify prioritizations of different purposes of education according to the theoretical framework of this study, especially when there are multiple considerations and potentially competing purposes? Are there developmental trends?
- RQ3 (Demographics). Are there significant demographic differences or trends in how they reason about purposes of education?

3.1.2 Hypotheses

- RQ1 (Prioritization). Ratings of Human Capital purposes of education correspond to reasoning and coordination patterns in the pragmatic domain. Ratings of Human Capabilities/Human Potential purposes correspond to reasoning and coordination in the personal domain. Most respondents will prioritize Human Potential/Personal purposes of education over purposes associated with other domains. A minority of respondents will prioritize Human Capital/Pragmatic purposes over other domains. A small number of respondents will show equal prioritization of various purposes of education across multiple domains. There should be no major differences in younger and older students' prioritization of Human Potential/Personal, Moral, and Social purposes of education. However, older students may prioritize Human Capital/Pragmatic educational purposes at this point in their lives more than younger students because of external influences that pressure them to pursue practical career choices.
- RQ2 (Coordination). Respondents, with answers to a free-response questionnaire, will show coordination among different purposes of education. The way they differentially coordinate among domains will follow previous developmental findings (cf. Nucci, 2001; Nucci et al., 2015; Turiel, 1983a, 1983b). It is expected that the majority of the adolescent subjects in this study will display a capacity for partial coordination among categories of purposes of education. It is expected that the older

participants (above age 14) will be more likely than the younger participants to provide fully comprehensive coordination across purposes of education.

- RQ3 (Demographics). There will be no significant differences in how subjects prioritize and coordinate purposes of education related to geographic area, gender, or race/ethnicity. There may be differential trends in prioritization, coordination, and justification of different educational purposes in relation to family-income level and parents' highest level of education. According to Dubow et al. (2009), parent education level has a profound effect on adolescent educational aspirations and actual occupational attainment as adults.

3.2 Methods

3.2.1 Procedures

The methods used for surveying high school students emerged from the study with college students reported in Chapter 2. The survey itself (all three parts: Demographics, Ratings of Purposes, and Free Responses) and analytical methods were the same as described in Chapter 2. The methods described below differ from Chapter 2 in recruitment and classroom administration procedures. Chapter 2 presented the results from college students who took the survey online through the Research Participation Program (RPP) during Fall 2021. Chapter 3 presents results from high school students who took the survey during the same semester, most of whom took it online from classrooms with one teacher. In a few cases, teachers encouraged students to complete the survey through the same secured link from their home computers.

The survey of high school students was accomplished through convenience sampling. G*Power 3.1 was used to determine adequate sample sizes for conducting the statistical analyses presented in section 3.3 Results. Recruitment of subjects was constrained during the period of recruitment (Fall 2021). The predominant concern of most high schools was returning to in-class instruction during the COVID-19 pandemic. Thus, it was not possible to obtain the required sample size from one school or school district. However, a sufficient sample size was obtained by recruiting in public schools in the Southeast and West Coast regions of the United States.

Since this study of high school students included minors (participants under the age of 18), considerations of anonymity and confidentiality that had already been put in place for the study with college students were further expanded. The research team had no access to personally identifiable information (including student names and email addresses), and the school and district staff had no access to student responses. Participating students gave online consent as part of the survey. The Protection of Human Subjects protocol for the study was approved by the Institutional Review Board (IRB). The IRB also approved a waiver of having to obtain parent permission for students under 18 because the survey poses very little risk. However, school districts were still offered the option to obtain parent permission if they preferred. Additionally, confidentiality agreements were signed pledging not to identify schools and districts in the reports.

3.2.2 Population and Demographics

The study sample consisted of 131 public high school students in grades 9 through 12 from the Southeast (primarily two schools from the same district) and West Coast (two schools from two nearby districts) of the United States. All participants had a basic English-language proficiency and a literacy level of 5th-grade or better. Within the limits necessary to comprehend and complete the survey, students were not excluded for Limited English Proficiency or remedial statuses. Consistent with previous research showing SCDT development between ages, the

students were divided into two age groups for most of the analyses: 69 younger students, ages 13 and 14; and 62 older students, ages 15 through 18. Respondents consisted of 67 males, 56 females, and 8 persons classified as "other" gender. They were spread across race/ethnicity categories and among SES levels. All demographic variables were based on subjects' self-identification. Tables 21 and 22 below show the distribution of students who participated in the study according to demographic categorizations.

Table 21

Demographic Breakdown of High School Students (n = 131)

Category	Item	Number	Percentage
Location	Southeast	98	74.80%
	West Coast	33	25.20%
Gender	Female	56	42.70%
	Male	67	51.10%
	Other	8	6.10%
Parent Education	Doctorate	4	3.10%
	Professional	5	3.80%
	Masters	34	26.00%
	Bachelors	24	18.30%
	Associates	7	5.30%
	Some College	11	8.40%
	HS	16	12.20%
	< HS	12	9.20%
	Unknown	16	12.20%
	No Ans	2	1.50%
Age	Younger (13-14)	69	52.70%
	Older (15-18)	62	47.30%
Race/Ethnicity	Asian	25	19.10%
	Black	5	3.80%
	Hispanic	38	29.00%
	Mixed	18	13.70%
	Native American	1	0.80%
	Unknown	3	2.30%
	White	41	31.30%
Family Income Level	Upper	6	4.60%
	Upper Middle	36	27.50%
	Middle	48	36.60%
	Lower Middle	12	9.20%
	Lower	5	3.80%
	Unknown	24	18.30%

Table 22

Ages and Grades of High School Students (n = 131)

Grades and Ages	Count	Average Age	Median Age
9th Grade	93	14.26	14
10th Grade	11	15.09	15
11th Grade	8	16.13	16
12th Grade	19	16.95	17
Younger Age (13 to 14)	69	13.94	14
Older Age (15 to 18)	62	15.82	16

3.3 Results

Results are presented in the following order: Confirmatory Factor Analysis (CFA) for Subscales, Analyses of Composites for High School Students, Analyses of Domain Coordination, and Analyses of Composites and Domain Coordination by Demographic Categories. All results from tests of statistical significance were examined based on an alpha of .05.

3.3.1 Confirmatory Factor Analysis (CFA) for Scales

Because of the smaller sample sizes, four one-factor CFA models were run for each of the following latent variables, each of which included four component items (which contributed to more reliable results based on the *N:q* ratio). The items of each domain factor were then used for making the following composite scales.

Table 23

Purposes of Education by CFA Subscales/Domain Composites

Domain	Item	Description
HCPrag	Q6	Prepare students to compete for the best jobs
	Q9	Help students achieve academic excellence
	Q10	Help students develop skills in STEM (science, technology, engineering, and math) to get high-paying jobs
	Q14	Prepare students to earn as much or more than their parents
HPPerson	Q2	Help students achieve their fullest potential
	Q4	Help students find and follow what they are interested in
	Q7	Help students learn how to learn for the rest of their lives
	Q8	Help students develop into well-rounded individuals with many abilities
Moral	Q3	Develop students' ability to improve the well-being of others in need
	Q13	Help students to be good people in their personal and social lives
	Q19	Help students use good reasoning about unfair conditions in society
	Q20	Prepare students to be good citizens
Social	Q1	Help students socialize
	Q11	Help students to learn how to get along with others in the workplace
	Q16	Develop students' trustworthiness and social credibility
	Q18	Prepare students to be active in democratic decisions and group consensus building
Free Standing (Not Included in Composites Based on CFA)		
Moral	Q5	Help students develop skills in the liberal arts (philosophy, history, language, art, music, etc.) to make the world a better place
HPPerson	Q12	Help students develop skills in the liberal arts (philosophy, history, language, art, music, etc.) because they enjoy the subject(s)
HPPerson	Q15	Help students develop skills in STEM (science, technology, engineering, and math) because they enjoy the subject(s)
HCPrag	Q17	Prepare students for work

Note: These components are the same as those presented in Chapter 2.

A four-factor covariance model was not run due to the smaller sample size, which would contribute to potentially unreliable results based on the *N:q* ratio. For this reason, related groups of items are referred to as "scales" (i.e., "composites") instead of "subscales" as in Chapter 2. For the CFA, a total of ten outliers were removed from each of the four scales (n = 131 down to n = 121). These included four non-normal categorical outliers (16-years old ninth-grade students) and six extreme multivariate response-pattern outliers. CFA model fit indices and Chronbach's Alpha reliability coefficients were run and reported for each of the four domain scales. The final sample for the CFA included the following: females (n = 51), males (n = 62), younger students ages 13-14 in grade 9 (n = 64) and older students ages 15-18 in grades 9-12 (n = 57).

Human Capital—Pragmatic Domain (HCPrag). An HCPrag Scale from the Survey About Purposes of Education was used to assess students' self-reported ratings of purposes of

education categorized as dealing with human-capital/pragmatic-domain concerns. This scale was a 10-point Likert-like scale that allowed for one-decimal-place increments between whole numbers (1 = Not Important to 10 = Extremely Important). Results of the first CFA included all 5 HCPrag items $\chi^2(5) = 13.229$, $p = .021$, CFI = 0.967, TLI = 0.934, RMSEA = 0.117, 90% CIs [0.0412, 0.195], SRMR = .0406). One item (Q17) was not retained because of low factor loadings and subpar model fit indices. The CFA was then rerun with the item removed. The results of the subsequent CFA suggested that the HCPrag scale achieved acceptable model fit based on the full sample ($\chi2$ (2) = 3.580, $p = .167$, CFI = .992, TLI = .977, RMSEA = 0.081, 90% CIs [0.00, 0.214], SRMR = .021). Table 24 presents the factor loadings of the CFA model before and after item deletions.

Table 24

Standardized HCPrag Loadings for High School CFA

Items	Descriptions	All Items	Retained Items
Q6	Prepare students to compete for the best jobs	0.79	0.81
Q9	Help students achieve academic excellence	0.77	0.74
Q10	Help students develop skills in STEM (science, technology, engineering, and math) to get high-paying jobs.	0.81	0.82
Q14	Prepare students to earn as much or more than their parents	0.71	0.72
Q17	Prepare students for work	0.58	Not Retained

In this study for HCPrag, the Cronbach's alpha reliability coefficients for total scores were .852 for the whole group of high school students, 0.820 for females, 0.874 for males, 0.845 for younger students, and 0.843 for the older students.

Human Potential/Capabilities—Personal Domain (HPPerson). An HPPerson Scale from the Survey About Purposes of Education was used to assess students' self-reported ratings of purposes of education categorized as dealing with Human Potential/Capabilities and personal-domain concerns. This scale was a 10-point Likert-like scale, allowing for one decimal place in between whole numbers (1 = Not Important to 10 = Extremely Important). Results of the first CFA included all 6 HPPerson items $\chi^2(9) = 28.595$, $p < .001$, CFI = 0.942, TLI = 0.903, RMSEA = 0.134, 90% CIs [0.0807, 0.191], SRMR = 0.0489). Two items (Q12 and Q15) were not retained because of low factor loadings and subpar model fit indices. The CFA was then rerun with the items removed. The results of the subsequent CFA suggested that the HPPerson scale achieved good model fit based on the full sample ($\chi2$ (2) = 2.836, $p = .242$, CFI = .996, TLI = .989, RMSEA = 0.0588, 90% CIs [0.000, 0.200], SRMR = .0201). Table 25 presents the factor loadings of the CFA model before and after item deletions.

Table 25

Standardized HPPerson Loadings for High School CFA

Item	Description	All Items	Retained Items
Q2	Help students achieve their fullest potential	0.83	0.88
Q4	Help students find and follow what they are interested in	0.78	0.78
Q7	Help students learn how to learn for the rest of their lives	0.76	0.74
Q8	Help students develop into well-rounded individuals with many abilities	0.77	0.75
Q12	Help students develop skills in the liberal arts (philosophy, history, language, art, music, etc.) because they enjoy the subject(s)	0.65	Not Retained
Q15	Help students develop skills in STEM (science, technology, engineering, and math) because they enjoy the subject(s)	0.59	Not Retained

In this study, the Cronbach's alpha reliability coefficients for total scores were .865 for the full sample, 0.747 for females, 0.915 for males, 0.842 for younger students, and 0.881 for the older student sample.

Moral (Moral). A Moral Scale from the Survey About Purposes of Education was used to assess students' self-reported ratings of purposes of education categorized as dealing with moral-domain concerns. This scale was a 10-point Likert-like scale, allowing for one decimal place in between whole numbers (1 = Not Important to 10 = Extremely Important). Results of the first CFA included all 5 Moral items $\chi^2(5) = 6.406$, $p = .269$, $p = .0269$, CFI = 0.995, TLI = 0.991, RMSEA = 0.0482, 90% CIs [0.00000, 0.142], SRMR = .0263). One item (Q5) was not retained. The CFA was then rerun with the item removed. The results of the subsequent CFA suggested that the Moral scale achieved good model fit based on the full sample ($\chi2$ (2) = 1.577, $p = .455$, CFI = 1.000, TLI = 1.005, RMSEA = 0.000, 90% CIs [0.000, 0.168], SRMR = 0.0136). Table 26 presents the factor loadings of the CFA model before and after item deletions.

Table 26

Standardized Moral Loadings for High School CFA

Item	Description	All Items	Retained Items
Q3	Develop students' ability to improve the well-being of others in need	0.73	0.72
Q5	Help students develop skills in the liberal arts (philosophy, history, language, art, music, etc.) to make the world a better place	0.66	Not Retained
Q13	Help students to be good people in their personal and social lives	0.8	0.8
Q19	Help students use good reasoning about unfair conditions in society	0.75	0.74
Q20	Prepare students to be good citizens	0.9	0.91

In this study, the Cronbach's alpha reliability coefficients for total scores were .870 for the full sample, 0.855 for females, 0.881 for males, 0.877 for younger students, and 0.865 for the older student sample.

Socialization (Social). A Social Scale from the Survey About Purposes of Education was used to assess students' self-reported ratings of purposes of education categorized as dealing with social-domain concerns. This scale was a 10-point Likert-like scale, allowing for one decimal place in between whole numbers (1 = Not Important to 10 = Extremely Important). Results of CFA suggested this scale achieved adequate model fit based on the full sample ($\chi2$ (2) = .782, *p = .676*, CFI = 1.000, TLI = 1.023, RMSEA = 0.000, 90% CIs [0.000, 0.137], SRMR = .0130). There were no item deletions for the Social scale. Table 27 presents the factor loadings of the CFA model.

Table 27

Standardized Social Loadings for High School CFA

Item	Description	All Items
Q1	Help students socialize	0.70
Q11	Help students to learn how to get along with others in the workplace	0.74
Q16	Develop students' trustworthiness and social credibility	0.89
Q18	Prepare students to be active in democratic decisions and group consensus building	0.49

In this study, the Cronbach's alpha reliability coefficients for total scores were .795 for the full sample, 0.741 for females, 0.841 for males, 0.788 for younger students, and 0.807 for the older student sample.

3.3.2 Analyses of Composites for High School Students

Whole-Group Composites. A repeated measures analysis of variance (ANOVA) with one within-subjects factor was conducted to determine whether significant differences exist among HCPrag, HPPerson, Moral, and Social. The main effect for the within-subjects factor was significant, $F(3, 390) = 18.34$, $p < .001$, indicating there were significant differences between the values of HCPrag, HPPerson, Moral, and Social. The means of the within-subjects factor are presented in the order of highest to lowest prioritization in Table 28 and Figure 4.

Table 28

Composite Means and Standard Deviations for High School Students

Variable	*M*	*SD*
HPPerson	7.88	1.89
Moral	7.51	2.11
HCPrag	6.98	2.21
Social	6.88	1.97

Note: n = 131.

Figure 4

Composite Means for High School Students
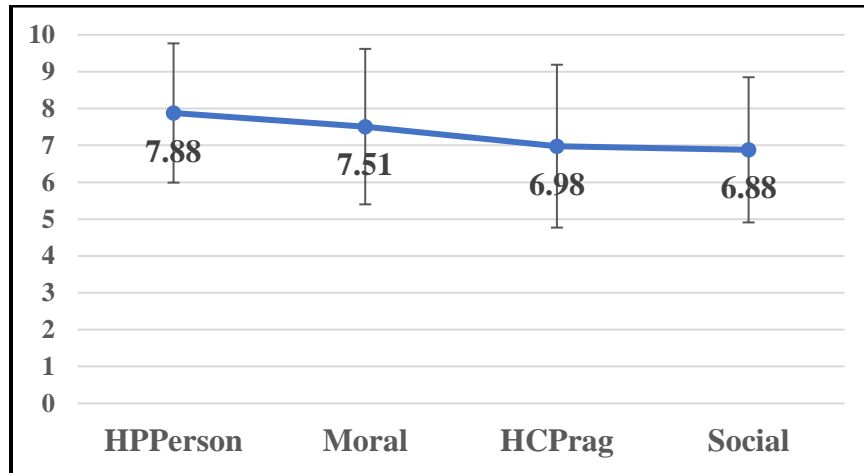
Post-hoc tests were conducted. The mean contrasts utilized Tukey comparisons based on an alpha of .05. Tukey comparisons were used to test the differences in the estimated marginal means for each combination of within-subject effects.

Within effects showed that HCPrag was significantly less than HPPerson, $t(130) = -3.43$, $p = .004$, HCPrag was significantly less than Moral, $t(130) = -2.69$, $p = .040$, HPPerson was significantly greater than Social, $t(130) = 4.14$, $p < .001$, and Moral was significantly greater than Social, $t(130) = 5.03$, $p < .001$. No other significant differences were found between HCPrag, HPPerson, Moral, and Social for all high school students.

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Composites by Age. Two-tailed independent sample *t*-tests were conducted to examine whether the means of the composites were significantly different according to age. The result was significant for HCPrag, *t*(129) = 2.03, *p* = .045. In general, younger students prioritize HCPrag purposes higher than older students (see Table 29 and Figure 5). Age was not a significant factor for the other three composites. The results for all four composites are presented in Table 29.

Table 29

Two-Tailed Independent Samples t-Tests for Composite Scores by Age

| Composite | Younger | | Older | | | | |
	M	*SD*	*M*	*SD*	*t*	*p*	*d*
HCPrag*	7.35	2.13	6.57	2.23	2.03	0.05	0.35
HPPerson	7.99	1.72	7.76	2.07	0.69	0.49	0.12
Moral	7.67	2.04	7.32	2.19	0.94	0.35	0.16
Social	6.87	2.01	6.89	1.94	-0.1	0.95	0.01

Note. n = 131. Degrees of Freedom for the *t*-statistic = 129.
　　　d represents Cohen's *d*.

An asterisk (*) indicates significant differences.

To control for effects of other variables and for assessing possible predictive effects of Age on HCPrag, an additional hierarchical linear regression was conducted. The other composites were entered at Step 1; Age was added as a predictor variable into the model at Step 2; and other demographic variables (Geographic Area, Gender, and Race/Ethnicity) were added at Step 3. All variables in the regression models have VIFs less than 5 (negligible multicollinearity). The *F*-test for Step 1 was significant, $F (3, 110) = 21.10$, $p < .001$, $\Delta R^2 = .37$, indicating that the other composites explained an additional 36.53% of the variation in HCPrag. The *F*-test for Step 2 was significant, $F (1, 109) = 4.87$, $p = .029$, $\Delta R^2 = .03$. This model indicates that adding Parent Education explained an additional 2.72% of the variation in HCPrag. The *F*-test for Step 3 was not significant, $F (6, F (5, 104) = 1.93, p = .096, \Delta R^2 = .05409) = 1.03$, $p = .403$, $\Delta R^2 = .01$, indicating that adding Gender, Race/Ethnicity, and Area did not account for a significant amount of additional variation in HCPrag. Overall, as shown in Figure 5, this indicates that the higher the Age, the less students prioritize HCPrag items.

Figure 5

HCPrag by Age
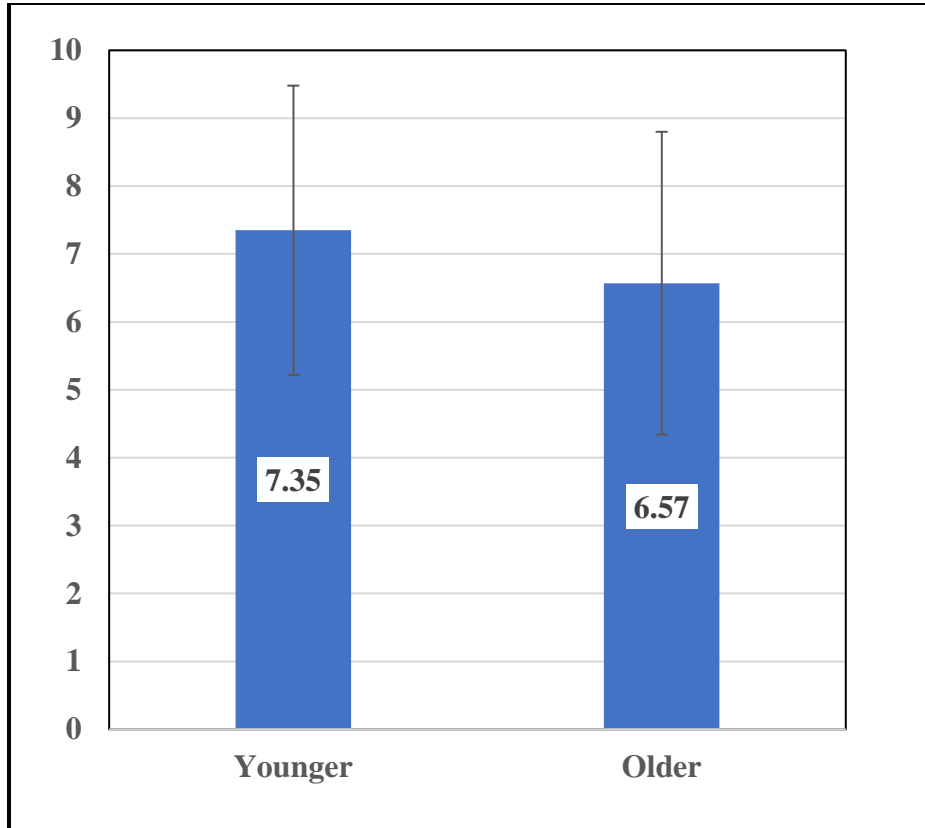
3.3.3 Analyses of Domain Coordination for High School Students

Breakdown of Coordination Scores by Types. Coder reliability was established between the same trained research assistants who coded the college students' free responses. Overall coder reliability for high school student responses was .84. The coding categories were the same for both college and high school students: *Type 1* coordination (Domain Prioritization/Subordination), *Type 2* coordination (Partial Coordination), and *Type 3* (Full Coordination), The following Tables 30 and 31 present the distribution of domain coordination types.

Table 30			Table 31		
Breakdown of Coordination Scores (Including Uncodable Responses)			*Breakdown of Coordination Scores (Codable Responses)*		
Type	Count	Percentage	Type	Count	Percentage
0's Uncodable	39	29.77%			
1's No Coordination	40	30.53%	1's No Coordination	40	43.48%
2's Partial Coordination	41	31.30%	2's Partial Coordination	41	44.57%
3's Full Coordination	11	8.39%	3's Full Coordination	11	11.96%
Total Count:	131	100.00%	Total Count:	92	100.00%

Domain Coordination by Age. An ANOVA was conducted to determine whether there were significant differences in Domain Coordination by age. The results were significant, $F(1, 90) = 8.83$, $p = .004$, indicating that there are significant differences in Domain Coordination Type by Age. The eta squared is 0.08, indicating that Age explains approximately 8% of the variance in Domain Coordination Type. The means and standard deviations are presented in Table 34 and Figure 6.

Table 32

Means and Standard Deviations for Domain Coordination by Age

Age Group	*M*	*SD*	*n*
Younger	1.5	0.54	50
Older	1.9	0.76	42

Figure 6

Domain Coordination by Age
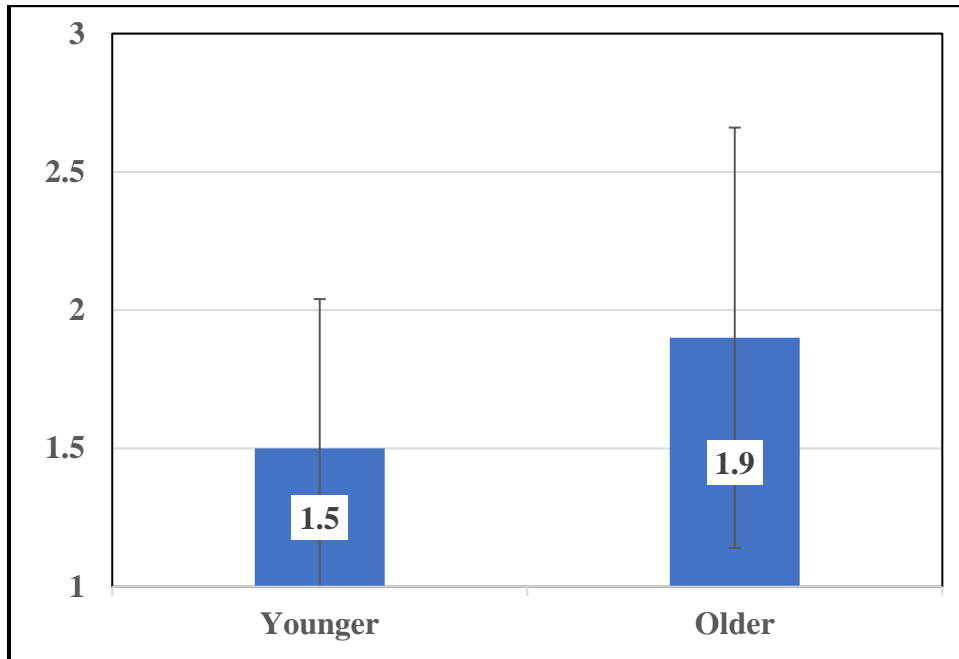
Posthocs were conducted. Paired *t*-tests were calculated between each pair of measurements to further examine the differences among the variables. The Tukey HSD p-value adjustment was used to correct for the effect of multiple comparisons on the family-wise error rate. For the main effect of Age, the mean of Domain Coordination for Younger ($M = 1.50$, $SD = 0.54$) was significantly smaller than for Older ($M = 1.90$, $SD = 0.76$), $p = .004$. Table 33 presents the distribution and percentages of Domain Coordination by Age.

Table 33

Breakdown of Domain Coordination Type by Age

Age	Type 1	Type 2	Type 3	Sums
Younger (13-14)	26	23	1	$n = 50$
Percentage	52.00%	46.00%	2.00%	100.00%
Older (15-18)	14	18	10	$n = 42$
Percentage	33.33%	42.86%	23.81%	100.00%

A Chi-square Test of Independence was also conducted to examine whether Domain Coordination and Age are independent. There were three types in Domain Coordination: 1, 2, and 3. There were 2 levels in Age: Younger and Older. The results of the Chi-square test were significant $\chi^2(2) = 10.96$, $p = .004$, suggesting that Domain Coordination and Age are related to one another. The following level combinations had observed values that were greater than their

expected values: Domain Coordination Type 3: Age Older, Domain Coordination Type 1: Age Younger, and Domain Coordination Type 2: Age Younger. The following level combinations had observed values that were less than their expected values: Domain Coordination Type 1:Age Older, Domain Coordination Type 2:Age Older, and Domain Coordination Type 3:Age Younger. Table 34 presents the results of the Chi-square test.

Table 34

Observed and Expected Frequencies

Coordination Type	Older	Younger	χ^2	df	p
1	14[18.26]	26[21.74]	10.96	2	0.004
2	18[18.72]	23[22.28]			
3	10[5.02]	1[5.98]			

Note. Values formatted as Observed[Expected].

To control for effects of other variables and for assessing possible predictive effects of Age on Domain Coordination, an additional hierarchical linear regression was conducted. For Step 1, Geographic Area, Gender, Race/Ethnicity, Family Income, and Parent Education were entered as predictor variables into the null model. Age was added as a predictor variable into the model at Step 2. All predictors in the regression model at all steps have VIFs less than 5. Table 35 presents the VIF for each predictor in the model.

Table 35

Variance Inflation Factors for Each Step

Demographic Variable	VIF
Step 1	
Area	1.46
Gender	1.15
Race/Ethnicity	1.58
Family Income	1.67
Parent Education	1.61
Step 2	
Area	1.48
Gender	1.15
Race/Ethnicity	1.84
Family Income	1.84
Parents Education	1.68
Age	1.32

The F-test for Step 1 was not significant, $F (9, 53) = 1.13$, $p = .361$, $\Delta R^2 = .16$. The demographic control variables did not account for a significant amount of additional variation in Domain Coordination. The F-test for Step 2 was significant, $F F (1, 52) = 4.58$, $p = .037$, $\Delta R^2 = .07$. This model indicates that adding Age explained an additional 6.80% of the variation in Domain Coordination. Age significantly predicted Domain Coordination, $B = 0.40$, $t(52) = 2.14$, $p = .037$. Based on this sample, this suggests that moving from the Younger to Older category of Age will increase the mean value of Domain Coordination Type by 0.40 units on average. Overall, the results indicate that domain coordination for high school students increases with age.

Correlation of Domain Coordination With Four Composites. A Spearman correlation analysis was conducted among Domain Coordination Type, HCPrag, HPPerson, Moral, and Social composites. Cohen's standard was used to evaluate the strength of the relationships, where coefficients between .10 and .29 represent a small effect size, coefficients between .30 and .49 represent a moderate effect size, and coefficients above .50 indicate a large effect size (Cohen, 1988).

A significant negative correlation was observed between Domain Coordination Type and HCPrag, with a correlation of -.36, indicating a moderate effect size ($p = .002$, 95.00% CI = [-.53, -.17]). This suggests that as Domain Coordination Type increases, HCPrag tends to decrease. No other significant correlations were found. Table 36 presents the results of the correlations.

Table 36

Spearman Correlations Between Domain Coordination and Composite Scores

Combination	r	95.00% CI	n	p
Domain Coordination-HCPrag	-0.36	[-.53, -.17]	92	0.002
Domain Coordination-HPPerson	0.06	[-.15, .26]	92	1
Domain Coordination-Moral	-0.05	[-.25, .15]	92	1
Domain Coordination-Social	0.05	[-.16, .25]	92	1

In summary, as domain coordination moves from Type 1 (no coordination) to Type 2 (partial coordination) to Type 3 (full coordination), HCPrag composites scores tend to decrease. Figure 7 below displays these relationships. Figure 8 below (excerpted from Figure 7) highlights the inverse relationship between the HCPrag composites and domain coordination.

Figure 7

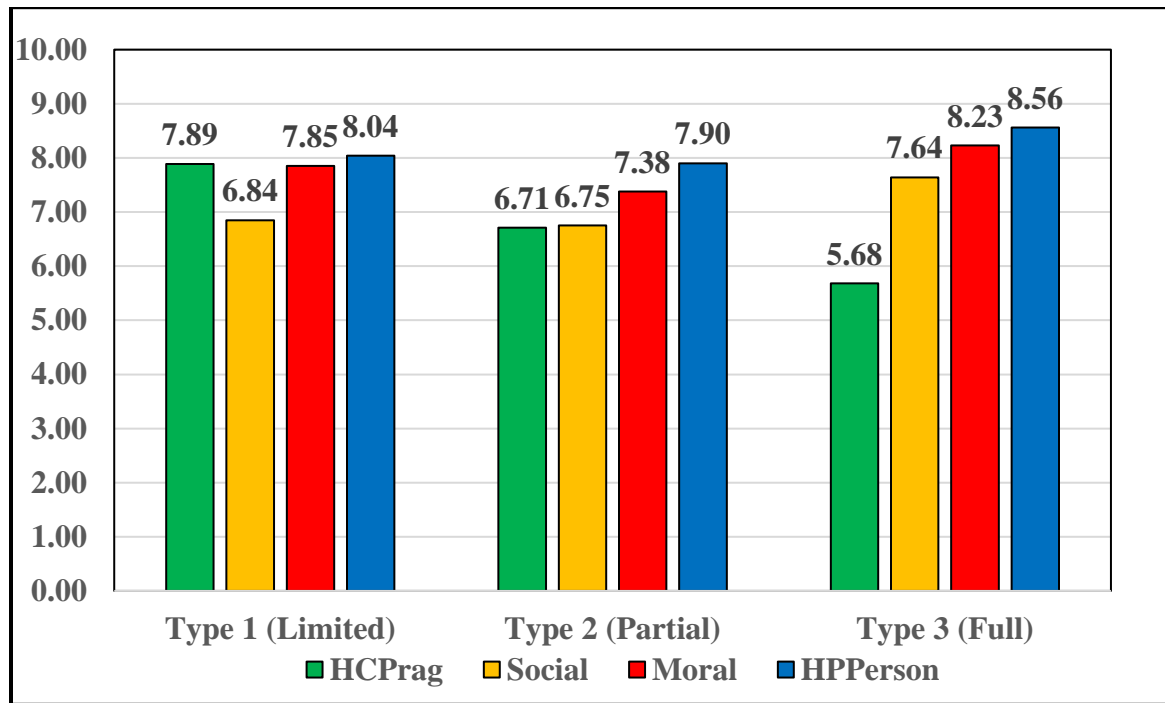*High School Composite Means by Coordination Type*

Figure 8

HCPrag Composites by Domain Coordination
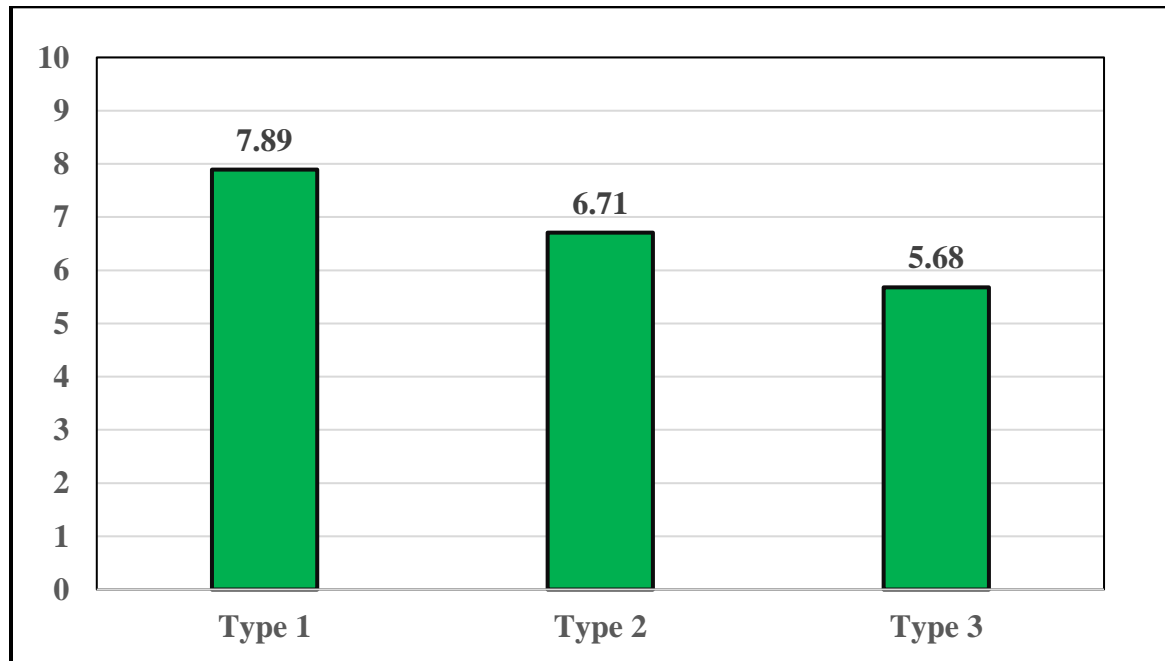
A linear regression analysis was also conducted to assess whether HCPrag, HPPerson, Moral, and Social significantly predicted Domain Coordination. All predictors in the regression model have VIFs less than 5; therefore, multicollinearity is not a concern. The results of the linear regression model were significant, $F(4,87) = 5.95$, $p < .001$, $R^2 = .21$, indicating that approximately 21.49% of the variance in Domain Coordination is explainable by HCPrag, HPPerson, Moral, and Social. HCPrag significantly predicted Domain Coordination, $B = -0.16$, $t(87) = -4.64$, $p < .001$. This indicates that on average, a one-unit increase of HCPrag will decrease the value of Domain Coordination by 0.16 units. HPPerson significantly predicted Domain Coordination, $B = 0.13$, $t(87) = 2.01$, $p = .048$. This indicates that on average, a one-unit increase of HPPerson will increase the value of Domain Coordination by 0.13 units. Moral did not significantly predict Domain Coordination, $B = -0.08$, $t(87) = -1.54$, $p = .127$. Based on this sample, a one-unit increase in Moral does not have a significant effect on Domain Coordination. Social did not significantly predict Domain Coordination, $B = 0.07$, $t(87) = 1.24$, $p = .217$. Based on this sample, a one-unit increase in Social does not have a significant effect on Domain Coordination. Table 37 summarizes the results of the regression model. Overall, HCPrag and HPPerson can partially predict the direction of change in domain coordination. Domain Coordination increases as HPPerson increases and decreases as HCPrag increases.

Table 37

Linear Regression With HCPrag, HPPerson, Moral, and Social Composites Predicting Domain Coordination

Variable	*B*	*SE*	95.00% CI	β	*t*	*p*
(Intercept)	1.98	0.35	[1.28, 2.67]	0	5.68	< .001
HCPrag	-0.16	0.03	[-0.23, -0.09]	-0.49	-4.64	< .001
HPPerson	0.13	0.06	[0.001, 0.25]	0.3	2.01	0.048
Moral	-0.08	0.05	[-0.19, 0.02]	-0.23	-1.54	0.127
Social	0.07	0.05	[-0.04, 0.17]	0.18	1.24	0.217

Note. Results: $F(4,87) = 5.95$, $p < .001$, $R^2 = .21$

Unstandardized Regression Equation: Domain Coordination = 1.98 - 0.16*HCPrag + 0.13*HPPerson - 0.08*Moral + 0.07*Social

Additional Qualitative Analyses of Ratings and Free-Response Examples. Selected items and corresponding free responses were examined to get a clearer picture of how individuals prioritize and coordinate purposes of education. Table 38 below shows high school students' average ratings of all 20 purposes of education in order from highest to lowest and color-coded by domain.

Table 38

High School Student Rankings of Purposes by Average Score

Item	Domain	Description	Avg Score	Rank
Q2	HPPerson	Help students achieve their fullest potential.	8.41	1
Q4	HPPerson	Help students find and follow what they are interested in.	8.33	2
Q20	Moral	Prepare students to be good citizens.	7.76	3
Q13	Moral	Help students to be good people in their personal and social lives.	7.56	4
Q19	Moral	Help students use good reasoning about unfair conditions in society.	7.53	5
Q8	HPPerson	Help students develop into well-rounded individuals with many abilities.	7.44	6
Q17	Unassigned HCPrag	Prepare students for work.	7.42	7
Q9	HCPrag	Help students achieve academic excellence.	7.41	8
Q7	HPPerson	Help students learn how to learn for the rest of their lives.	7.34	9
Q11	Social	Help students to learn how to get along with others in the workplace.	7.29	10
Q16	Social	Develop students' trustworthiness and social credibility.	7.21	11
Q3	Moral	Develop students' ability to improve the well-being of others in need.	7.18	12
Q1	Social	Help students socialize.	7.13	13
Q15	Unassigned HPPerson	Help students develop skills in STEM (science, technology, engineering, and math) because they enjoy the subject(s).	7.1	14
Q6	HCPrag	Prepare students to compete for the best jobs.	6.97	15
Q12	Unassigned HPPerson	Help students develop skills in the liberal arts (philosophy, history, language, art, music, etc.) because they enjoy the subject(s).	6.83	16
Q10	HCPrag	Help students develop skills in STEM (science, technology, engineering, and math) to get high-paying jobs.	6.73	17
14	HCPrag	Prepare students to earn as much or more than their parents.	6.72	18
Q5	Unassigned Moral	Help students develop skills in the liberal arts (philosophy, history, language, art, music, etc.) to make the world a better place.	6.61	19
Q18	Social	Prepare students to be active in democratic decisions and group-consensus building.	5.89	20

The highest rated item is Q2, "Help students achieve their fullest potential" (HPPerson), and the lowest rated item is Q18, "Prepare students to be active in democratic decisions and group-consensus building" (Social). Most students chose human potential and personal items as the most important purposes of education and moral items as the second most important. Examining the average ratings of the 20 items by ranking from highest to lowest indicates that personal and moral concerns are the dominant domains of purposes of education for these students. This mirrors the order of the high school composite scores (refer to Table 28): HPPerson (7.88), Moral (7.51), HCPrag (6.98), and Social (6.88).

Selected Free Responses. The selection criteria for choosing free-response examples from high school students were different from those used for college students in Chapter 2, especially because almost no high school students wrote about Q18 (Socialization), *Prepare students to be active in democratic decisions and group-consensus building*. An explanation for this trend could be that many high school students are still developing conceptual understanding of societal systems and governmental processes. Furthermore, the dominant composite domain of prioritization for many high school students does not match the domains of the highest and lowest ranked items that they chose to write about in their free responses. This inconsistent tendency could be attributed to undeveloped coordination of purposes. In other words, some high school students have not yet begun to coordinate their prioritizations consistently with what they express in their free responses about purposes of education.

The way high school free responses were selected and organized for review was slightly different from that of college students. High school responses were selected and organized according to coordination type and age because developmental trends are an additional point of research interest for this population. Like college student responses, high school student responses were also checked for clarity and representativeness of views. The responses are presented below in Tables 39, 40, and 41.

To reiterate from Chapter 2, *Type 1* coordination (Domain Prioritization/Subordination) involves concerns in one domain taking precedence over other domains involved in the issue. In other words, concerns in one or more domains are subordinated to one overriding/prevailing domain. A respondent who displays *Type 2* coordination (Partial Coordination) mentions elements from more than one domain, but they are not fully integrated with concepts involved in all domains at hand. Any proposed solutions meet concerns from multiple domains separately rather than in a fully integrative way. Finally, in *Type 3* coordination, elements from multiple domains are identified and taken into account in generating a resolution or judgment about the purpose(s). Solutions clearly acknowledge and attempt to integrate multiple-domain considerations. These differences are illustrated in the examples below in Tables 39, 40, and 41. (Note: Student responses are presented as written, unedited.)

Table 39

Type 1 Reasoning

Respondent 65 (Age 14)	Coordination Type 1	High Composite: HPPerson
Max Rating (Q2, HPPerson)	Because everyone should choose what they get to do in life and how they want to do it.	
Min Rating (Q18, Social)	Because students should get to choose what they do	
Respondent 103 (Age 14)	Coordination Type 1	High Composite: Moral
Max Rating (Q4, HPPerson)	i rated them the way i did because it should not be all about how much money you make.	
Min Rating (Q14, HCPrag)	the ones that i rated the least where all about learning which job will earn you the most money.	
Respondent 57 (Age 14)	Coordination Type 1	High Composite: HCPrag
Max Rating (Q7, HPPerson)	I think people need to learn how to get a job and earn money.	
Min Rating (Q1, Social)	Everyone has different ways of socializng so social skills differ.	
Respondent 1 (Age 17)	Coordination Type 1	High Composite: HCPrag
Max Rating (Q6, HCPrag)	Want to be rich.	
Min Rating (Q18, Social)	Too much work to study.	

Table 40

Type 2 Reasoning

Respondent 6 (Age 14)	Coordination Type 2	High Composite: HPPerson
Max Rating (Q4, HPPerson)	Well, I lean more towards a view that Education should focus on what the student wants, not the community, if they want to be a doctor, cool! Let them study to be a doctor. If they want to own a small tea shop, Cool! Let them own a small tea shop. Ect.	
Min Rating (Q13, Moral)	As mentioned above, I don't think that people should be so keen to have people earn money. They could just want to be happy rather than set for life.	
Respondent 84 (Age 14)	Coordination Type 2	High Composite: Moral
Max Rating (Q4, HPPerson)	I believe its extremelt important to perpare students to continue their work in something they love insetad of forcing their time into high paying job they dislike.	
Min Rating (Q6, HCPrag)	People shouldnt perpare students to compete for the best jobs and instead perpare them to go fro jobs they personally want no matter what the status of the job.	
Respondent 104 (Age 15)	Coordination Type 2	High Composite: HPPerson
Max Rating (Q4, HPPersonal)	Uh- You shouldn't force people to learn about a subject just because it will suit them better. Doing what you love is important for mental health because being stuck in some job you hate just because someone else(your parents, peers, case managers, etc.) is a quick trip to Not Fun Times(tm)	
Min Rating (Q9, HCPrag)	Teaching people to be the best citizens they can be is very important. People need to be taught sometimes that just because you think you should do something doesn't mean you should.	
Respondent 40 (Age 15)	Coordination Type 2	High Composite: HCPrag
Max Rating (Q16, Social)	Education is important for job seeking and qualifications, and not for actual real-world skills. School's only purpose is to show that the students can take the rigor of a college course, due to the fact that they fill students' brains with useless information that they must restate. Though it may seem pointless, I think it's necessary to show the colleges and employers that the students can take the difficulty of the school they are applying for.	
Min Rating (Q5, Moral)	Education is not meant to actually teach useful knowledge in majority of the core classes, as students will never need the skills they learn in classes like literature.	

Table 41

Type 3 Reasoning

Respondent 54 (Age 15)	Coordination Type 3	High Composite: HPPerson
Max Rating (Q19, Moral)	I think that education should create not only academically successful people, but also good-hearted ones who have morals. I attend a highly competitive, rank-enthused school, and as an activist myself, I find it difficult to watch people be so intellectual in one form while completely lacking in the idea of morals within the state, the church, and other institutions that fundamentally run our country, and in turn, our day-to-day lives.	
Min Rating (Q18, Social)	I think some skills aren't necessary for schools to provide as students can find/learn these things elsewhere. For example, students can learn social skills outside of school through more experience in larger environments.	
Respondent 70 (Age 16)	Coordination Type 3	High Comp: HPPerson, Moral
Max Rating (Q1, Social)	being able to work with others is important in every job no matter the education level. working in a hospital requires to be able to work with people as a team so does working in construction. no matter where you go being able to communicate with other is crucial.	
Min Rating (Q9, HCPrag)	they can't be achieved with out the the skills i put down as important. if someone doesn't know how to communicate with others how are they suppose to communicate with teachers for help. they will stay quite and it will be to late.	
Respondent 41 (Age 17)	Coordination Type 3	High Composite: Moral
Max Rating (Q5, Unassigned Moral)	It's important for students to be citizens of the world and their community. Education in social issues, liberal arts, and how to be kind and good people enables further positive learning in the future.	
Min Rating (Q6, HCPrag)	While STEM education is important (I personally have a great deal of interest in STEM fields), I think that their personal importance to students decreases if they don't have a vested interest in those areas. On the other hand, liberal arts classes benefit all students because of their universal applicability to their own lives.	
Respondent 38 (Age 18)	Coordination Type 3	High Composite: HPPerson
Max Rating (Q7, HPPerson)	I believe school is more than just education. while the education aspect is important teaching students how to be and helping them realize what they want to do is equally if not more important. knowing things is important but learning how to interact with others will take students much farther	
Min Rating (Q6, HCPrag)	learning things just for money should not be the purpose of education. it should be finding what you love or learning to love certain subjects so that you can make a career.	

Many students identified conflicts between HPPerson and HCPrag purposes of education, essentially conflicts between personal interests and practicality. The most prevalent sentiment is a preference for individual choice in educational pursuits leading to personal fulfillment, not necessarily wealth. However, there are opposing views, and a few high school students differ in how they coordinate the conflicts.

Some types 1 and 2 coordinators had contrasting views of the conflict. Like most other high school students in the sample, Respondents 65, 103, 6, 84, and 104 expressed prioritizations of HPPerson over HCPrag purposes of education. On the other hand, Respondents 57, 1, and 40 (and others in the minority) expressed prioritization for HCPrag purposes of education over other domains. There were also respondents who demonstrated type 3 coordination of issues around the seemingly conflictual relationship between HPPerson and HCPrag purposes. For example, Respondent 70 expressed a Socialization reason to address HCPrag concerns relevant to educational purposes, and Respondent 38 offered a succinct resolution of how to coordinate both HPPerson and HCPrag purposes of education. (Refer to Tables 39, 40, and 41 for their exact responses.)

There is also a parallel contrast discussed about STEM and liberal arts courses, commonly understood as academic courses pertaining to practical and personal-development pursuits. Respondent 41 (type 3), a proponent of both STEM and liberal arts courses, talked about the "universal applicability of liberal arts to (students') own lives." Respondent 40 (type 2), on the other hand, sided with several other respondents in thinking that "students will never need the skills they learn in classes like literature." This issue will be taken up for further discussion that includes undergraduate respondents later in this chapter.

In general, most type 1 coordinators simply reject the imposition of a pragmatic purpose when it conflicts with a preferred personal purpose: what you want is more important than what you do not want. Type 2 coordinators recognize that jobs are necessary; however, they emphasize the importance of lifestyle preference over job security. There are other students with types 1 and 2 coordination that prioritize HCPrag purposes over all other kinds of purposes. They tend to prioritize securing good jobs to the exclusion of personal, social, and moral educational purposes. Type 3 coordinators hint that one might be able to find a career path that is both meaningful and practical, a path that addresses most of the important concerns in education and life.

3.3.4 Analyses of Composites and Domain Coordination by Demographic Categories

Demographic composite-score comparisons were done using mostly ANOVAs and T-tests on categories of geographic area, gender, race/ethnicity, family-income level, and parents' level of education. Exclusions in analyses were made if groups were too small in number or if respondents did not answer. Exclusions were as follows: Gender, Non-binary = 8; Race/Ethnicity, American Indian or Alaska Native = 1 and Black or African American = 5; and respondents who did not answer for Race/Ethnicity, Unknown/Prefer not to answer = 3; Family Income, Unknown/Prefer not to answer = 24; Parents Highest Level of Education, Unknown/Prefer not to answer = 19. Family-Income groups were collapsed from five levels to three, and Parents' Highest Levels of Education were collapsed from eight levels to three. Although Family Income Level (Family Income) and Parents' Highest Level of Education (Parent Education) are both considered indicators of socioeconomic status (SES) and they both correlate with each other in this study ($r = .47$, $p < .001$, 95.00% CI = [.30, .61]), they are separated in analyses because they show differential results in analyses with other variables.

Composites by Geographic Area. A multivariate analysis of variance (MANOVA) was conducted to assess if there were significant differences in the linear combination of HCPrag, HPPerson, Moral, and Social between the levels of Area. The main effect for Area was not significant, $F(4, 126) = 1.85$, $p = .122$, $\eta^2_p = 0.06$, suggesting the linear combination of HCPrag, HPPerson, Moral, and Social was similar for each level of Area. Since there were no significant predictors, additional testing was not performed.

Composites by Gender. Two-tailed independent samples t-tests were conducted to examine whether composite scores were significantly different between the Female and Male categories of Gender. For HCPrag ($t(121) = -1.39$, $p = .167$), HPPerson ($t(121) = -0.45$, $p = .656$), Moral ($t(121) = 1.73$, $p = .087$), and Social ($t(121) = 0.23$, $p = .822$), the results of the two-tailed independent samples t-tests were not significant, indicating the null hypothesis cannot be rejected. This finding suggests that the means of all four composites were not significantly different between females and males. The results are presented in Table 42.

Table 42

Two-Tailed Independent Samples t-Tests for Composite Scores by Gender

Composite	Female		Male				
	M	*SD*	*M*	*SD*	*t*	*p*	*d*
HCPrag	6.73	2.12	7.28	2.25	-1.39	0.167	0.25
HPPerson	7.79	1.83	7.94	1.99	-0.45	0.656	0.08
Moral	7.83	1.95	7.17	2.26	1.73	0.087	0.31
Social	6.89	1.92	6.81	2.08	0.23	0.822	0.04

Note. N = 123. Degrees of Freedom for the t-statistic = 121. *d* represents Cohen's *d*.

Age by Gender Interactions. Because differences between mean scores of females and males in the Moral composite were approaching significance, an additional analysis was conducted to determine if there were interaction effects between age and gender. A MANOVA and posthoc ANOVAs were conducted to assess if there were significant differences by Age and Gender interaction in the four composites. The MANOVA resulted in no significant differences [$F(4, 116) = 2.00$, $p = .099$, $\eta^2_p = 0.06$]; however, one of the posthoc ANOVAs showed significant differences between younger and older females and males in the means for the Moral composite. The interaction effect between Age and Gender was significant, $F(1, 119) = 4.20$, $p = .043$, $\eta^2_p = 0.03$. This indicates that there are significant differences in prioritization of moral purposes of education for each factor level combination of Age and Gender interaction term (see Figure 17). That is, moral composites differ according to age for females and males. The means and standard deviations are presented in Table 43.

Table 43

Means, Standard Deviations, and Sample Sizes for Composites by Age and Gender

HCPrag	*M*	*SD*	*n*
Younger : Female	7.07	2.05	33
Older : Female	6.24	2.15	23
Younger : Male	7.51	2.22	34
Older : Male	7.04	2.28	33
HPPerson	*M*	*SD*	*n*
Younger : Female	7.76	1.8	33
Older : Female	7.83	1.92	23
Younger : Male	8.03	1.76	34
Older : Male	7.85	2.23	33
Moral *	*M*	*SD*	*n*
Younger : Female	7.61	2.11	33
Older : Female	8.16	1.68	23
Younger : Male	7.67	2.02	34
Older : Male	6.65	2.41	33
Social	*M*	*SD*	*n*
Younger : Female	6.78	2.1	33
Older : Female	7.04	1.65	23
Younger : Male	6.98	2.01	34
Older : Male	6.62	2.17	33

Note. An asterisk (*) indicates statistical significance.

Figure 9

Moral Composites by Age and Gender
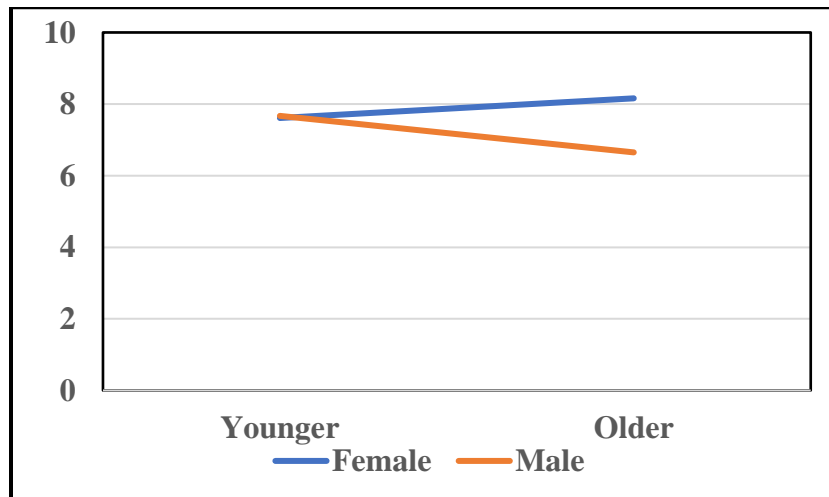
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Composites by Race/Ethnicity. A multivariate analysis of variance (MANOVA) was conducted to assess if there were significant differences in the linear combination of composites HCPrag, HPPerson, Moral, and Social among the four categories of Race/Ethnicity (Asian, Hispanic, Mixed, and White). The main effect for Race/Ethnicity was not significant, $F(12, 351) = 1.58$, $p = .096$, $\eta^2_p = 0.05$, suggesting the linear combination of HCPrag, HPPerson, Moral, and Social composites was similar for each level of Race/Ethnicity. Since there were no significant predictors, additional testing was not performed. Table 44 presents descriptive statistics of composite scores by Race/Ethnicity (including categories that were too small to include in the MANOVA).

Table 44

Mean and Standard Deviation for Composites by Race/Ethnicity

HCPrag	M	SD	n
American Indian	4.33	N/A	1
Asian	6.96	1.68	25
Black	5.67	4.15	5
Hispanic	7.52	2.3	38
Mixed	6.6	2.38	18
White	6.92	2.03	41

HPPerson	M	SD	n
American Indian	5.1	N/A	1
Asian	8.34	1.64	25
Black	5.84	4.02	5
Hispanic	7.87	1.88	38
Mixed	7.65	2.16	18
White	8.07	1.44	41

Moral	M	SD	n
American Indian	3.02	N/A	1
Asian	8.1	1.62	25
Black	5.11	3.41	5
Hispanic	7.99	1.91	38
Mixed	6.74	2.62	18
White	7.55	1.76	41

Social	M	SD	n
American Indian	5.4	N/A	1
Asian	7.5	1.51	25
Black	5.09	3.33	5
Hispanic	7.16	1.85	38
Mixed	6.16	2.01	18
White	6.85	1.97	41

Composites by Family-Income Level. A multivariate analysis of variance (MANOVA) was conducted to assess if there were significant differences in the linear combination of HCPrag, HPPerson, Moral, and Social composites between the levels of Family Income. The main effect for Family Income was not significant, $F(8, 204) = 1.46$, $p = .175$, $\eta^2_p = 0.05$, suggesting the linear combination of HCPrag, HPPerson, Moral, and Social was similar for each level of Family Income. The means and standard deviations are presented in Table 45.

Table 45

Means and Standard Deviations for Composites by Family Income

HCPrag	*M*	*SD*	*n*
Lower	6.11	2.43	17
Middle	7.24	2.03	48
Upper	6.89	2.27	42

HPPerson	*M*	*SD*	*n*
Lower	6.62	2.69	17
Middle	8.2	1.42	48
Upper	8.21	1.95	42

Moral	*M*	*SD*	*n*
Lower	6.22	2.85	17
Middle	7.79	1.8	48
Upper	7.62	2.28	42

Social	*M*	*SD*	*n*
Lower	5.71	2.28	17
Middle	7.21	1.76	48
Upper	7.02	2.1	42

Composites by Parent Education. A MANOVA was conducted to assess if there were significant differences in the linear combination of HCPrag, HPPerson, Moral, and Social composites between levels of Parent education. The main effect for Parent Education was significant, $F(8, 214) = 2.38$, $p = .018$, $\eta^2_p = 0.08$, suggesting the linear combination of HCPrag, HPPerson, Moral, and Social was significantly different among the levels of Parent Education. Posthoc ANOVAs were conducted for each dependent variable. The results were significant for HPPerson but not for the other three composites (see Table 46). The higher levels of parent education, the higher students rate HPPerson concerns (see Figure 10 below).

Table 46

Means and Standard Deviations for Composites by Parent Education

HCPrag	*M*	*SD*	*n*
Level 1 (≤ High School)	7.09	2.28	28
Level 2 (some or = College)	7.02	1.86	42
Level 3 (Graduate Education)	6.93	2.25	42
HPPerson*	*M*	*SD*	*n*
Level 1	7.16	2.41	28
Level 2	8.26	1.03	42
Level 3	8.41	1.59	42
Moral	*M*	*SD*	*n*
Level 1	7.04	2.69	28
Level 2	7.77	1.44	42
Level 3	7.67	2.13	42
Social	*M*	*SD*	*n*
Level 1	6.45	2.55	28
Level 2	7.13	1.54	42
Level 3	7.14	1.77	42

Note. Asterisks ("*") indicate differences in composites with significant findings as shown in the paragraph above.

Figure 10

HPPerson by Parents Education
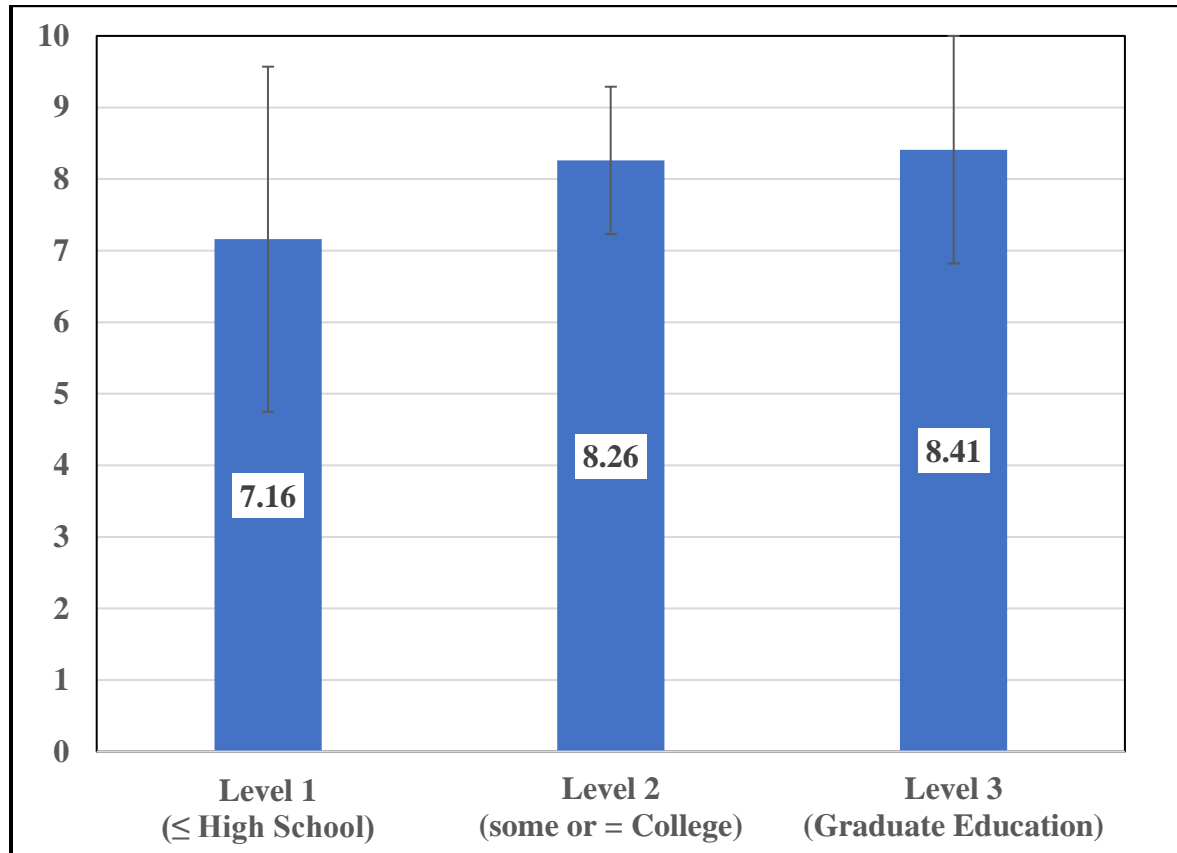
To control for effects of other variables and for assessing possible predictive effects of Parent Education on HPPerson, an additional hierarchical linear regression was conducted. The other composites were entered at Step 1; Parent Education was added as a predictor variable into the model at Step 2; and the other demographic variables (Family Income, Race/Ethnicity, Gender, Area, and Age) were added at Step 3. All variables in the regression models have VIFs less than 5 (negligible multicollinearity). The F-test for Step 1 was significant, $F(3, 81) = 51.15$, $p < .001$, $\Delta R^2 = .65$, indicating that the other composites explained an additional 65.45% of the variation in HPPerson. The F-test for Step 2 was significant, $F(2, 79) = 8.71$, $p < .001$, $\Delta R^2 = .06$. This model indicates that adding Parent Education explained an additional 6.24% of the variation in HPPerson. The F-test for Step 3 was not significant, $F(8, 71) = 0.55$, $p = .811$, $\Delta R^2 = .02$, indicating that adding the other demographics did not account for a significant amount of additional variation in HPPerson. Overall, this indicates that the higher the level of Parent Education, the more students prioritize HPPerson items.

Domain Coordination by Demographic Variables. ANOVAs were conducted to determine whether there were significant differences in Domain Coordination by Geographic Area, Gender, Race/Ethnicity, Family Income, and Parent Education. The results of the ANOVAs were not significant for Geographic Area, $F(1, 90) = 0.38$, $p = .537$; Gender, $F(1, 83) = 0.06$, $p = .799$; Race/Ethnicity, $F(3, 85) = 0.78$, $p = .508$; Family Income, $F(2, 70) = 0.37$, $p =$

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.695, indicating the differences in Domain Coordination among these categories within these demographic variables were all similar. However, the results were significant for Parents' Level of Education ($F(2, 79) = 3.36$, $p = .040$).

Coordination by Parents' Level of Education. The results of the ANOVA were significant, $F(2, 79) = 3.36$, $p = .040$, indicating that there were significant differences in Domain Coordination among the levels of Parent Education (Level 1 = High School and below; 2 = College all levels; 3 = Graduate level). The means and standard deviations are presented in Table 47 and Figure 11.

Table 47

Means and Standard Deviations for Domain Coordination by Parent Education

Parent Education Level	M	SD	n
Level 1 (≤ High School)	1.62	0.67	21
Level 2 (Some or = College)	1.57	0.65	35
Level 3 (Graduate Education)	2	0.69	26

Figure 11

Domain Coordination by Parent Education
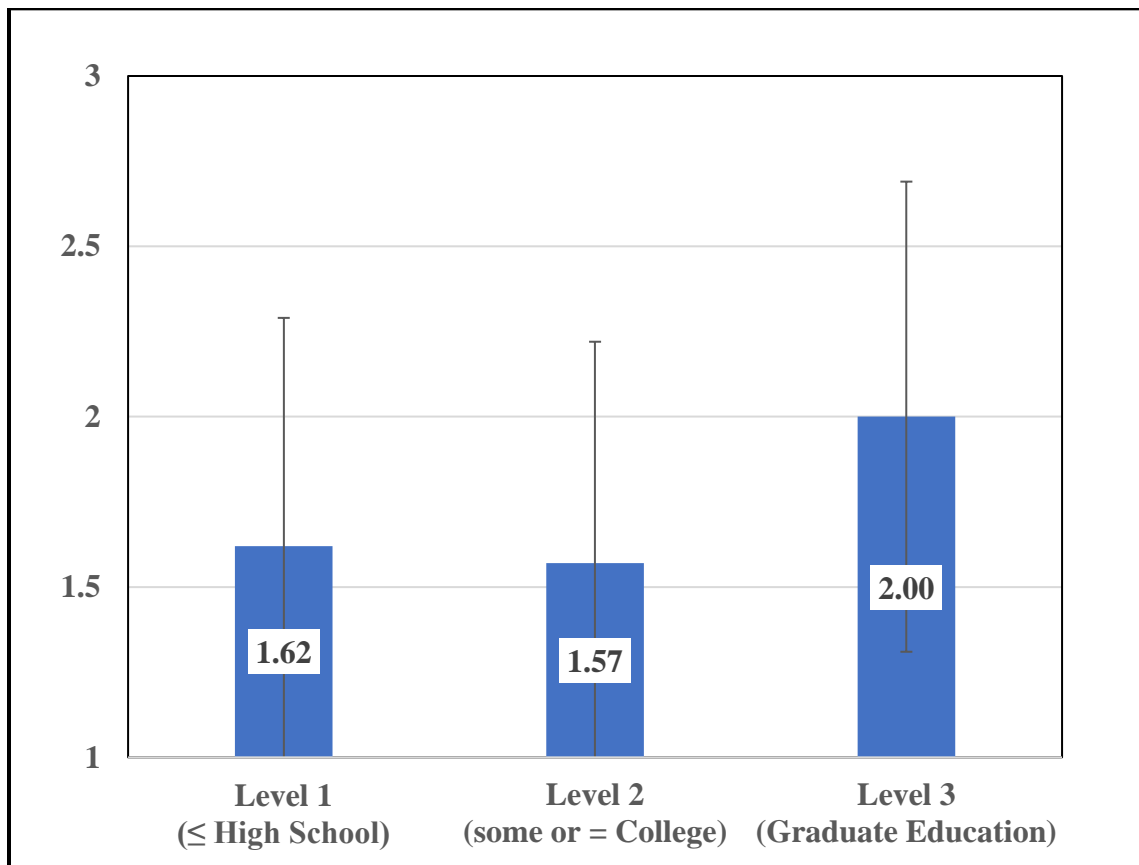
Posthoc tests were conducted. Paired *t*-tests were calculated between each pair of measurements to further examine the differences among the variables. The Tukey HSD p-value adjustment was used to correct for the effect of multiple comparisons on the family-wise error rate. For the main effect of Collapsed_Parents_Education_3_Levels, the mean of Domain Coordination Type for Level 2 (*M* = 1.57, *SD* = 0.65) was significantly smaller than for Level 3 (*M* = 2.00, *SD* = 0.69), *p* = .041. No other significant effects were found.

A Chi-square Test of Independence was conducted to examine whether Domain Coordination and Parent Education were independent. There were 3 levels in Domain Coordination: 1, 2, and 3. There were 3 levels in Parent Education: 1, 2, and 3. The results of the Chi-square test were not significant based on an alpha value of .05, $\chi^2(4) = 6.47$, *p* = .166, suggesting that Domain Coordination and Parent Education could be independent of one another. This implies that the observed frequencies were not significantly different than the expected frequencies. Table 48 presents the results of the Chi-square test.

Table 48

Observed and Expected Frequencies of Domain Coordination and Parent Education

Domain Coordination	Parent Education			χ^2	df	p
	Level 1	Level 2	Level 3			
Type 1	10[8.71]	18[14.51]	6[10.78]	6.47	4	0.166
Type 2	9[9.48]	14[15.79]	14[11.73]			
Type 3	2[2.82]	3[4.70]	6[3.49]			

Note. Values formatted as Observed[Expected].

To control for effects of other variables and for assessing possible predictive effects of Parent Education on Domain Coordination, an additional hierarchical linear regression was conducted. For Step 1, Age, Gender, Race/Ethnicity, and Family Income were entered as predictor variables into the null model. Parent Education was added as a predictor variable into the model at Step 2. All predictors in the regression model at all steps have VIFs less than 5.

The *F*-test for Step 1 was not significant, $F(7, 55) = 1.25$, *p* = .294, $\Delta R^2 = .14$. The demographic control variables did not account for a significant amount of additional variation in Domain Coordination. The *F*-test for Step 2 was significant, $F(2, 53) = 3.20$, *p* = .049, $\Delta R^2 = .09$. This model indicates that adding Parent Education explains an additional 9.30% of the variation in Domain Coordination. Although Domain Coordination does not significantly increase from Level 1 to Level 2 of Parent Education, it does significantly increase from Level 1 to Level 3, $B = 0.57$, $t(53) = 2.32$, *p* = .024. In general, higher levels of parent education predict increases in domain coordination.

3.4 Summary and Discussion of Results

The results generally supported hypotheses for high school students. Hypotheses for RQ1 (Prioritization) were partially supported. The CFA showed that Human Capital purposes align with pragmatic domain purposes and that Human Potential purposes align with personal domain purposes of education. The whole-group prioritization pattern is as follows from high to low

means: HPPersonal (7.88), Moral (7.51), HCPragmatic (6.98), and Socialization (6.88). There is a developmental trend for prioritization of purposes from HCPrag to HPPerson. Older students prioritized HPPerson items higher than younger students. However, contrary to part of the hypothesis, younger students prioritized HCPrag items significantly higher than older students.

Hypotheses for RQ2 (Coordination) were supported. There is also a developmental trend for coordination of multiple purposes of education. Most high school students displayed Type 1 (no coordination) or Type 2 (partial) coordination. A greater proportion of older students displayed partial coordination than did younger students. A minority, almost all of which were older students, displayed Type 3 (full) coordination. Generally, students increase their coordination with age.

Hypotheses for RQ3 (Demographics) were partially supported. For most demographics (except age), there were no significant differences in prioritization of purposes of education. In general, all groups within demographic categories showed composite scores in the same pattern as discussed above in Hypothesis 1 for the whole high school sample (and as shown in Figure 4). There were significant differences in composite scores and domain coordination related to parent education; however, there were no significant differences related to family income. Also, there was a significant interaction effect between age by gender: Prioritization of moral education purposes diverge with age by gender. Moral composite scores of females increase with age; scores of males decrease.

3.4.1 Composites for All High School Students and Developmental Findings

Results of the CFAs suggested that the four models achieved adequate model fits. It also showed that the latent variables associated with the HC and HP educational frameworks corresponded with those in the pragmatic and personal domains. Human Capital purposes of education correspond to the pragmatic domain, and Human Potential purposes correspond to the personal domain. The same items comprising the domain scales from the models were used for calculating four composite scores for each respondent. There were significant differences in all four overall composite means: HPPerson was the highest; Moral was the second highest; HCPrag was the second lowest; and Social was the lowest. Overall, most of the high school students prioritize human potential/personal and moral purposes of education more than human capital/pragmatic and socialization purposes of education. Furthermore, this is generally the case for respondents from all demographic categories.

However, there were significant differences in prioritization of human capital/pragmatic purposes of education according to age. Younger students (ages 13 to 14) prioritize HCPrag higher than older students (ages 15 to 17). This finding aligns with two other findings: younger students generally display lower coordination than older students; and higher priorities of HCPrag items have a negative correlation with domain coordination (as reported in section 3.3 Results and in the next subsection). These combined findings will be discussed in greater depth in the following chapter.

3.4.2 Domain Coordination of High School Students

Whole-Group and Age-Group Distribution of Domain Coordination. The majority of high school students (the whole group) displayed Type 1 and Type 2 coordination (none and partial)—close to an even split (40 Type 1 vs 41 Type 2). Only 11 students displayed Type 3 coordination (full). Of those, one was younger, and 10 were older. There is a significant difference in how younger and older students coordinate among purposes of education. This indicates that there is a developmental progression to a more advanced type of coordination as age increases. As stated in Chapter 1, this is evidence of increased equilibration in older students,

a developmental process. Older students generally have more ability than younger students to coordinate multifaceted domain issues—such as multiple educational purposes. These findings follow similar developmental patterns found in other domain-theory based studies (Nucci et al., 2017).

Correlations Between Domain Coordination and Composites. Composite scores were correlated with domain-coordination types. There was a significant negative correlation between the HCPrag composite and domain coordination. Regression analysis shows that both HCPrag and HPPerson significantly relate to domain coordination. Prioritization of HCPrag inversely predicts coordination, while HPPerson positively predicts coordination. This reflects concerns of such authors as Nussbaum (2016) about the dangers of neglecting human-development purposes of education in favor of a sole focus on human capital. That is, more focus on human capital correlates negatively with coordination of the multiple purposes of education. Multiple scholars already referenced in prior related sections emphasize the importance of prioritizing and developing human capabilities/personal purposes of education to develop well-rounded individuals with abilities to understand multiple perspectives. This also supports development of abilities to coordinate among multiple domains and purposes, including human capital/pragmatic matters. Development of these abilities also contributes to moral and social development necessary for democratic engagement, full participation in complex social issues, and contribution to a just society.

3.4.3 Demographic Influences on Composite Scores and Domain Coordination

Demographic analyses of composite scores show significant differences in means for age (already discussed above) and parent education. There were no significant differences in composite scores and domain coordination related to geographic area, gender (as a variable by itself), race/ethnicity, and family income. In general, all demographic groups show relationships among composite scores similar to the high-to-low pattern discussed previously. For domain coordination, there were significant differences by age (already discussed above) and parents' highest level of education.

Gender and Age Effects. Gender alone was not shown to be a significant factor for high school students' composite scores and domain coordination. However, there were significant differences in the Moral composite scores between older females and older males, and between younger males and older males. This was shown in an interaction effect between Gender and Age. There is a divergence in Moral scores as males and females get older. While female scores increase, male scores decline significantly. Older females show significantly higher prioritization of moral purposes of education than older males. One possible explanation is that as students get older, they are pulled into directions of different social norms pertaining to moral priorities. For example, some common gendered, prescriptive stereotypes that may still exist today include: "men are supposed to be tough and competitive," while "women are supposed to be caring and empathetic." Such social messages may become more salient as students try to solidify their personal identities in relation to social groups during late adolescent development.

Race/Ethnicity. There were no significant differences among mean composite scores and domain coordination for race/ethnicity. These results follow findings of other domain-theory based studies (Nucci et al., 2017; Smetana & Yoo, 2023). Race/ethnicity shows no significance in students' prioritization or coordination of purposes of education.

Family Income Level. Although the means of HPPerson, Moral, and Social composites were higher for upper and middle family-income levels than for lower levels, the results were not significant with this sample size. If this were to be further investigated, one possible explanation

is that students from higher family income levels are freed somewhat from having to be concerned with practical matters of living (such as food and shelter) and thus have the luxury to be concerned with educational priorities in other domains (see Becker and Tomes, 1986). There were no differences in domain coordination by family income levels of high school students.

        Parent Level of Education. There is a positive relationship between parent education and HPPerson—the higher the parents' level of education, the higher the HPPerson composite score. This indicates that more highly educated parents may have notable relationships with students' prioritization of personal development and pursuits of individual interest through education (Dubow et al., 2009).

        Parent education has a significant positive predictive effect on domain coordination. In general, the higher the level of parent education, the fuller the coordination (i.e., Types 2 and 3 coordination).The fuller coordination is an indication that, regardless of their preferred domains of reasoning, students are prioritizing and coordinating a greater range of uses and purposes of education. Other research may provide explanations for this finding. For example, Dubow et al. (2009) reported that parents' level of education has a significant positive and predictive effect on teenagers' educational aspirations and actual education attainment and/or occupational attainment (pp. 9–10).

3.4.4 Unexpected Results for Specific Items

        This section will discuss possible directions for future research about items that pertain to both high school and college students. Findings from specific questions in the survey resulted in unexpected outcomes with both groups that point toward the need for further investigation in subsequent research.. Four items dealing with STEM and Liberal Arts (one HCPrag, two HPPerson, and one Moral) and three additional items (two Socialization and one Moral) are the focus of this discussion: *Q10 (STEM for HCPrag) Versus Q15 (STEM for HPPerson), Q12 (Liberal Arts for HPPerson), and Q5 (Liberal Arts for Moral).* A notable number of students (approximately 17% in the college and 8% in the high school samples) spontaneously chose to write about the tensions between STEM and liberal arts (including arts and humanities) in their free responses. This may represent a common misuse of the term "liberal arts" to mean simply its humanities components (see Wilson, 2021). Even though students distinguished between STEM and liberal arts purposes within the items, most of them did not consider them to be the most important of the 20 items.

        Overall, many students expressed awareness of a *push* to pursue STEM subjects over liberal arts (Gonzalez & Kuenzi, 2012). However, respondents from this study generally recognized that both areas of study are important. Although some students majored (or intended to) in STEM subjects to get high-paying jobs, most stated that it should be studied for intellectual interest. Some students also said that liberal arts (including arts and humanities) should be studied for better understanding of the human condition and others' perspectives. This mirrors perspectives of educational leaders (Natividad, 2022).

        What is particularly interesting is the extent to which their responses revealed how socioeconomic and intergenerational factors may influence judgements and choices around what is deemed pragmatic or even "worthy" of study. For some students, *social mobility* is a driving educational purpose (see Labaree, 1997). Of further interest is how some college respondents discussed conflicts between STEM and liberal arts in relation to how choosing and pursuing each could affect the broader society, especially morally.

        The thoughts and concerns expressed by the students in this study reflect an awareness of the broader discourse taking place within American society. Business and government leaders

are worried about not having enough of a workforce with STEM skills (Anft, 2013).[2] Consequently, schools and students are encouraged (or even pressured) to concentrate their studies in STEM fields. This study reveals that high school and college students recognize this but they also want more than what concentrating in STEM by itself offers. These views of students are in line with arguments made by critics of the overemphasis upon STEM. David Hart from George Mason University states, "Really, combining STEM knowledge with humanities knowledge would be ideal" (as cited by Anft, 2013, p. 11). As discussed in Chapter 1, Nussbaum (2016), Zakaria (2015), and Roth (2014) are also skeptical about sacrificing liberal arts education in favor STEM education. These issues still warrant more in-depth investigation from multiple disciplines of inquiry.

Q1 (Socialization) Help students socialize. Among college students, 14% rated this the most important purpose of education, and 9% rated it the least important. Overall, it was ranked 14th according to average scores. Among high school students, 23% rated it the most important, and 10% rated it the lowest. Overall, it was ranked 13th according to average scores. Such a dichotomy in ratings needs to be investigated more thoroughly. These results could have been influenced by the social disruption of the pandemic, or they could also be a symptom of Putnam's (2000) observations about low social capital in American culture.

Q18 (Socialization) Prepare students to be active in democratic decisions and group consensus building. Among college students, less than 0.5% rated this item as the most important purpose of education, and 3% rated it the lowest priority. Among high school students, nobody rated it the highest priority, and 14% rated it the lowest priority. Overall, it was ranked 16th by college students and 20th (last place) by high school students. Does this reflect current divisions and worries about the survival of democracy in the American political system? According to Walter Parker (2010), "Schools in societies with democratic ideals are obligated to cultivate enlightened and engaged citizens. Helping young people form the habits of listening to strangers, at that very public place called school, should advance this work" (p. 2814). The findings for this item may reflect that this kind of education is not currently being implemented in many schools. Future studies may clarify this and reveal ameliorative actions.

Q19 (Moral) Help students use good reasoning about unfair conditions in society. Among college students, 3% rated this the most important purpose of education, and 3% rated it the lowest. Among high school students, less than 1% rated it the highest, and less than 1% rated it the lowest. Overall, it was ranked 7th in importance by college students and 5th in importance by high school students. The difference between ranking by average score and by the number of students that thought this important indicates that students consider this moral purpose very important but not so much in relation to other purposes (HPPerson items for college students and other Moral items for high school students). This very much needs further investigation. Future studies should build upon this and possible findings from other studies.

3.4.5 Conclusion

The results of this study assist in understanding adolescent reasoning about purposes of education. The outcomes of the research reported in this and the last chapter provide insight into the developmental trajectory of student reasoning about purposes of education. These findings and issues (along with implications for educational policy and recommendations for future research) will be discussed in Chapter 4: Discussion and Conclusions.

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[2]Anft (2013) reports on studies that claim there is actually no shortage of STEM-qualified job seekers in the United States—it is a myth—instead, it is an industry attempt to lower wages (p. 3).

Chapter 4: Discussion and Conclusions

4.1 Introduction

Policymakers and educational philosophers have provided conflicting claims about the purposes of education. For the most part, contemporary educational policy has defined education in terms of human capital (Klees, 2016). In contrast, philosophers (e.g., Nussbaum, 2011) and likeminded economists (e.g., Sen, 2005) have argued that education should be directed at promoting students' personal growth and "human potential," while other educational philosophers and policymakers have focused upon the role of education in producing ethical citizens committed to democratic values (cf. Cuban, 2015; Lee et al., 2021).

A society may have legitimate demands for economic returns from formal education, but failure to address other human purposes through education can result in dysfunction of both people and society—and produce opposite results from what was intended with human capital educational goals. One obvious source about the need for multiple purposes of education is the intended target population of all these issues, the students themselves. However, comments from participants of this study indicate that little prior attention has been paid to the views of students themselves. As presented in Chapter 1, educational purposes in the history of American schooling (from Puritan colonialism to modern U.S. postindustrial democracy) have been predominantly imposed by organized social institutions. Even today, students mostly pursue externally imposed educational purposes. This dissertation sought to address this situation by investigating how the students understand these purposes, what they prefer, and why.

This research was heavily informed by social cognitive domain theory (Turiel, 2023) and partially by aspects of compatible theories of student motivation (e.g., Ryan & Deci, 2020) that allowed exploration of how young people frame their purposes of education. Additionally, this study's working analytical framework was also backgrounded by human capabilities/potential and human capital educational frames of reference. This study's theoretical structure permitted a mapping of students' social cognition and personal motivation onto the proposed goals formalized by educational policy. The measurement instrument developed for this study and the data it captured allow examination of how students prioritize and coordinate among multiple and possibly competing educational goals. It also integrates philosophical, policy, and conceptual frameworks that reveal knowledge structures and reasoning about the educational, social, and political worlds.

Contrary to what policymakers and education officials may intend, this dissertation discovered that most high school and college-age students prioritize personal growth (human capabilities/potential) and moral/ethical goals over human capital goals. Findings from this study also indicate that, with age, students generally develop the ability to coordinate or balance these competing priorities. It is also possible that the use of other research designs and measures could capture additional information about what kinds of interventions contribute to greater capabilities for coordination. For example, can measurements of explicit teaching about how to coordinate various purposes, when compared to existing methods of assessing coordination types for age groups and grade levels, provide information about how to support greater coordination in younger students?

The research reported in this dissertation involved administering a three-part survey in which high school and college students provided the following: (1) demographic information, (2) ratings of 20 common purposes of education, and (3) explanations for the highest and lowest ratings. As reported in Chapters 2 and 3, statistical factor analysis resulted in grouping items into four latent variables (composites) representing social cognitive domains:

- HPPersonal (HPPerson: human potential, personal choice, self-identity, autonomy),
- Moral (human welfare, justice),
- Socialization (Social: social norms, interpersonal relations, social participation), and
- HCPragmatic (HCPrag: human capital, pragmatic).

For both population samples, analyses were conducted to answer the following three research questions:

- RQ1 (Prioritization). How do students prioritize different purposes of education, and are there developmental differences?
- RQ2 (Coordination). How do students coordinate different purposes of education, and are there developmental differences?
- RQ3 (Demographics). Are there differences in how students prioritize and coordinate different purposes of education based on demographic variables?

As stated above, the results generally supported the hypotheses for each research question. Overall, both college and high school students prioritize HPPerson and Moral purposes higher than HCPrag and Social purposes of education. For RQ1, composites were analyzed through statistical tests. For RQ2, free responses were coded and then analyzed quantitatively and qualitatively. Additional qualitative findings are reported in this chapter according to their relevance to major discussion issues. Relationships between findings for RQ1 and RQ2 are discussed here in more detail and depth. For RQ3, notable demographic findings from both Chapter 2 and Chapter 3 are discussed. The remainder of this chapter presents a detailed discussion of the major findings of the research including relevant developmental and demographic differences among high school and college students. This chapter also addresses selected theoretical issues, broader implications of the findings, research limitations, and future research directions.

4.2 Discussion of Results for High School and College Students: RQ1, RQ2, and RQ3

The surveys of both high school and college students had notable results. Although there were no specific hypotheses about relationships between the two main items of investigation (prioritization of purposes and domain coordination), statistical correlations and regressions showed significant relationships.

Discussions below are the result of integrating the following findings:

- For both high school and college students, increases in domain coordination were associated with increases in HPPerson scores and decreases in HCPrag scores.
- For high school students, domain coordination increased significantly with age ($r^2 = .07$) and higher levels of parent education ($r^2 = .09$). For college students, domain coordination had no significant relationship with any demographic variable.
- HPPerson scores for high school students increased with higher levels of parent education. HPPerson scores for college students increased with higher levels of family income while their HCPrag scores decreased with higher levels of parent education.

In some cases, findings about college students can be considered a developmental target for college-bound high school students (close to 80% of high schoolers according to self-reports). According to results reported in Chapters 2 and 3, older high school students show changes in prioritization patterns and types of coordination approaching those of college students.

4.2.1 Discussion of Prioritization, Domain Coordination, and Development

In this study, younger high school students generally prioritized HCPrag higher than did older students and showed less domain coordination of all purposes of education. For college students, age was not a factor in either prioritization or coordination of purposes, a possible indication that most of them have reached a more developed form of coordination. College students who prioritized HCPrag purposes higher than other purposes, like the high school students, showed lower domain coordination. Generally, however, most high school and college students eschewed HCPrag concerns in favor of HPPerson concerns, and the HPPerson concerns were associated with greater coordination.

HPPerson According to SCDT and Extended Framework. It is possible that higher HPPerson prioritization is a more coordinated "position" from which to integrate concerns and elements from the other domains, including HCPrag. Development of self (personhood) is a transactive process of building conceptions of self in relation to other things (other persons, social groups, societal norms, ideas of right/wrong/goodness; see Nucci & Lee, 1993). This is also necessary for developing a self-system (Nucci, 2019, in press). This development of the self-system is necessary for understanding the perspectives of other people and for successful responsive engagement in the social world (Laden, 2012). These developmental and transactional processes support Nussbaum's (2011) vision of widespread development of human capabilities which are necessary for individuals to live full, meaningful lives, participate in democratic societies, and be able to collaborate with others to improve social systems. These are all components of HPPersonal purposes and the development of coordination capacity.

HCPrag According to SCDT and Extended Framework. A possible reason that some students show dominant prioritization of HCPrag purposes with accompanying lower coordination may have to do with an overemphasis on human-capital/pragmatic goals by businesses and governmental institutions. These interest groups push their concerns formally and informally down to educational institutions. This may occlude considerations of other aims of education, thus narrowing opportunities for coordinating reasoning about other possible purposes. This is a concern of other notable scholars (e.g., Klees, 2016; Robeyns, 2006; Spring, 2015; Tomasevski, 2008; and Walker, 2012). Another reason for favoring HCPrag purposes and demonstrating less coordination is lower SES family circumstances. Such students may see more need in getting a high paying job because of having less of a buffer to explore their interests. This should also be a concern of practicing educators and policymakers. As revealed in student free responses discussed in Chapters 2 and 3, many students are very much aware of the external pressures to emphasize pragmatic purposes.

Possible SCDT Extensions to Address Challenges to SDT and Achievement Goals Research. Another notable line of research with which to compare this study's findings, methods, and implications is self-determination theory (SDT) and the achievement goals approach. (A summary of theoretical and psychological framings of both SDT and achievement goal constructs were discussed in Chapter 1, Sections 1.2.4 and 1.2.5.) SCDT and SDT motivation research can complement one another while differing from each other in several ways. This SCDT-based study investigates student prioritization of reasons and coordination for purposes/goals of education. SDT studies also investigate educational goals ("what" to achieve) and reasons for their pursuit ("why" to achieve).

However, this SCDT research approach categorizes goals and spontaneous reasons into domains of conceptual knowledge structures while the SDT/achievement goals approach categorizes goals as either mastery tasks (intrinsically motivated) or performance tasks

(extrinsically motivated). SDT reasons are either autonomous (intrinsic) or controlled (extrinsic). The goals and reasons together provide a motivation mixture in "achievement goal complexes."

Sommet and Elliot (2017), in SDT-based research, analyzed four studies about subjects' achievement goals, reasons for goal pursuits, and combinations of these. Their survey items for mastery goals and autonomous reasons are similar to this survey's HPPerson educational purposes, and many of their items for performance goals and controlled reasons are similar to this survey's HCPrag educational purposes. They also studied these constructs in relation to beneficial outcomes (e.g., interest, positive emotion, deep learning).

Sommet and Elliot found that there are few significant relationships between goals and reasons. However, there are more significant relationships when combinations of goals and reasons are analyzed as "achievement goal complexes." These authors state that their findings are limited because the study methods were not sufficiently comprehensive to capture the complexity that goes beyond comparing the relationships among achievement goals, reasons, and the relationships in between. Furthermore, few SDT/achievement goal studies incorporate "spontaneously generated reasons." An exception to this is a study by Urdan and Mestas (2006) that attempts to incorporate interview data.

The authors of both studies just discussed (Sommet & Elliot, 2017; and Urdan & Mestas, 2006) suggest that other mixed-methods approaches could be useful in capturing the complexity of respondents' reasoning about both goals and reasons. Furthermore, Sommet and Elliot point out that the content of the goals and reasons in and of themselves may warrant reconfigurations within their survey measures and analytical methods. The SCDT theoretical framework and methods of this current study partially addresses some of their recommendations. They do this by systematically providing a more comprehensive survey instrument with items that have fuller content and by using free-response questions for capturing more complexity in reasonings about those educational purposes. This study goes a step further by leaving room for respondents to reason about the *whys* behind their reasons for prioritizing goals.

For example, in Sommet and Elliot's questionnaire (based on SDT/achievement goals), one survey item is, "My aim is to completely master the material presented in my classes because I find this a personally valuable goal." This was categorized as (MAp X AR), meaning *Mastery Approach goal* for an *Autonomous Reason*. However, if this was a goal given by an instructor to an entire class, then it could be a *performance* goal, not a *mastery* goal. And the *autonomous* reason is ambiguous. It could be a *controlled* reason if the student considers it "personally valuable" to comply with the perceived demands of the teacher. The results can be difficult to interpret accurately without asking the students to provide their own reasoning around these items before analyzing the results according to the framework being used.

The SCDT approach, on the other hand, is to choose goals whether achievement or performance oriented because of the overall importance, whether chosen for autonomous or controlled reasons, and whether personally, morally, socially, or pragmatically important. As Sommet & Elliot and Urdan & Mestas have already mentioned, additional clarity could be achieved from free response explanations from the subjects and other approaches better suited to conceptualize these factors. This study's use of SCDT approaches already incorporates some of that.

There is value in SDT/achievement goals approaches in that they more explicitly embed selected affective motivational components in some of the items (e.g., "I pursue goals because I would feel bad, guilty, or anxious if I didn't do it" (Sommet & Elliot, 2017, p. 1162). Those studies also sometimes emphasize the value of relating their findings with additional beneficial

outcome measures. On the other hand, SCDT-like approaches organize items and delineate subjects' responses by conceptual domains that allow for evaluating the coordination and relationships among those domains. This approach can serve to broaden opportunities for measuring people's reasoning about educational purposes within the methodological frameworks. Further theoretical and research considerations between SDT/achievement goals and SCDT could be fruitful in future works. This would especially apply concerning points of coherence between SDT/achievement goals' autonomous versus controlled reasons and SCDT's personal domain/human potential and pragmatic domain/human capital categories of educational purposes.

4.2.2 Discussion of Demographics, Prioritization, and Coordination

Race/Ethnicity. For both high school and college samples, race/ethnicity (and geographic area for high school) were not significant elements in students' prioritization and coordination of purposes of education. This may reflect the history of increasing racial and ethnic diversity in the United States alongside increasing standardization of public education programs and policies intended to educate all citizens with common norms and knowledge. In recent decades, there have been mixed results from initiatives to "close the achievement gap" among racial and ethnic groups—for example, the national public school implementations of the No Child Left Behind Act of 2001 and Race to the Top Act of 2013. Such policy initiatives and studies may continue as long as there are noticeable education achievement gaps attributable to demographics such as race and ethnicity. However, the findings of this study show that, regardless of race and ethnicity, students prioritize and coordinate purposes of education in similar ways. This may suggest that individual high school and college students primarily share concerns about similar educational purposes (especially personal growth) regardless of personal background and external circumstances.

Gender. There were significant differences in educational priorities by gender, especially in domain composites. For college students, females prioritized human potential/personal and moral purposes of education more than males. For high school students, there was a significant developmental gender interaction—younger females and younger males prioritized moral purposes of education similarly, yet both genders diverged in opposite directions with age. Older females prioritized moral educational purposes much higher than older males. This foretells the situation of college students: females have higher moral scores than males.

According to previous SCDT research, (e.g., Horn, 2003; Killen & Stangor, 2001), there are no differences in the basic structure and development of moral reasoning between females and males. However, evidence also shows that females generally are more sensitive to morally salient elements of social situations than are males. In this study, the findings show that older females prioritize moral purposes of education more than older males. This may also signal that schools and society in the United States still have gender divisions, some of which may heavily influenced by gendered socialization experiences. Some social activists and scholars discuss that expected and actual "gender gaps" may require significant reduction if societies are to become genuinely fair and equitable social systems (e.g., McConnon et al., 2022).

Socioeconomic Measures (SES). Finally, as pointed out in previous chapters, the two SES categories of family income and parent education showed significant results relating to domain prioritization and coordination of purposes of education. For college students, higher family income correlated with and significantly predicted higher prioritization of HPPerson, and higher parent education level correlated with and significantly predicted lower prioritization of HCPrag. For high school students, family income was not significantly associated with either

prioritization or coordination of educational purposes. However, higher levels of parent education for high school students were significantly correlated with higher prioritization of HPPerson *and* predictive of higher domain coordination of educational purposes. Overall, students with highly educated wealthy parents are HPPersonal dominant and less concerned with HCPragmatic issues.

Students from lower-income families and/or students whose parents have lower education levels tend to be HCPragmatic dominant. The greater prioritization of HCPrag concerns may be drawing attention away from HPPerson and other purposes, particularly the development of such things as human capabilities and self-actualization. As mentioned in the summaries of results from Chapters 2 and 3, students from lower SES groups may prioritize HCPrag purposes over HPPerson purposes because of the perception that achieving higher levels of education will lead to reaching higher income which, in turn, will lead to upward social mobility. Students from higher SES groups may have an additional "luxury" of not having to worry about HCPrag goals (e.g., food, shelter, safety). Thus, their desires to pursue other goals through education—especially HPPerson goals—are more possible. Their higher SES provides somewhat of a safety net from setbacks, at least economic ones.

Wealth disparity may be a contributor to this situation, a situation that many in U.S. society do not recognize accurately (Arsenio, 2018). Arguments could be made that HCPrag dominance, if not caused by socioeconomic differences, is more pronounced in lower SES individuals. Therefore, reduction of income disparity in U.S. society may result in higher possibilities of HPPerson prioritization and fuller domain coordination. This proposition could be substantiated further with future research. (Methods of reducing problems of wealth disparity is beyond the scope of this study.)

These two SES indicators—family income and parent education—may have a synergistic effect on the balance of prioritization between HCPrag and HPPerson purposes. This, in turn, influences how students coordinate all educational purposes. By extension, as pointed out by Dubow et al. (2009), this can have a significant impact on their measurable life outcomes and potentially those of subsequent generations.

4.3 Conclusions

The following subsections discuss research limitations, additional future directions, implications, and recommendations for educational practice and policies. Some final notes at the end reiterate overall findings and make concluding comments.

4.3.1 Limitations and Recommendations for Future Research

A primary limitation of this study was the difficulty in conducting it during the COVID pandemic. It was difficult to collect enough data from high school students who were trying to transition to and back from home-based internet-centered schooling to their regular classroom-based in-person schooling. Many school district administrators and principals were reluctant to have students participate in the study because of concerns about taking time away from teachers who were already burdened with altered instructional activities. Despite these difficulties, permissions were secured and enough high school student data was collected for sufficient analyses. In the future, it may be easier to conduct studies like this during a "normal" school year.

There were more non-responses from high school students than from college students, especially for the free-response items. If this study were to be repeated, additional funding could be secured so that researchers could travel to facilitate greater completion rates of the survey.

This would also allow for using interview methods to prompt students for more accurate and thorough answers and reasoning.

Another limitation is that the college sample was from only one "selective" public university with a fairly distinctive student body. Future studies should include participants from different levels and kinds of educational institutions (e.g., secondary schools, vocational schools, community colleges, other higher education institutions, and transfer students) preferably from different ranking tiers and geographic areas. For example, Powell's (2014) dissertation study of students in vocational schools in South Africa found that students want instruction beyond that which only addresses employability. They also want education based on capabilities approaches that help to increase human capabilities that matter to the students and contribute to human flourishing. Corroborating studies would give a fuller picture of how students universally prioritize and coordinate different purposes of education.

Some demographic groups were not represented adequately. Although both the college and high school student samples were representative of the demographic make-ups of their schools in general, there were insufficient numbers of Black/African American and nonbinary students. Future studies should include better distributions of different racial, ethnic, gender, and socioeconomic groups. This will facilitate generalizing to the US student population.

Additionally, 34% of college students and 35% of high school students in these samples are or will be first-generation college students. Their qualitative responses may reveal more information about the American Dream of living better than their parents. Respondent comments from this study revealed that first-generation students—especially those whose parents are immigrants—are frequently pressured to pursue educational purposes that improve family living standards. Future studies might also consider the prospect of student-loan debts influencing responses about purposes of education.

There were unexpected quantitative and qualitative results for particular items. These items, discussed in Section 3.4.4, include four items associated with STEM and Liberal Arts, two items about socialization and democratic education, and one about sociomoral reasoning. For some of these items, both high school and college students gave unexpected priority ratings or elaborated a great deal in their free responses. Their responses possibly reflect additional student concerns about balancing multiple purposes that warrant further investigation.

Finally, the latent factors were established in this study through confirmatory factor analysis, a variable centered approach. In future studies, latent profile/class analyses, a person-centered approach, can be used to provide more fine-grained information about individuals and subgroups, anticipate student responses to educational goals, and help to develop instruction and counseling interventions. For example, based on evidence from this study so far, one might expect an HCPrag dominant student to coordinate less among all purposes of education. However, profile analysis may more easily identify additional distinctions (sub-classes) among this group. In reviewing qualitative data, some HCPrag dominant students whose parents are immigrants indicate that they understand other perspectives on the purposes of education, have higher coordination, and, thus, may not need special interventions.

Future research directions also include conducting additional replication and longitudinal studies that seek to survey other samples, including cross cultural and cross national, in order to confirm the general findings of this study. After that, it would be ideal to carry out a longitudinal study of the same individuals from the ninth grade through college age. It would provide for more robust methods to study developmental processes involved in changes and coordination of purposes of education. Such a study would require the composition of a research team so that

new members could replace others that are lost from the research project for various reasons. Of course, such a study would probably also require special funding.

4.3.2 Implications and Recommendations for Educational Practice and Policy

Findings from this study may lend themselves not only to future research (some of which was discussed above), but also to implications for applications to educational practices, programs, and policies.

Instructional Issues in the Classroom and Beyond. This study gave an opportunity for both high school and college students to judge and reason about explicitly stated purposes of education. There were many extra comments at the end of the survey in which students expressed that they were rarely asked to think about these important issues in their own educational experiences. Such comments include, for example: "I wish you made this survey before I went to high school. I wish I lived in the future generations in a reformed education system" (High School Respondent 17); "Thank you for the survey because it helped me understand my own views on education or it helped me remember why I'm at school in the first place." (College Respondent 392).

Such responses imply that many educators do not ask students to think on their own about different purposes of education as a standard instructional practice. Possible approaches to supporting student awareness, prioritization, and coordination of their own educational purposes in constructive ways may include *domain-based education* (Nucci 2001, 2009; Nucci & Ilten-Gee, 2021; Nucci & Powers, 2014) and *responsive discourse* (Laden, 2012). These methods provide targeted and systematic instruction and examples for a variety of educational purposes and contexts.

Counseling and Advisement Issues. Some student problems (motivational, developmental, psychological, and/or social) may be related to misunderstandings about the purposes of education. The survey used in this study can lend itself to use in school counseling and academic advising. For example, it could be used as a routine yearly assessment or at different points in the school year for students to clarify and reflect upon the purposes of their education. As indicated in comments by students referenced above, it could at least help to clear up confusion about educational pursuits.

Alignment of Purposes for Schools and Districts. As part of the survey, students were asked to report if they think there are differences between how they themselves and officials from their educational institutions prioritize purposes of education. Students replied as follows: High School—43% Yes, 9% No, 48% Unsure; College—39% Yes, 10% No, 51% Unsure. The higher percentages of "Unsure" responses indicate that purposes are not discussed enough. Schools and educational systems are likely to benefit from giving special attention to negative responders for being at risk of school disengagement, even dropping out. By triangulating opinions and evaluating discrepancies between what and how purposes are prioritized by schools and their students (also parents, staff members, and other community stakeholders), educational purposes can be aligned for better outcomes. This dissertation study may offer ideas on how to ensure the alignment of educational purposes among schools, districts, and communities. This need not be limited to public schools. Private and religious schools can also apply findings from this study. It can be applied to vision statements, mission plan implementation, and how they affect actual school ethos.

Selected Educational Policy Issues. Over the past decades in the history of U.S. public education, prioritization of different purposes of education has changed along with changes in political issues and federal governmental initiatives. At times, educational policy leaders and

congressional taskforces have sought input from research communities to provide expert opinions, guidance, and/or research-based evidence for implementing legislative acts (e.g., Race to the Top, 2013). Schools and educators are expected to implement the initiatives in order to obtain funding or avoid sanctions. The changes have had various effects on how educational institutions manage and work.

Some of these educational policy programs are pertinent to the HCPrag-versus-HPPerson and STEM-versus-Liberal Arts conflicts. These include the Soviet launch of Sputnik which led to the National Defense Education Act (U.S. Congress, 1958) to increase emphasis on science and engineering education; the Nation at Risk Report (National Commission on Excellence in Education, 1983) that led to high-stakes testing; and the No Child Left Behind Act (2001) that was intended to reduce racial/ethnic and socioeconomic achievement gaps but had adverse effects on some low-income communities (e.g., Nicholls, 1989; Ravitch, 2013). For at least the last two decades, the two trends (human capital-driven education and increased funding and programs for STEM) have tended be implemented in widespread top-down directives for American public schools. These actions most likely influenced how at least some students responded to this study.

One possible counteractive to overemphasis on narrow HCPrag purposes is to promote overall multidomain coordination by supporting different purposes. These can be achieved by coordinating liberal arts with STEM subjects, discussing moral and social implications of different kinds of lifestyles, encouraging group projects for purposeful socialization, and fostering collaborative opportunities for civic engagement. The overall educational aim should be to coordinate and balance different kinds of purposes to achieve a well-rounded life, lives in which individuals can recognize and fulfill capabilities to improve self and society.

4.3.3 Final Notes

Important questions for American students need to be answered. What is the purpose of education? Why are we going to school? There is not one, but multiple purposes of education. Coordinating between conflicts in those purposes is essential to development of higher faculties and societal progress. Most discussions of educational purposes consist of opinions of authorities or "experts" from disciplines of business, government, and education. Paraphrases of statements made through mass media, academic conferences, and even everyday informal conversations include such assertions as: "We need engineers and scientists to compete with other nations for our national security; Our students can't read or calculate—Finland and Singapore are beating us in PISA tests; We need graduates in STEM (science, technology, engineering, and mathematics) to keep up with demand from the rapidly expanding technology and to maintain a healthy GDP." Few of these experts seem to have considered that the students may actually have other needs from the educational establishment. Fewer of these "authoritative voices" seem to have considered what the students themselves want from their formal educational endeavors.

The introductory chapter of this dissertation discussed the history of purposes of American education as understood mostly by education experts. Against that background, this research attempts to include the voices of students concerning those purposes. The study is based on a survey of high school students from the East and West coast of the United States and college students from a major public university with a particularly diverse student body in terms of demographics and nationality. Overall, students want more than human capital and work habits from their formal education. American secondary and post-secondary students believe that purposes of education should span beyond the limited capital-driven purposes which policy and

formal educational institutions in the United States overemphasize at the expense of better humans, a better society, and a better world.

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Survey About Purposes of Education

Part I. Please read and answer the following questions. (Please do not write your name anywhere. Your responses are totally anonymous.)

Q1. Age: _____

Q2. Gender: _____

Q3. Grade Level/Year in School: _____

Q4. Race/Ethnicity/Cultural Background (select all that apply):
☐ American Indian or Alaska Native
☐ Asian
☐ Black or African American
☐ Caucasian/White
☐ Hispanic or Latinx
☐ Native Hawaiian or Pacific Islander
☐ Other (please specify): _____
☐ Prefer not to answer

Q5. Family income level:
○ Lower
○ Lower-Middle
○ Middle
○ Upper-Middle
○ Upper
○ Other (please specify): _____
○ Prefer not to answer

Q6. Parent's highest level of education:
- ⭘ Less than high school
- ⭘ High school graduate
- ⭘ Some college
- ⭘ 2-year degree (Associates)
- ⭘ 4-year degree
- ⭘ Professional degree
- ⭘ Master's degree
- ⭘ Doctorate
- ⭘ Other (please specify): _____
- ⭘ Prefer not to answer

Q7. School Programs you participate in [for High School only]:
- ⭘ Academic
- ⭘ College Readiness
- ⭘ Creative Arts
- ⭘ Language
- ⭘ Leadership
- ⭘ Performing Arts
- ⭘ ROTC
- ⭘ Sports
- ⭘ Other (please specify): _____
- ⭘ Prefer not to answer

Q8. Academy (if applicable) [for High School Only]: _____

Q9. Current Academic Grade Point Average (GPA) (optional): _____

Q10. Plans after graduation:
- ⭘ Community College/2-Year College (for HS only) _____
- ⭘ University/4-Year College (for HS only) _____
- ⭘ Technical/Vocational School (for HS only) _____
- ⭘ Continuing education (for College only) _____
- ⭘ Working full-time _____
- ⭘ Undecided _____
- ⭘ Other (please specify): _____
- ⭘ Prefer not to answer _____

Q11. Additional information about plans after graduation (optional)**:** _____
_____

Q12. If going to college, Major or intended Major: _____ __
Major 2 (if applicable): _____
Minor and/or concentration (optional): _____

Q13. Do you talk about education matters and plans for the future with friends, peers, parents, teachers, counselors, school personnel and/or others?
   O Yes
   O No
   O Unsure

Q14.Whose ideas about purposes of education are most compatible with your own? Please

describe briefly.

_____

_____

_____

Part II. What are the most important purposes of education?

Q15. **How important are the following purposes of education to you?**
Please rate each purpose listed below from "1 - Not Important" to "10 - Extremely Important."
Do not mark every purpose the same. Consider the full range of ratings for each item on the list
.

Purposes of Education	Not Important		Moderately Important			Extremely Important				
1. Help students socialize.	0 1 2 3 4 5 6 7 8 9 10									
2. Help students achieve their fullest potential.	0 1 2 3 4 5 6 7 8 9 10									
3. Develop students' ability to improve the well-being of others in need.	0 1 2 3 4 5 6 7 8 9 10									
4. Help students find and follow what they are interested in.	0 1 2 3 4 5 6 7 8 9 10									
5. Help students develop skills in the liberal arts (philosophy, history, language, art, music, etc.) to make the world a better place.	0 1 2 3 4 5 6 7 8 9 10									
6. Prepare students to compete for the best jobs.	0 1 2 3 4 5 6 7 8 9 10									
7. Help students learn how to learn for the rest of their lives.	0 1 2 3 4 5 6 7 8 9 10									
8. Help students develop into well-rounded individuals with many abilities.	0 1 2 3 4 5 6 7 8 9 10									
9. Help students achieve academic excellence.	0 1 2 3 4 5 6 7 8 9 10									
10. Help students develop skills in STEM (science, technology, engineering, and math) to get high-paying jobs.	0 1 2 3 4 5 6 7 8 9 10									
11. Help students to learn how to get along with others in the workplace.	0 1 2 3 4 5 6 7 8 9 10									
12. Help students develop skills in the liberal arts (philosophy, history, language, art, music, etc.) because they enjoy the subject(s).	0 1 2 3 4 5 6 7 8 9 10									

13. Help students to be good people in their personal and social lives.	0	1	2	3	4	5	6	7	8	9	10
14. Prepare students to earn as much or more than their parents.	0	1	2	3	4	5	6	7	8	9	10
15. Help students develop skills in STEM (science, technology, engineering, and math) because they enjoy the subject(s).	0	1	2	3	4	5	6	7	8	9	10
16. Develop students' trustworthiness and social credibility.	0	1	2	3	4	5	6	7	8	9	10
17. Prepare students for work.	0	1	2	3	4	5	6	7	8	9	10
18. Prepare students to be active in democratic decisions and group-consensus building.	0	1	2	3	4	5	6	7	8	9	10
19. Help students use good reasoning about unfair conditions in society.	0	1	2	3	4	5	6	7	8	9	10
20. Prepare students to be good citizens.	0	1	2	3	4	5	6	7	8	9	10

Part III: Free Response and Additional Questions

Q16. Please explain **<u>why</u>** you chose to rate the **<u>most important</u>** purposes of education the way you did just now. You may also like to consider where your ideas came from.

_____

_____

_____

_____

Q17. Please explain **<u>why</u>** you chose to rate the **<u>least important</u>** purposes of education the way you did. You may also like to think about where your ideas came from.

_____

_____

_____

_____

Q18. Are there differences between you and officials at your school about how important purposes of education are? (School officials include teachers, counselors, principals, professors, advisors, other faculty members, deans, etc.)

O Yes

O No

O Unsure

Q19. How *similar* are these ideas about purposes of education? (Circle the number that most matches your opinion.)

| 1	2	3	4	5	6	7	8	9	10
Same				Similar					Different

Q20. How should any differences in views about purposes of education be resolved?

_____

_____

_____

Q21. Have your own views about the purposes of education changed from earlier years of being a student?
- O Yes
- O No
- O Unsure

Q22. If so, how? If not, why not? (optional)

_____

_____

_____

Q23. How much do you think people's ideas about purposes of education are changing because of COVID-19 and online instruction? (Circle the number that most matches your opinion.)

1	2	3	4	5	6	7	8	9	10
No Change				Some Change					Much Change
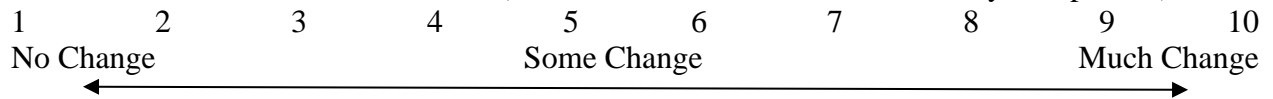
Q24. Please explain.

_____

_____

_____

Q25. I answered all items truthfully on this survey.
   O Yes
   O No
   O Unsure

Q26. Do you have any final questions, comments, or concerns?

_____

_____

Coding Guide for Student Free-Responses from Survey About Purposes of Education

Introduction

Coding of free responses involves (A) domain of reasoning (4 domains) and (B) domain coordination (3 types). This is part of the qualitative methods. The main purpose of using mixed methods (i.e., looking at quantitative ratings and qualitative free responses) is to get a fuller picture of how subjects are reasoning. (Refer to tables of educational purposes with domain designations for reference.)

Therefore, students' free responses are coded by the following:

> (A) **Domain** of reasoning (4 domains), with the assistance of logging some common thematic elements within domains

> (B) **Coordination** of domains (3 types)

Domain Identification

Descriptions

> **HCPragmatic/Prudential**: Issues having to do with pragmatic concerns of an individual's well-being or safety (prudential), social-status maintenance, or economic mobility. Because Human Capital (HC) is seen as a major purpose of education and corresponds with pragmatic concerns, they are categorized together.

> E.g., school is to prepare you to get a good job, learn what is useful for the real world, survival, making money, get rich, socioeconomic status, social mobility, opportunities for doing other things

> **HPPersonal:** Issues having to do with an individual's autonomy, personal prerogative, and self-identity concerns. Concerns with developing individual Human Potential or Human Capabilities (HP) is a major purpose of education for many.

> E.g., Personal growth, achieving potential (not just in wealth, but in non-material achievements such as art, music, literature), developing and pursuing intrinsic interests, do what you want, find what you love, grow as a human being

> **Moral**: Issues having to do with fairness, justice, equity, concerns for human welfare, empathy, and some rights, concerns for social justice, protecting the environment.

> E.g., helping others or the world, reducing inequality, inequity, make the world a better place, be a good, kind person, have a heart, "be moral"

> **Socialization/Social/Societal:** Issues having to do with social conventions, interpersonal relations (e.g., friendships), societal structure and social systems functioning.

> E.g., Sociability, communication skills, group acceptance, getting along with people, making friends, building community, …

ID 57 HCPrag+ I think people need to learn how to get a job and earn money.

ID 45 HPPersonal+ I believe school should help kids find what they like and excel at in order to develop those skills more

ID 49 HPPersonal+ I think that education should assist a student towards their goal of self-actualization. Education is there to develop the minds of the young, and should include things the student are interested in, and should prepare students towards a life of their choosing.

ID 80 Social+[Prag+] i believe that it is necessary for people to understand how to communicate and learn lots of social skills in order to better prepare for work

ID 70 Social+[Prag+] being able to work with others is important in every job no matter the education level. working in a hospital requires to be able to work with people as a team so does working in construction. no matter where you go being able to communicate with other is crucial.

they can't be achieved with out the the skills i put down as important. if someone doesn't know how to communicate with others how are they suppose to communicate with teachers for help. they will stay quite and it will be to late.

ID 101 Moral+ [HPPerson+, possibly Social+] I rated those certain ones high because I feel like they will help the world be a better place and help kids get off their phones and start living.

I rated some lower than other because I felt like they wouldnt really help the world.

ID 115 Moral+ [HCPrag+] The reason why I rate most of the important purpose of education of 5 and over was because I think that education is really important because it helps a one human being get out of poverty.

i say that the most important things that we as students should learn how to become some in the future someone who well help others.

Domain Coordination
Descriptions

Type 1 (Domain Prioritization/Subordination)—Concerns in one domain take precedence over other domains involved in the issue. In other words, concerns in one or more domains are subordinated to one overriding/prevailing domain.

Type 2 (Partial Coordination)—Elements from more than one domain are mentioned, but they are not fully integrated with concepts involved in all domains at hand. Any proposed solutions meet concerns from multiple domains separately rather than in a fully integrative way.

Type 3 (Coordinated)—Elements from multiple domains are identified and taken into account in generating a resolution or judgment about the purpose(s). Solutions clearly acknowledge and attempt to integrate multiple-domain considerations.

Examples

Type 1. ID 1 HCPrag Want to be rich.

Want to be rich.

Type 2. ID69 Moral, HCPrag, HPPersonal I chose to rate the most important purposes of education the way I did because people need to learn to get what job they want and to help the world in the future.

Type 3. ID 70 Social and HCPrag

being able to work with others is important in every job no matter the education level. working in a hospital requires to be able to work with people as a team so does working in construction. no matter where you go being able to communicate with other is crucial.

they can't be achieved with out the the skills i put down as important. if someone doesn't know how to communicate with others how are they suppose to communicate with teachers for help. they will stay quite and it will be to late.

Type 3. ID 41 HPPerson, Moral, Social It's important for students to be citizens of the world and their community. Education in social issues, liberal arts, and how to be kind and good people enables further positive learning in the future.

While STEM education is important (I personally have a great deal of interest in STEM fields), I think that their personal importance to students decreases if they don't have a vested interest in those areas. On the other hand, liberal arts classes benefit all students because of their universal applicability to their own lives.