Educative Conditions for Prosocial Value Development during College

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Dedication

This dissertation is dedicated to my parents, Allen and Laura Horn, for their unwavering

support of my intellectual endeavors.

Abstract

Several facets of the undergraduate experience have been linked with the importance students assign to prosocial values (e.g., helping people in need), including academic major, exposure to social and cultural diversity, community service, and a prosocial institutional ethos. However, these factors have not been examined within a single framework that links prosocial value development to educative conditions and critical psychological assets, including empathy, existential engagement, prosocial expectancies, and social problem understanding. Longitudinal data were derived from the responses of 7,709 undergraduate students (59 percent female, 15 percent non-White ethnicity, modal age= 18) who completed the CIRP Freshman Survey during 1991 and the College Senior Survey as graduating seniors during 1995. Responses were examined with multiple regression and path analysis. The multiple regression results demonstrated that gains in empathy, existential engagement, and prosocial expectancies, as well as perceived change in social problem understanding, predicted greater prioritization of helping people in need than of being financially well off during the senior year (β= .08-.14). Majoring in any field, relative to majoring in business or economics, was positively associated with prosocial value prioritization. Particularly large associations with prosocial value prioritization were observed among students who majored in the humanities, psychology, social sciences, caring-oriented fields (e.g., education), and biology (β= .37-.50), relative to majoring in business. Path model results indicated that majoring in the social sciences was indirectly associated with the value measure via perceived change in social problem understanding, and majoring in the humanities predicted value orientation via existential

engagement. Participation in diversity workshops, the completion of diversity coursework, and frequent cross-racial interactions predicted greater prosocial value development ($\beta = .06-.16$). The relationship between diversity and value orientation was at least partly mediated by empathy. Participation in volunteerism only ($\beta = .20$), or a combination of service-learning and volunteerism ($\beta = .33$) but not service-learning alone, was positively associated with the development of a prosocial value orientation. Moreover, an analysis of the organizational context of service revealed that service through educational, healthcare, community relief, and social services organizations (but not through public safety, political, recreational, or environmental organizations) was uniquely associated with senior-year value orientation ($\beta = .08 -.15$). Although the duration of service was positively associated with prosocial value prioritization, direct contrasts of service duration categories indicated that participation in service for less than one month did not predict gains in prosocial value development relative to no service. Furthermore, experiences of 7-12 months were not associated with greater prosocial value development relative to service duration of more than 12 months. Each service variable was also indirectly associated with value orientation: the combination of service-learning and volunteerism via social problem understanding; social services organization via each psychological asset; community relief organization via existential engagement and social problem understanding; and service duration via empathy, prosocial outcome expectancies, and social problem understanding. Finally, exposure to a prosocial ethos was also positively associated with prosocial value prioritization ($\beta = .14$), an association that was partly mediated by existential engagement. The findings suggest that prosocial

value development can be promoted by (a) ensuring that major curricula explicitly endorse the prioritization of prosocial ideals, incite a reasoned examination of ethical dilemmas, and connect specialized knowledge with social problems and solutions; (b) increasing exposure to a general civic curriculum, including diversity coursework and high-quality service-learning courses; (c) facilitating interactions among students of diverse backgrounds; (d) promoting participation in a co-curriculum that includes diversity workshops and volunteerism through humanitarian organizations; and (e) cultivating a campus community that expects and recognizes the pursuit of prosocial ideals. Among the future directions for research, a longitudinal analysis of multiple time lags is needed to understand the dynamic changes in the reflective evaluation, affirmation, and enactment of personal values during college.

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Chapter I

Introduction

Over the past few decades, colleges and universities in the United States have

been increasingly urged to cultivate prosocial attitudes and values necessary for active

and responsible citizenship (Boyer & Hechinger, 1981; Ehrlich, 2000; Colby et al., 2003;

Jacoby & Associates, 2009; National Task Force on Civic Learning and Democratic

Engagement, 2012). This educative process entails "modifying values and beliefs to

include more humane frames of reference, balancing the ethic of care with the ethic of

justice" (Chickering & Reisser, 1993, p. 246). Prosocial values are reflected in a range of

personalized goals that involve helping people in need, improving the human condition,

promoting social justice, contributing to the public good, and protecting the environment.

The importance assigned to prosocial values has been associated either directly or

indirectly with cooperative behavior in social dilemmas (Sagiv, Sverdlik, & Schwarz,

2011), spontaneous helping (Wilhelm & Bekkers, 2010), volunteerism (Clary et al.,

1998), donating money (Maio & Olson, 1995), environmental citizenship behaviors

(Stern et al., 1999; Oreg & Katz-Gerro, 2006), and willingness to engage in outgroup

social contact (Schwartz, 1996). And yet, only 12 percent of 18-25 year olds believe that

the most important life goal for people in their generation is to help people in need, which

can be contrasted with the 64 percent who believe that the most important goal is "to get

rich" (The Pew Research Center, 2007, p. 12).

In the absence of active commitments to prosocial ideals, students are at risk of

narrowly constructing their identities from the prevailing norms of consumption and

egoism (Bellah et al., 1991), thereby giving rise to a "nation of spectators" that no longer finds any legitimate reason for civic engagement (National Commission on Civic Renewal, 1997). Some might suggest that the demise of democracy by mass disengagement is already well underway. Even though levels of educational attainment increased considerably during the latter third of the 20th century (NCES, 2012a), Putnam (2000) observed that "Americans have been dropping out in droves, not merely from political life, but from organized community life more generally" (p. 64). For example, Putnam documented declines in various types of civic engagement among individuals aged 18-29 between the mid-seventies and the mid-nineties: reads newspaper (- 57 percent); signed petition (- 46 percent); attended public meeting (- 57 percent); wrote congressman (- 47 percent); and served as an officer of a local organization (- 53 percent). Moreover, the United States currently has the second lowest voter turnout among OECD countries (OECD, 2011); the U.S. ranking on the Corruption Perceptions Index has fallen since 2001 (Transparency International, 2012); and support for government action on global warming remains below 50 percent of the populace (Pew Research Center, 2010), to name but a few symptoms of ailing civic health.

While the prospect of a rising tide of civic apathy is profoundly concerning, colleges and universities are not without recourse. The nearly 4,900 degree-granting institutions in the United States currently enroll over 20 million students (NCES, 2012b), which constitutes a critical opportunity for administrators and faculty to provide experiences conducive to prosocial value development. Accordingly, efforts to promote the civic mission of undergraduate education in the United States have recently grown

much more deliberate and systemic. Two important documents symbolized the beginnings of a civic institutionalization movement. First, the Wingspread conference held in 1998 initiated a dialogue among leaders in higher education about the process of imbuing a "democratic spirit" within students, faculty, staff, administrators, and the institution as a whole. The resulting *Wingspread Declaration on Renewing the Civic Mission of the American University* highlighted the need to articulate the civic outcomes of curricula and engage students in the "work of citizenship" through civically relevant academic projects, cocurricular experiences, and discourse with members of a diverse campus community. Second, the Campus Compact initiated the *Presidents' Declaration on the Civic Responsibility of Higher Education* in 1999, which has been signed by over 500 college and university presidents. The Declaration articulated a commitment to better prepare students for political engagement and to ensure that students can utilize their knowledge for civic ends. The specific role of presidential leadership included the adoption of institutional goals and assessment procedures for fostering civic responsibility as well as promoting a civic dimension within accreditation, institutional ranking, and the state's public agenda for higher education.

Several national associations have also been quite instrumental in galvanizing support for the institutionalization of civic and moral education. In 2003, the American Association of State Colleges and Universities initiated the American Democracy Project (in partnership with the *New York Times*), which provides resources and services for improving civic education. In 2005, the Association of American Colleges and Universities (AAC&U) created the Liberal Education and America's Promise (LEAP)

program to strengthen the connection between liberal education and both civic and vocational outcomes. In AAC&U's recent report, *A Crucible Moment: College Learning and Democracy's Future* (2012), a national task force proposed several student outcomes in four rubrics: (a) knowledge: democratic principles, systems, movements, and primary texts as well as an understanding of diverse cultures and religious traditions; (b) skills: critical thinking, quantitative reasoning, communication, perspective-taking, collaboration, and second-language fluency; (c) values: social responsibility, freedom, equality, tolerance, justice, empathy, integrity, and open-mindedness; and (d) collective action: informed, moral, civil, and able civic engagement. To this end, the authors recommended that institutions "foster a civic ethos that governs campus life, make civic literacy a goal for every graduate, integrate civic inquiry within majors and general education, and advance civic action as lifelong practice" (p. 14). Of particular interest here is the educative potential inherent in academic majors, social and cultural diversity, community service, and a prosocial ethos.

Academic Major

The recent concern with the institutionalization of civic aims in academic disciplines partly arose within discourses on pubic engagement (Edgerton, 1994; Boyer, 1996; Bringle, Games, & Malloy, 1999). For instance, Boyer's proposal emphasized "connecting the rich resources of the university to our most pressing social, civic and ethical problems… [and] creating a special climate in which the academic and civic cultures communicate more continuously and more creatively with each other" (Boyer, 1996, p. 19-20). More generally, faculty have increasingly supported the integration of

civic aims within the curriculum. For instance, according to the HERI survey results of faculty at public four-year institutions, the proportion of faculty rating moral character development as a "very important" or "essential" goal of undergraduate education increased from 54 percent in 1989 (Astin, Korn, & Dey, 1990) to 68 percent in 2007 (DeAngelo et al., 2008). Furthermore, DeAngelo et al. (2008) found that a strong majority of faculty agreed that a college education should include efforts to "engage students in civil discourse around controversial issues" (73 percent) and "encourage students to become agents of social change" (59 percent). Among the more prominent efforts to integrate civic aims within major curricula, the American Association for Higher Education (AAHE) organized an 18-volume series on the rationale and means for linking service-learning with various academic disciplines (National Service-Learning Clearinghouse, 2013).

The need to equalize opportunities for prosocial development across academic majors is evident in past research. For example, prosocial value ratings have been positively associated with majoring in the social sciences (Berger, 2000) but negatively associated with majoring in engineering (Sax, 2000). The full extent of variation in prosocial development across majors, however, remains unclear, as past analyses have typically used a rather limited spectrum of major categories. A more complete understanding of the relationship between academic major and prosocial value development could promote reform efforts by (a) directing attention to majors with the greatest need for reform and (b) identifying the strengths of particular types of

disciplinary study, which may inform reforms in other major curricula and the design of a general education curriculum.

Social and Cultural Diversity

The last two decades have witnessed a growing emphasis on diversity in the curriculum, co-curriculum, and the broader social context. Gurin et al. (2002) asserted that the incorporation of ethnic diversity within the student experience fosters the ''orientations'' conducive to participation in a pluralistic democracy, comprising ''perspective-taking, mutuality and reciprocity, acceptance of conflict as a normal part of life, capacity to perceive differences and commonalities both within and between social groups, interest in the wider social world, and citizen participation'' (p. 341). Accordingly, many colleges and universities have sought to promote positive cross-racial interactions on campus, provide diversity workshops, and expand course offerings related to such fields as ethnic studies and women's studies. By 2000, approximately 54 percent of postsecondary institutions included a diversity requirement for general education (Humphreys, 2000).

In response to periodic challenges to affirmative action in college admissions (see Orfield, 2001), researchers have examined the effects of three facets of diversity: (a) the ethnic composition of the student body; (b) the completion of diversity-related courses; and (c) cross-racial interactions (Gurin et al., 2002). The resulting corpus of research supports the notion that classroom and interactional diversity yield positive effects on citizenship outcomes (Hurtado, Dey, Gurin, & Gurin 2003), including commitment to social justice (Zuniga, Williams, & Berger, 2005). The postulated mediating mechanisms

(e.g., increased empathy), though, have not been widely subjected to analysis in relation to prosocial value development (cf. Pettigrew & Tropp, 2008).

Community Service

During the 1980s, campus reformers began advocating for community service as a principal means of civic education during college (Jacoby, 2009). In 1985, the presidents of Brown, Georgetown, and Stanford Universities and the president of the Education Commission of the States founded the Campus Compact to promote the development of institutional support structures for community service and service-learning. The efforts of the Campus Compact were validated and reinforced during the 1990s with the passage of the National and Community Service Act of 1990 under President George H.W. Bush and the subsequent creation of the federal agency, the Commission on National and Community Service. Under President Clinton, The National and Community Service Trust Act of 1993 established the Corporation for National and Community Service to coordinate national service initiatives such as AmeriCorps and Learn and Serve America, both of which supported service opportunities for college students.

Concomitantly, participation in community service among college students has increased over the past decade. Whereas 28 percent of students at Campus Compact member institutions engaged in community service during 2001, 44 percent of students participated in service during 2012 (Campus Compact, 2013). Vogelgesang and Astin (2000) estimated that 77 percent of students had engaged in community service at some point during college, though only 30 percent had engaged in service-learning. Moreover, the potential impact of service participation on prosocial development appears to be quite

positive. Past research has indicated that participation in volunteerism or service-learning during college is positively correlated with the importance assigned to prosocial values and attitudes (e.g., Astin, Sax, & Avalos, 1999; Conway, Amel, & Gerwien, 2009). However, the generic construct of volunteerism or service-learning has been the primary focal phenomenon. Few analyses have sought to identify the unique contribution of service-learning relative to volunteerism or the significance of variations in the service experience, including the organizational context and duration of service.

Prosocial Ethos

Institutional leaders have been urged to develop a campus culture or ethos that supports the moral and civic development of students (Colby et al., 2003; National Task Force on Civic Learning and Democratic Engagement, 2012). This is particularly crucial and challenging in the midst of competing norms of consumerism and narrow vocationalism. Indeed, the purposes and practices of colleges and universities have been increasingly shaped by demands for economic competitiveness, growing popularity of neoliberalism[1] in public discourse, and conditions of financial exigency (Kezar, 2004). Critics have noted that higher education has been redefined as an *industry* that satisfies the private interests of students seeking credentials and employers seeking skilled labor (Bok, 2003; Gumport, 2000; IHEP, 1998; Kezar, 2004; Newman, Couturier, & Scurry, 2004). This industrial model has yielded considerable pressure to further align the curriculum with the marketplace, for the only possible relevance of education is that which is vocational. Even justifications for liberal education are now commonly cast in

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[1] The term neoliberalism here refers to a political-economic philosophy that advocates a strong reliance on free market strategies to address public problems, the protection of individual property rights, the reduction or elimination of governmental regulations, and the privatization of public services.

terms of work-related skills or cultural capital that enhances one's marketability as "well-rounded" (Schneider, 2000).

In contrast, a prosocial ethos is defined by the degree to which such ideals as care, justice, tolerance, and environmental protection are expressed through the social interactions, symbols, and practices that permeate an institution. Although empirical demonstrations of the power of a prosocial ethos have been scarce, past research has revealed a positive correlation between the average level of social activism in the student body and the subsequent importance students assign to social activism (Sax, 2000). The present study extends this line of research by examining the predominant value orientation that characterizes the student body.

Various educative conditions – academic major, social and cultural diversity, community service, and a prosocial ethos – may thus be conducive to prosocial value development. However, past research has primarily measured ratings of prosocial values rather than a relative prioritization of both prosocial and egoistic values. In addition, past educational research has been generally limited to an analysis of one type of condition, which fails to reveal whether multiple conditions yield unique effects. Previous inquiries have also focused mainly on direct effects rather than exploring the possibility of indirect effects. The first purpose of this study is thus to provide an analysis of potential focal points for intervention by examining the associations among prosocial values and related constructs, including empathy, existential engagement, prosocial expectancies, and understanding of social problems. The second purpose is to examine the direct and

indirect associations among prosocial values and four facets of the undergraduate

experience: academic major, diversity, community service, and a prosocial ethos.

Chapter II

Review of the Literature

The literature review summarizes research that links prosocial values, psychological assets, and the undergraduate experience. First, a prosocial value orientation is defined as the relative prioritization of prosocial and egoistic values. Second, automatic and reflective mechanisms of value development are discussed. Third, several psychological assets conducive to prosocial value development are identified, including empathy, existential engagement, prosocial expectancies, and social problem understanding. Fourth, collegiate sources of prosocial value development are described, such as academic major, diversity, community service, and a prosocial ethos. Finally, an overview of the current study is provided.

Prosocial Value Orientation

Personal values refer to "enduring beliefs that a specific mode of conduct is personally or socially preferable to an opposite or converse mode of conduct or end-state of existence" (Rokeach, 1973, p. 5). Values can be distinguished from attitudes in that the former are abstract goals and the latter, particular evaluations. Specifically, attitudes can be defined as negative or positive evaluations of a particular entity (Rohan, 2000), such as abortion, gun control, or environmental regulations. Values, in contrast, apply across life domains and situations, functioning as "guiding principles" in life (Schwartz, 1994, p. 21). The value of promoting the welfare of others, for instance, may be salient in the selection of a career, the resolution of a moral dilemma, or the support of a presidential candidate. Relative to attitudes, values are more stable over time and more essential to

one's sense of self (Feather, 1992; Hitlin, 2003), and they frequently operate as unquestioned truisms (Maio & Olson, 1998).

Schwartz's theory of personal values remains among the most widely used conceptions, as it has been the subject of research with over 40,000 participants in more than 60 countries (Schwartz, 1992, 2005). Schwartz (1992) identified 10 distinct values that are nearly universal in presence but variable in prioritization: power, achievement, hedonism, stimulation, self-direction, universalism, benevolence, tradition, conformity, and security. The universality of these values is thought to have resulted from three requirements of human existence: "biologically based organism needs, social interaction requirements for interpersonal coordination, and social institutional demands for group welfare and survival" (Schwartz & Bilsky, 1987, p. 551). While the values are universal, their relative importance varies across individuals based on particular biological, social, and cultural configurations (Brosch et al., 2011; Roccas et al., 2002).

Past research has indicated that the 10 aforementioned values are typically structured along two bipolar dimensions: (a) openness to change vs. conservation and (b) self-enhancement vs. self-transcendence (Schwartz & Boehnke, 2004). In the latter dimension, self-enhancement entails the values of power, achievement, and hedonism, which reflect goals of acquiring social status and prestige, personal success, and sensual gratification, respectively. Self-transcendence comprises prosocial values, that is, concern for the welfare of people in personal contact (i.e., benevolence) and the welfare of larger social collectives and nature (i.e., universalism). A prosocial value orientation, then,

reflects the relative prioritization of these two dimensions, wherein greater importance is assigned to self-transcendence than self-enhancement.

General Mechanisms of Value Development

While values are considered to be among the more stable psychological constructs, they may nonetheless undergo significant change (Sheldon, 2005). According to Bardi and Goodwin (2011), value change may occur automatically through such mechanisms as priming or intentionally through reflective evaluation. In the automatic route, environmental cues already linked with particular values in memory may prime a value schema and increase the likelihood that it is used. For example, Gardner, Gabriel, and Lee (1999) demonstrated that the importance assigned to collectivist values can be increased by asking participants to read a story that emphasizes familial rather than personal benefits. Repeated priming of values is thought to lead to long-term change to the extent it strengthens connections between the alternative value schema and other schemata (Bardi & Goodwin, 2011).

In the reflective route, individuals consciously evaluate and modify the importance assigned to values. For instance, Bernard, Maio, and Olson (2003a) found that participants who enumerated reasons for supporting self-transcendence values subsequently assigned more importance to such values, relative to a control condition.[2] Value development through reflective evaluation could be conceivably influenced by the perceived feasibility, moral defensibility, instrumentality, normativity, and self-

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[2] This effect is limited to people who initially lack explicit cognitive support for their values. Moreover, Bernard, Maio, and Olson (2003b) demonstrated that individuals who have articulated a rationale supporting equality assigned more importance than control subjects to prosocial values (e.g., helping others) after being presented with a rhetorical attack on equality. The rationalization of prosocial values can thus inoculate one against future value challenges.

consistency of assigning high importance to a particular value (cf. Bardi & Goodwin,

2011). That is, prosocial values would seem more tenable than egoistic values to the

extent they are construed as practicable, morally superior, instrumental to one's goals,

consistent with social norms and expectations, and concordant with other self-aspects

(e.g., attitudes, behavior). For example, Schwartz and Bardi (1997) argued that

individuals engage in a process of value "acclimation," whereby values deemed

unattainable are downgraded relative to those perceived as attainable.[3] Indeed, the pursuit

of goals beyond one's means can be maladaptive and result in frustration and depression

(Maddux & Meier, 1995).

In another example, value change may stem from cognitive dissonance, a state of

discomfort that arises from an awareness of inconsistency amongst beliefs (Festinger,

1957). Cognitive dissonance motivates individuals to reduce dissonance and to avoid

information that may increase dissonance (Elliot & Devine, 1994). Any one of various

methods may be employed to reduce dissonance, such as trivializing dissonant beliefs

(Simon et al., 1995), increasing rational support for a preexisting belief (Sherman &

Gorkin, 1980; Hart et al., 2009), or changing a belief or behavior (Rokeach, 1973;

McCann, 1997). Inconsistencies that threaten one's sense of moral worth are particularly

likely to incite a state of dissonance insofar as most individuals conceive of themselves as

morally good (Rokeach, 1973; Aronson, 1992).

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[3] However, they note that deprivation is more predictive of value espousal than feasibility when the value in question is based on material needs. It is also notable that basic tendencies to seek adaptive behavior may be automatic or reflective (Bardi & Goodwin, 2011).

Psychological Assets in Prosocial Value Development

The process of prosocial development ideally involves not only values but also skills, interests, beliefs, and attitudes. Prosocial behavior, for instance, has been positively associated with such constructs as empathy (Eisenberg et al., 2002), existential engagement (Schnell, 2010), prosocial expectancies (Reeb et al., 2010), and awareness of social problems (Steg & de Groot, 2010). While values can be conceptualized as influencing such constructs, the possibility of reciprocal effects has recently received some attention (Leung & Zhou, 2008; Goodwin, Polek, & Bardi, 2012). Goodwin, Polek, and Bardi (2012), for instance, examined longitudinal changes in values and social complexity beliefs among recent Polish immigrants in the United Kingdom. Their cross-lagged panel analysis of responses at three time periods indicated that social complexity beliefs (e.g., "human behavior changes with the social context") predicted subsequent endorsement of self-direction values (e.g., "thinking up new ideas and being creative is important") in both time lags, and self-direction values subsequently predicted social complexity beliefs. In contrast, the initial endorsement of universalism values (e.g., it is important to protect the weak in society) subsequently predicted higher levels of social complexity, but initial social complexity did not predict greater support for universalism values. The present study extends the search for reciprocal effects by proposing that key psychological assets may influence the degree to which prosocial values are primed, evaluated, and affirmed.

Empathy.

Empathy can be defined as "an affective response that stems from the apprehension or comprehension of another's emotional state or condition and is similar to what the other person is feeling or would be expected to feel" (Eisenberg, 2000, p. 671). Davis (1983) conceptualized empathy in terms of cognitive and affective dimensions. The former consisted of perspective-taking and fantasy, the tendencies to adopt the perspectives of other people and project oneself into fictional characters of movies and literature, respectively. The latter consisted of the tendencies to react with either concern for others or personal distress. Empathy has been further distinguished as situational or dispositional, wherein the latter is relatively less context-dependent (Eisenberg, 2000).

Empathy has been positively associated with prosocial behavior (Eisenberg et al., 2002), particularly when personal distress is low (Carlo, Allen, & Buhman, 1999). Empathy may also play a crucial role in the development of moral reasoning. As Kohlberg (1984) asserted, "[t]he structure of society and morality is a structure of interaction between the self and other selves… The modes of role-taking… represent the varying structures of moral judgment and choice" (p. 73). Moral development in this view proceeds as individuals move beyond the self-oriented perspective in the pre-conventional stages to the societal perspective in the fourth conventional stage and the universal perspective of the post-conventional stages. Empathy has thus been positively associated with moral reasoning (Carlo et al., 2013; Eisenberg, Zhour, & Koller, 2001).

Despite the long tradition of investigations in this area, the link between empathy and prosocial values is unclear. On the one hand, high importance assigned to prosocial

values may increase the propensity to empathize with others. Accordingly, a regression analysis of questionnaire responses indicated that universalism and benevolence values predicted perspective-taking and empathic concern while controlling for gender and other values (Silfver et al., 2008). On the other hand, the tendency to empathize with others may render salient the need to promote the welfare of others, which would foster cognitive (and affective) support for prioritizing prosocial over egoistic values.

Existential engagement.

Philosophers and psychologists have long noted that individuals differ in the degree to which they intentionally develop and draw upon value commitments to inform decision-making and promote personal well-being and meaning in life[4] (e.g., Csikszentmihalyi, 1993; Frankl, 1959/2006; Fromm, 1941; Heidegger, 1953/1996). Some approach the task of creating a meaningful and purposeful life through a process of active existential engagement that consists of the reflective evaluation, affirmation, and enactment of a personal system of values (cf. Berzonsky et al., 2011; Duriez et al., 2012). In the collegiate context, for instance, 51 percent of college freshmen and 58 percent of seniors report that "developing a meaningful philosophy of life" is a very important or essential life goal (Franke et al., 2009). Moreover, Dezutter et al.'s (2013) analysis of over 8,000 students from 30 U.S. colleges and universities revealed variation in the presence and search for meaning: 23 percent of respondents had a high presence of meaning and were engaged in a continuous search for meaning; 15 percent reported a high presence of meaning but no current search for meaning; 35 percent indicated that

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[4] Meaning in life refers to "the cognizance of order, coherence, and purpose in one's existence, the pursuit and attainment of worthwhile goals, and an accompanying sense of fulfillment" (Reker & Wong, 1988, p. 221).

they had a moderate presence of and search for meaning; 18 percent reported low presence but high search for meaning; and 9 percent reported low presence of and low search for meaning.

Existential engagement can be contrasted with existential disengagement or "indifference" (Schnell, 2010), that is, the tendency to avoid, minimize, or reject the possibility of developing meaningful value commitments. Instead of resolving, however tentatively, difficult questions about "the point of it all," the existentially-disengaged frequently take flight in the flurry of mundane activities and distractions in routine work, material consumption, and entertainment (Schnell, 2010). Heidegger (1953/1996) characterized this inauthentic condition as "the self of the self-forgetful" (p. 296). Frankl (1959/2006) termed the life without personal commitments an "existential vacuum," wherein the individual frequently suffers from boredom, seeks distraction through base pleasures, and "either wishes to do what other people do (conformism) or he does what other people wish him to do (totalitarianism)" (p. 106).[5]

While existential engagement may entail little more than the reasonable evaluation and selection of guiding principles, it may predispose individuals to affirm prosocial ideals as instrumental to personal well-being. To be sure, a positive experience in life can be constructed from various sources, but self-transcendence is thought to yield the most profound sense of personal well-being and meaning in life (Reker & Wong, 1988; Seligman, 2002; Damon, Menon, & Cotton-Bronk, 2003). Accordingly, Hill et al.'s (2010) longitudinal analysis of college students indicated that a prosocial but not

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[5] Existential disengagement differs from a crisis of meaning or a recurring sense that one's life is pointless; the former condition presents better psychological functioning than the latter (Schnell, 2010).

financial orientation during the senior year predicted scores on a measure of psychological well-being 13 years after graduation. Schnell (2010) observed that individuals who exhibited low levels of meaningfulness in life or "existential indifference" tended to have fewer commitments to social causes than individuals who reported high levels of meaningfulness in life. Thus, individuals who are existentially engaged may deem prosocial ideals more instrumental than egoistic ideals in attaining a sense of well-being and meaning in life.

Prosocial outcome expectancies.

In his social-cognitive theory of motivation, Bandura (1997) distinguished between two types of expectancy beliefs: self-efficacy and outcome expectations. Whereas self-efficacy beliefs were defined as the individual's perceptions of her ability to perform a particular task, outcome expectations referred to beliefs about the probable impact of engaging in particular actions (Bandura, 1997). Individuals may develop self-efficacy beliefs from four sources: mastery experiences, social persuasion, physiological arousal, and vicarious experiences (Bandura, 1997). Mastery experiences (i.e., successful performance) are thought to be most influential in determining self-efficacy. Outcome expectations are partly influenced by personal experiences (actual and vicarious) as well as efficacy expectations, since individuals with a high level of confidence in their performance ability will frequently project a positive outcome (Bandura, 1997). Self-efficacy in particular has been a fundamental construct in explaining human behavior and motivation: it influences which behaviors are initiated, the amount of effort exerted, and the degree to which one persists when obstacles are encountered (e.g., Maddux, 1995;

Schunk & Pajares, 2009). Moreover, Sheu et al.'s (2010) path model based on a meta-analysis of 40 studies (71 percent of participants were college students) demonstrated that self-efficacy and outcome expectations directly predicted goals, but self-efficacy was mainly indirectly associated with goals via outcome expectations and interests.

Prosocial outcome expectancies can thus be defined as beliefs about whether prosocial behavior effectively promotes the welfare of others, which can be distinguished from prosocial efficacy beliefs about one's ability to perform such behaviors. Both self-efficacy and outcome expectancies have been positively associated with indicators of prosocial behavior, though measures frequently fail to distinguish between the constructs (Feather & Newton, 1982; Feather, Woodyatt, & McKee, 2012; Greenslade & White, 2005; Miller et al., 2009; Reeb et al., 2010). Miller et al.'s (2009) path analysis, for example, revealed that measures of social justice self-efficacy and outcome expectations (e.g., engagement would help provide equal opportunities) predicted social justice interest. Similarly, Reeb et al. (2010) reported in a review of research that a measure of "community service self-efficacy" was positively associated with service intentions and generativity.

Researchers have only recently begun to include value constructs in models with prosocial expectancies (Caprara & Steca, 2007; Feather, Woodyatt, & McKee, 2012). Feather, Woddyatt, and McKee (2012) examined Australians' willingness to support a non-profit organization dedicated to assisting Aboriginal people who had suffered injustice. Their path analysis indicated that the importance assigned to universalism predicted the perceived collective responsibility for the past treatment of Aboriginal

children, which in turn predicted positive outcome expectations of volunteering to support the organization ("time spent volunteering will help the cause"). However, an obverse relationship also seems possible. The belief that one can effectively alleviate suffering may promote a sense of personal control and responsibility over the welfare of others, which would support the prioritization of prosocial values. Stated negatively, the presence of prosocial outcome expectancies may preclude value acclimation in favor of an egoistic orientation.

   Understanding of social problems.

   Myriad social problems confront local, national, and global communities, including poverty, low educational attainment, gender and racial inequality, preventable disease, and global warming. The individual's awareness and understanding of social problems and human suffering constitutes a critical precursor to prosocial behavior (Latane & Darley, 1970; Schwartz, 2010; Stern, Dietz, & Abel, 1999; Weiner, 1995). Schwartz (2010) postulated that prosocial behavior partly stems from an awareness of the social consequences of inaction, awareness of possible courses of remedial action, self-efficacy, and the acceptance of some measure of personal responsibility for the action needed. Stern et al.'s (1999) value-belief-norm theory maintains that pro-environmental behavior results from altruistic and biospheric values, an awareness of conditions that threaten people and the biosphere, and the acceptance of personal responsibility. Accordingly, Steg and de Groot (2010) demonstrated that participants who had read a text about the health problems associated with particulate matter reported greater self-ascribed responsibility and intentions to engage in environmental activism, relative to

control group participants whose text had trivialized the associated health problems. Similarly, research on intergroup behavior frequently takes into account perceptions of inequality, structural advantage, or the deprivation of out-group members, which may incite guilt or moral outrage and prosocial intentions (Brown et al., 2008; Leach et al., 2006; Mallett et al., 2008; Tougas & Veilleux, 1990).

Prosocial values have been postulated to influence the salience and construal of social problems (Schwartz, Sagiv, & Boehnke, 2000). In order to efficiently allocate attentional resources, individuals tend to focus on information that reflects the discrepancy between ideal and actual conditions. The importance assigned to self-transcendence has thus been positively associated with worrying about social and environmental problems (Schwartz, Sagiv, & Boehnke, 2000) and seeking environment-related information (Verplanken & Holland, 2002). Social problems themselves may be interpreted in very distinct ways, wherein prosocial and egoistic orientations differentially weight social and personal consequences. In their social dilemma experiment, Sagiv, Sverdlik, and Schwarz (2011) observed that the accessibility of participants' values (benevolence or power) influenced the degree to which their explanations for cooperative or competitive behavior reflected concerns with benevolence (e.g., importance of charity) or power (e.g., importance of profit). Reciprocally, it can be conjectured that an understanding of social problems influences prosocial values by increasing relevant cognitive support, such as beliefs about interdependence, determinants of social welfare, human-environment dynamics, and the magnitude and prevalence of human suffering and injustice. As noted earlier, individuals

may increase the importance they assign to prosocial values after elaborating supporting reasons (Bernard, Maio, & Olson, 2003a).

Collegiate Sources of Prosocial Value Development

Early research on the effect of education focused on educational attainment, which has been positively associated with prosocial goals and values (Astin, 1993; Kuh, 1993; Miller & Shanks, 1996; Knox, Lindsay, & Kolb, 1993). Astin's (1993) examination of college students' values between 1985 and 1989 revealed an increase in the commitment to environmentalism and a decrease in the value of financial success. Similarly, Knox, Lindsay, and Kolb (1993) found that, relative to having only a high school diploma, individuals with a baccalaureate degree were more likely to espouse the goal of community leadership, and individuals with an advanced degree were more likely to endorse the value of social justice. Miller and Shanks (1996) confirmed that the positive relationship between postsecondary education and adopting an egalitarian orientation appears across three generations: pre-new deal, new deal, and post-new deal.

The preceding conception of value development suggests that some educative conditions may promote the automatic activation or reflective evaluation of values in ways that favor the prioritization of prosocial values. Moreover, the potential effectiveness of value interventions may partly operate through an indirect impact on closely related constructs, such as empathy, existential engagement, prosocial expectancies, and social problem understanding. The present study examines four facets of the undergraduate experience, including academic major, diversity, community service, and a prosocial ethos.

Academic major.

As curricula of specialized disciplinary study and socialization, academic majors arguably differ in the extent to which they foster dispositions, capacities, and knowledge relevant to prosocial value development (Colby et al., 2003; see also Jones, 2011). The humanities ideally furnish an understanding of the human condition and an exploration of modes of living (Kronman, 2008). Psychology prepares many students for helping-oriented fields, such as counseling and clinical psychology (Harton & Lyons, 2003).[6] The social sciences, especially sociology, attempt to improve our understanding of social problems. Teacher education and health fields explicitly promote an ethic of care. The sciences may also be relevant to prosocial development. In particular, during the rise of universities in the early 20th century, knowledge of the biological sciences was considered fundamental for promoting the realization of Christian moral ideals. For instance, public health reforms (e.g., improving water quality) were framed in terms of "brotherly love and responsibility" and "protection of the innocent" (Reuben, 1996, p. 142). Contemporarily, the biological sciences facilitate an understanding of such problems as the tragedy of the commons, which can be seen in overfishing, deforestation, the extinction of species, and the depletion of aquifers (Wilson, 2003).[7]

In contrast, fields such as business, economics, and engineering may afford fewer opportunities for prosocial learning. A core assumption of business and economics is that individuals are fundamentally egoistic and concerned solely with the pursuit of profit

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[6] This study treats psychology as an "individual-level" science rather than a "social" science, given the differences in focal phenomena.

[7] In the "tragedy of the commons," unmitigated use of a common pool resource, although rational from the perspective of any given individual or corporation, can eventually result in overuse and eventual depletion of the resource.

(Hausman & McPherson, 1993; Heyne, 2008). The intensive technical training in engineering has been identified as a serious barrier to a broader civic education (Vaz, 2012). Finally, among the social sciences, political science most explicitly normalizes the competition for power, which may undermine the development of prosocial values. Furthermore, whereas the goals of political science in the 1950's were captured by such phrases as "education for public service," the more generic purpose of increasing students' analytical capacities was adopted by the 1990's (Schneider, 2005, p. 132).

Although many students select academic majors partly on the basis of personal goals and values (Huang & Healy, 1997), exposure to course information and peer influence may differentially facilitate the adoption of a prosocial value orientation and the development of certain psychological assets (Chatard & Selimbegovic, 2007; see Samuel & Lewin-Epstein, 1979). Indeed, past longitudinal research controlling for pre-test scores has indicated that majoring in the social sciences is positively correlated with prosocial value ratings (Berger, 2000; Pascarella, Ethington, & Smart, 1988; see also Huang & Healy, 1997). Conversely, Sax (2000) found that majoring in engineering was negatively associated with the importance assigned to activism, and Krishnan (2008) observed that the importance of self-oriented values increased among business students over the course of a two-year MBA program. In one of the few studies of multiple types of majors, Mitchell et al. (2008) analyzed survey responses from a nationally-representative sample of over 4,000 high school seniors with three follow-up questionnaires over the course of six years. Their growth curve model indicated that majoring in the humanities, social sciences, education, and biological sciences was positively associated with the perceived

importance of contributing to society, relative to majoring in business. Majoring in the humanities also predicted gains in the importance of "finding purpose and meaning in life." However, applied health, psychology, and political science were not included as direct contrasts, and the potential effect of major in relation to other sources of prosocial development was not examined.

Social and cultural diversity.

The student experience at most colleges and universities is characterized by some degree of diversity in gender, socioeconomic class, sexual orientation, nationality, race, and ethnicity. Diversity may be encountered informally through social interactions or formally through structured activities in the curriculum and cocurriculum. Exposure to social and cultural diversity has been studied mainly in the context of intergroup relations. For instance, cross-group interaction has long been deemed a powerful factor in reducing prejudice (Allport, 1954; Pettigrew & Tropp, 2000). According to Allport (1954), intergroup contact yields positive effects when there is (a) equal group status, (b) common goals, (c) intergroup cooperation, and (d) consistency with authority (e.g., tradition, law). However, Pettigrew and Tropp's (2000) meta-analysis largely confirmed that intergroup contact can reduce prejudice even when Allport's conditions are not strictly met. A more recent meta-analysis indicated that intergroup contact reduces prejudice by enhancing perspective-taking, reducing contact anxiety, and increasing knowledge about out-group members (Pettigrew & Tropp, 2008).

Curricular and cocurricular interventions include diversity coursework and workshops. Approximately 54 percent of postsecondary institutions include a diversity

requirement for general education (Humphreys, 2000). Diversity workshops are offered at 73 percent of four-year institutions, and 42 percent of institutions with workshops require student attendance (McCauley, Wright, & Harris, 2000). Diversity workshops differ from academic courses in that they tend to last only a few hours; they are more interactive; and they focus on affective as well as cognitive outcomes (McCauley, Wright, & Harris, 2000). Diversity courses in such fields as ethnic studies and women's studies are generally designed to cultivate knowledge of other groups and awareness of social inequalities (Engberg, 2004). In contrast, diversity workshops focus on the reduction of prejudice by encouraging participants to "engage in exploration and sharing of attitudes towards various groups, air negative and positive feelings, share personal experiences of injury or discrimination, role play, and practice managing intergroup conflict" (McCauley, Wright, & Harris, 2000, p. 101).

Exposure to social and cultural diversity may influence the student's value orientation by promoting the capacity for empathy as well as reducing bias, which arguably functions as a cognitive-affective barrier to generalizing the values of care and justice. Indeed, numerous studies have demonstrated that cross-group interactions and diversity coursework predict gains in various measures of civic attitudes and values (Chang, Astin, & Kim, 2004; Gurin, Dey, Hurtado, & Gurin, 2002; Nelson Laird, 2005; Nelson Laird, Engberg, & Hurtado, 2005; Sax, 2000), such as motivation to promote inclusion and social justice (Zuniga, Williams, & Berger, 2005).

Community service.

Community service refers to planned and sustained activities that are performed without monetary compensation and are intended to benefit another person, group, or organization (Penner, 2004; Wilson, 2000). Community service encompasses both volunteerism and service-learning. Volunteerism carries the additional qualification of being non-obligatory. Service-learning combines community service with coursework and structured reflection (Corporation for National and Community Service, 2009). Community service is thought to foster prosocial development by promoting a sense of civic self-efficacy and a more profound understanding of social problems (Eyler & Giles, 1999; Youniss & Yates, 1999), cultivating prosocial themes within one's identity (Hart & Fegley, 1995; Youniss & Yates, 1999), and developing social capital that reinforces prosocial norms (Larson et al., 2006). Past research has tended to focus on the direct effects of volunteerism and service-learning, different types of service, and service duration.

Numerous studies have demonstrated that community service during college is positively correlated with the importance assigned to prosocial values and attitudes (e.g., Astin, 1993; Astin, Sax, & Avalos, 1999; Conway, Amel, & Gerwien, 2009). In their meta-analysis of 103 pre-/post-test studies, Conway, Amel, and Gerwien (2009) found that participation in service (volunteerism or service-learning) at all educational levels was associated with gains in a variety of academic, personal, social, and citizenship outcomes. For example, small to moderate effect sizes were observed for the relationship between service participation and moral development (.34), social skills (.05), social

tolerance (.22), attitudes towards marginalized people (.13), personal responsibility (.08), community engagement (.20), and social justice (.22). Moreover, the average gain in citizenship outcomes among college students was slightly higher than in the general sample (.30).[8]

Service-learning in particular has been positively associated with prosocial expectancies (Eyler, Giles, & Braxton, 1997; Astin & Sax, 1998; Reeb et al., 2010; Vogelgesang & Astin, 2000), perceived improvement in understanding social problems (Astin & Sax, 1998; Everett, 1998; Eyler & Giles, 1999), and prosocial values (Astin & Sax, 1998; Markus, Howard, & King, 1993). Yorio and Ye (2012) conducted a meta-analysis of 40 studies that examined service-learning during college in relation to three outcome categories termed understanding social issues (e.g., cultural awareness, moral values, understanding community needs); personal insight (e.g., self-efficacy, self-awareness); and cognitive development (e.g., critical thinking, GPA). Although these categories are quite heterogeneous, significant main effects were observed: understanding social issues (.37), personal insight (.37), and cognitive development (.53).

It is less clear whether the observed effects of service-learning are more attributable to the service experience relative to the curricular component. In Conway, Amel, and Gerwien's meta-analysis (2009), participation in service-learning programs did not yield greater gains in social or citizenship outcomes relative to participation in non-curricular service. The unique effect of service-learning may thus reside with cognitive outcomes, such as an understanding of social problems. Moreover, a positive

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[8] Effect sizes are in parentheses. The effect size is computed as (the difference between the treatment group mean and the control group mean) divided by the pooled standard deviation.

impact of service-learning should be partly contingent upon the quality of the experience. Taylor and Pancer (2007), for instance, found that mandatory service participants who experienced social support and positive outcomes were more likely to engage in volunteerism two months after completing the service requirement. Astin et al.'s (2000) analysis of longitudinal data collected from over 22,000 college students underscored the need to promote reflection on the service experience in relation to course content. Specifically, the discussion of the service experience with other students fully mediated the relationship between service-learning and commitment to activism.

Less research has been conducted on the type and duration of service. A principal distinction regarding the type of service regards the degree to which students interact with people in need (Reinders & Youniss, 2006) and the organizational centrality of prosocial ideals (Horn, 2012). Horn (2012) found that service during secondary school through "humanitarian" organizations such as social service and faith-based organizations predicted greater prosocial value prioritization, but service through "utilitarian" organizations such as sports or political organizations was unassociated with value orientation. This difference was postulated to result from variation in information flows relevant to social problems, activities that involve helping people in need, social interactions with the less fortunate, and norms that reinforce prosocial ideals (relative to such ideals as leisure, power, or security). Similarly, Astin and Sax (1998) found that service-learning during college that involved "human needs" activities was most strongly associated with the importance assigned to helping others, among other types of service.

The significance of service type within a broader framework of undergraduate experiences, however, has not yet been examined.

The duration of service may also be a significant determinant of prosocial development by influencing the frequency of priming and value reflection. Piliavin and Callero (1991), for instance, argued that the repetition of prosocial behavior promotes the development of an altruistic identity, wherein a service role becomes integrated within one's sense of self. The duration of service has thus been positively associated with prosocial value ratings, while controlling for type of service (Astin & Sax, 1998; Astin, Sax, & Avalos, 1999). However, the minimum threshold and point of diminishing returns have not been widely examined. In the former, there is some evidence that short-term service during secondary school does not have a lasting effect on prosocial value development (Horn, 2012). In the latter, Conway, Amel, and Gerwien's (2009) meta-analysis provided tentative evidence of a positive linear relationship between duration and outcomes only among programs of less than 30 weeks (analyses were complicated by an inadequate number of studies). The present study reexamines these questions in the collegiate context.

Prosocial ethos.

Colleges and universities have been urged to develop an institutional ethos characterized by "the infusion of democratic values into the customs and habits of everyday practices, structures, and interactions; the defining character of the institution and those in it that emphasizes open-mindedness, civility, the worth of each person, ethical behaviors, and concern for the well-being of others; [and] a spirit of public-

mindedness that influences the goals of the institution and its engagement with local and global communities" (National Task Force on Civic Learning and Democratic Engagement, 2012, p. 15). Similarly, a prosocial ethos can be defined by the degree to which such ideals as care, justice, tolerance, and environmental protection are expressed through the social interactions, symbols, and practices that permeate a group or organization (see Ehman, 1980; Schein, 1990). Of particular interest in this study is the predominant value orientation that characterizes the student body as a whole.

A prosocial ethos arguably constitutes a significant source of prosocial value development (Colby et al., 2003). Social contexts have long been identified as critical forces in moral development (Berkowitz, 2002; Battistich, Solomon, Watson, & Schaps, 1997; Dewey, 1944; Piaget, 1965), and in the context of higher education, Astin (1993) concluded that "the student's peer group is the single most potent source of influence on growth and development during the undergraduate years" (p. 398). Astin and Panos (1969) coined the term "progressive conformity" to describe the tendency of students to adopt prevailing characteristics of the peer group, which may occur through modeling, reinforcement, and reasoning among peers (see Biddle, Bank, & Marlin, 1980). For example, students attending an institution with a prosocial ethos may be more likely to encounter peers who are volunteering in the community, interested in a social cause, and disposed to interpret events in moral terms. Accordingly, Sax (2000) reported that a strong predictor of change in students' commitment to social activism (e.g., community participation, helping others) was the overall level of social activism of the student body.

Overview of the Current Study

An analysis of prosocial value development must thus account for changes in key psychological assets and exposure to specific types of educative conditions. Given the focus on college student development, this study draws upon longitudinal data from a national sample of undergraduate students who completed surveys during the freshman and senior years. Figure 1 illustrates the basic conceptual model under examination. Institutional attributes refer to institutional control (private/public), admissions selectivity, and institutional type (college/university). Student background characteristics include gender, ethnicity, socioeconomic status, religiosity, and academic achievement. The undergraduate experience category comprises academic major, diversity, community service, and a prosocial ethos. Psychological assets include empathy, existential engagement, prosocial expectancies, and understanding of social problems. These variables are directly or indirectly linked with the development of a prosocial value orientation, that is, the relative prioritization of prosocial over egoistic values.

Figure 1.

General Model of Prosocial Value Development during College.
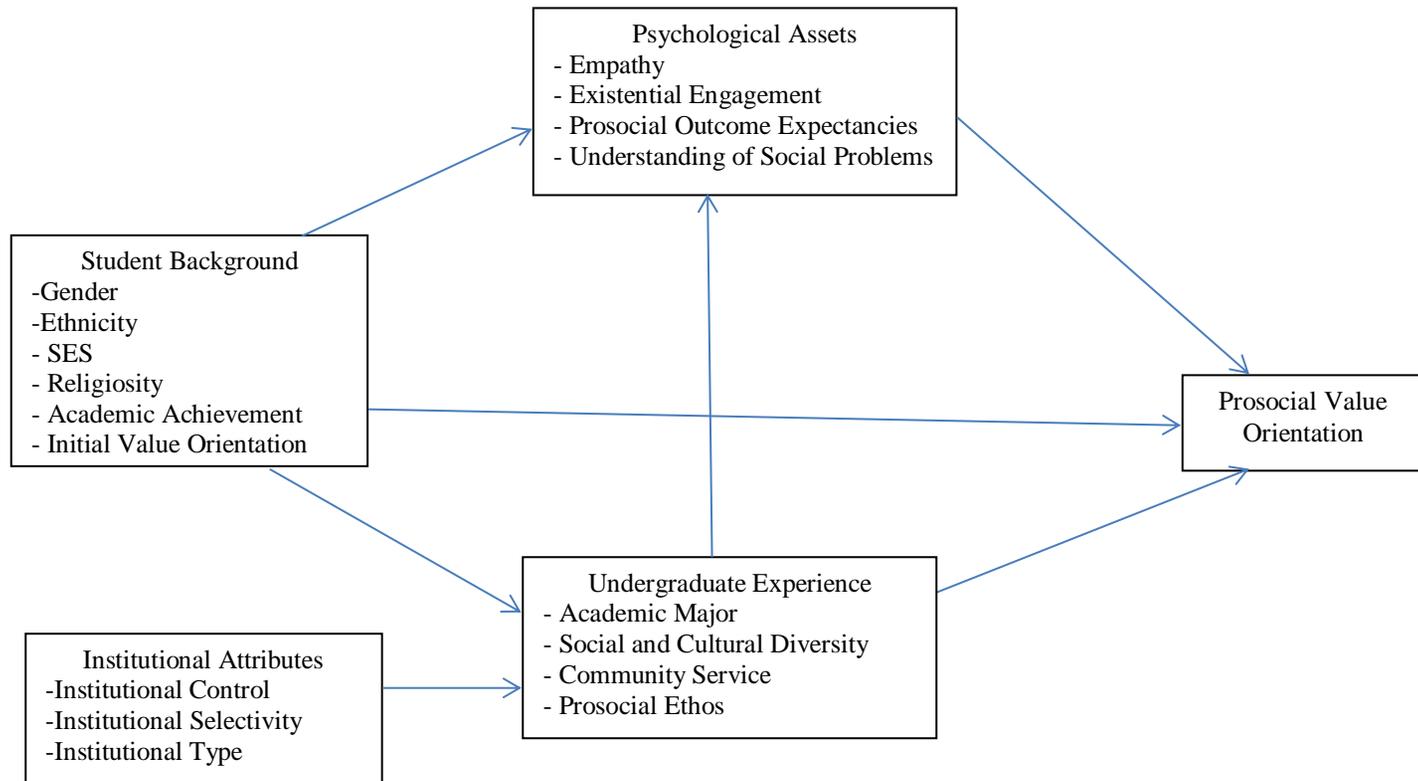
Institutional attributes and student background characteristics may be variously correlated with other variables in the model. For example, prosocial values have been positively associated with being female (Ryckman & Houston, 2003) and being religious (Berger, 2000). These constructs are not of central interest in this study but are rather included as control variables.

As noted earlier, a central premise of this study is that prosocial value development may occur through automatic priming or effortful evaluation of value priorities. Moreover, two types of sources of value development were propounded: growth in psychological assets and specific educative experiences. Although prosocial values may influence the development of some psychological assets, there is reason to believe that a reciprocal relationship may also exist. The tendency to adopt another's perspective may enhance moral reasoning and more readily afford an affective basis for prosociality during value dilemmas. Individuals who intentionally develop value commitments for a meaningful life may find few avenues more satisfying than the pursuit of prosocial ideals. Positive outcome expectations likely serve as a protective factor against downgrading the value of prosociality. And an understanding of social problems may elucidate the moral necessity of being prosocial. Indeed, recent research has suggested that values and proximal constructs exhibit reciprocal causality (Goodwin, Polek, & Bardi, 2012), but this possibility has not been investigated in the context of prosocial development during college. Longitudinal gains in psychological assets are thus hypothesized to be positively associated with the prioritization of prosocial values.

Various educative conditions – academic major, diversity, community service, and a prosocial ethos – may be conducive to prosocial value development. However, past research has primarily measured ratings of prosocial values rather than a relative prioritization of both prosocial and egoistic values. In addition, past educational research has been generally limited to an analysis of one type of condition, which fails to reveal whether multiple conditions yield unique effects. Previous inquiries have also focused mainly on direct effects rather than exploring the possibility of indirect effects. Several hypotheses are thus tested for each type of educative condition, while controlling for demographic and institutional attributes.

Exposure to the information, norms, and social influences of specialized disciplinary study is measured by the student's academic major. Majoring in business and economics should reinforce the profit motive, and majoring in engineering may afford few opportunities for prosocial coursework. Relative to other majors, then, majoring in business or engineering should negatively predict the prioritization of prosocial values. In contrast, majoring in education and applied health should expose students to a care ethic, thereby promoting a prosocial value orientation. The emphasis on values in the humanities likely influences existential engagement, and the focus on social problems in the social sciences should increase understanding of social problems. These majors should thus also be positively associated with prosocial value prioritization relative to majoring in business. However, due to its accommodation of power and status ideals, majoring in political science should be negatively associated with the adoption of a prosocial value orientation relative to other social science majors.

Social and cultural diversity is thought to promote a prosocial value orientation by enhancing the disposition for empathy and reducing prejudice. This study examines the relative significance of cross-racial interactions, racial awareness workshops, and diversity coursework in relation to senior-year value orientation.

The analysis of community service focuses on curricular integration, type, and duration. Volunteerism and service-learning relative to no service should be positively associated with the prioritization of prosocial values, as they likely promote such constructs as civic agency and awareness of social problems. Moreover, a high-quality service-learning experience should strongly predict prosocial value prioritization. Although the survey instrument did not include items related to the quality of service-learning, students did report whether they had engaged in both service-learning and volunteerism, one reason for which might have been a high-quality service-learning experience (see Taylor & Pancer, 2007). This study thus tests the more general hypothesis that participation in a combination of service-learning and volunteerism more strongly predicts prosocial value prioritization than does service-learning alone or volunteerism only.

Participation in a humanitarian organization but not in other organizations should be positively associated with the prioritization of prosocial values, due to differences in information flows, activities, social interactions, and norms. Prosocial ideals are presumed to be variously prominent in community relief, education, healthcare, social services, and environmental organizations. Other ideals such as power, leisure, and

security are thought to be dominant in political, sports, and public safety organizations (Horn, 2012).

The duration of service should be positively correlated with the prioritization of prosocial values through identity development processes and repeated priming of proximal constructs. Dissimilar to past analyses, this study compares several levels of service duration to no service, ranging from less than one month to more than 12 months. Short-term service should not be associated with value orientation relative to no service. An additional analysis is conducted to identify the point of diminishing returns in service duration with respect to prosocial value development.

A prosocial institutional ethos is measured by the average level of prosociality among freshmen. Exposure to a prosocial ethos should be positively associated with the prioritization of prosocial values, insofar as it influences the perception of norms and the nature of social influence.

Following an analysis of direct associations, a path analysis is conducted of direct and indirect associations. Based on the discussion of reciprocal effects, freshman-year value orientation should predict senior-year value orientation indirectly through psychological assets. In addition, since an understanding of social problems ideally emphasizes the need and possibilities for social change, the relationship between social problem understanding and value orientation should be partly mediated by outcome expectations.

Regarding academic major, majoring in the humanities and social sciences should be indirectly associated with value orientation via existential engagement and social

problem understanding, respectively. Majoring in psychology should predict gains in dispositional empathy through preparation for the helping professions.

The present study also tests the hypothesis that the relationship between diversity and prosocial values is partly mediated by empathy. Due to its focus on social inequality, diversity coursework should be indirectly associated with value orientation via social problem understanding.

Participation in a humanitarian organization is thought to be conducive to empathy, existential engagement, prosocial expectancies, and social problem understanding. And thus this study tests the hypothesis that the relationship between humanitarian service and prosocial values is partly mediated by each psychological asset. Moreover, given the relatively strong effects observed in Yorio and Ye's (2012) meta-analysis for cognitive outcomes, the relationship between service-learning and value orientation is hypothesized to be at least partly mediated by social problem understanding. Given the positive correlation between time-on-task and a wide variety of student outcomes (Karweit, 1989), the relationship between service duration and value orientation should also be partly mediated by each psychological asset. Finally, an exploratory analysis is performed to determine whether there are any indirect associations between prosocial ethos and value orientation.

Chapter III

Method

This section elaborates the data source and variables for this study. The description of the data source includes both an overview of the survey instruments and specific restrictions invoked for sample construction. Variable descriptions are provided for value orientation, psychological assets, undergraduate experiences, student background characteristics, and institutional attributes.

Data Source

The data were derived from two surveys administered by the Higher Education Research Institute (HERI) at the University of California, Los Angeles: the Cooperative Institutional Research Program (CIRP) Freshman Survey and the College Senior Survey. For the Fall 2012 administration of the Freshman Survey, 263,937 students at 389 four-year institutions (24 percent public) completed the survey. For the 2009 administration of the College Senior Survey, 24,457 students at 111 four-year institutions (15 percent public) completed the survey.

The Freshman Survey has been administered since 1966 and has been available for administration at colleges and universities that have first-year undergraduate students and that respond to the U.S. Department of Education's Higher Education General Information Survey (Pryor et al., 2012). The Freshman Survey contains over 200 items pertaining to high school experiences, level of academic preparation, admissions process, college expectations, peer and faculty interactions, values and goals, demographic attributes, and financing college (HERI, 2012a). The survey is intended to be

administered before first-year classes begin, such as during an orientation session. The survey is administered each year between March 15th and October 8th.

The College Senior Survey has been administered since 1993 as either a stand-alone assessment or a follow-up to the Freshman Survey (as well as other CIRP surveys). The survey contains items associated with academic achievement, interactions with faculty, cognitive and affective outcomes, values and goals, college satisfaction, and future plans (HERI, 2012b). In order to facilitate longitudinal analysis, the College Senior Survey repeats several items that appear in the Freshman Survey. The survey is intended to be administered to seniors who are close to graduation, such as during a graduation rehearsal. The survey is administered each year between November 15th and June 28th.[9]

An important consideration regarding the College Senior Survey is the variation in survey items over time. Most relevant to the present study, items associated with community service primarily appeared between 1995 and 2004. Moreover, the 1995 survey contained items related to the organizational context and duration of service, which were mostly absent in subsequent data years. The 1995 data year is thus most appropriate for this analysis, particularly since this study is focused on relationships among variables rather than estimating current variable frequencies.

The study design required that data from both surveys be available from students at institutions which administered both surveys. The construction of a sample for analysis proceeded in three steps. First, the 1995 data year for the College Senior Survey was selected based on the inclusion of relevant survey items. Longitudinal data were available

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[9] Copies of the Freshman Survey and the College Senior Survey used in this study are available online at http://www.heri.ucla.edu/researchersToolsCodebooks.php

for an initial sample of 11,648 students from 86 institutions that administered the 1995

College Senior Survey (8 percent public). Second, this study focuses on four-year

institutions and thus data from two-year institutions were omitted (n=276). Third, a

cohort was created by establishing the base survey year as 1991[10]; restricting the sample

to students who completed both surveys at the same institution; and retaining only first-

time, full-time respondents and senior-year respondents who were identified as

"graduating seniors." Graduating senior status was indicated by the survey item, "Please

indicate the highest degree you will have earned as of June 1995… Bachelor's degree."

Accordingly, cases were deleted for respondents who completed the Freshman Survey

earlier or later than 1991 (n= 2,520); students who completed surveys at different

institutions (i.e., transfer students, n=281); first-time part-time students (n=6); and

respondents who were not identified as "graduating seniors" (n= 700). These restrictions

yielded an initial sample of 7,709 students.

Human Subjects

The datasets for the 1991 administration of the CIRP Freshman Survey and the

1995 administration of the College Senior Survey were accessed online through HERI's

data archives website. HERI makes data sets publicly accessible once they are more than

10 years old. Institutional Review Board approval was unnecessary since analyses with

publicly accessible data are not considered human subjects research. A copy of the

response from a research compliance supervisor from the University of Minnesota is

provided in Appendix A.

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[10] In 1991, 282,834 students at 603 institutions participated in the administration of the Freshman Survey (Astin, Dey. Korn, & Riggs, 1991).

Variables

Survey items were selected for value orientation, psychological assets, undergraduate experiences, and demographic and institutional control variables. While the surveys used in this study did not include construct measures of values and psychological assets, several survey items serve as viable proxies. Table 1 provides descriptive statistics for all variables.

Value Orientation

A measure of the individual's value orientation was developed from responses to the survey item on the College Senior Survey, "Indicate the importance to you personally of each of the following." One sub-item reflected an egoistic value, "Being very well off financially," and another sub-item reflected a prosocial value, "Helping others who are in difficulty." Items were scored as not important, somewhat important, very important, or essential (1-4). These items are similar to those in Schwartz's (1992) value instrument, which assesses the perceived importance of such ideals as "wealth (material possessions, money)," being helpful (working for the welfare of others)," and "social justice (correcting injustice, care for the weak)."

Table 1

Variable Frequencies

	Valid	Min	Max	Mean	SD	CV
Senior-year value measure	7559	2.00	8.00	5.38	1.18	0.22
Female	7709	0.00	1.00	0.59		
Non-white ethnicity	7610	0.00	1.00	0.15		
SES (Parent education)	7635	1.00	8.00	6.39	1.77	0.28
First-generation student status	7635	0.00	1.00	0.14		
Religiosity	7667	1.00	3.00	2.52	0.65	0.26
Private high school	7672	0.00	1.00	0.38		
Academic achievement (College GPA)	7556	2.00	6.00	4.57	0.85	0.19
Public college/university	7709	0.00	1.00	0.06		
Institutional selectivity	7419	615.00	1250.00	1101.88	119.62	0.11
Masters/Research University	7709	0.00	1.00	0.47		
Freshman value measure	7526	2.00	8.00	5.06	1.18	0.23
Freshman empathy	7653	2.00	5.00	3.97	0.74	0.19
Senior empathy	7643	2.00	5.00	4.10	0.72	0.18
Freshman existential engagement	7533	1.00	4.00	2.66	0.98	0.37
Senior existential engagement	7537	1.00	4.00	2.83	0.99	0.35
Freshman prosocial outcome expectancies	7556	1.00	4.00	3.20	0.86	0.27
Senior prosocial outcome expectancies	7441	1.00	4.00	3.07	0.86	0.28

- Table Continues -

Table 1 (*continued*)

	Valid	Min	Max	Mean	SD	CV
Freshman-senior change: Empathy	7589	-3.00	3.00	0.13	0.82	
Freshman-senior change: Existential engagement	7370	-3.00	3.00	0.18	1.10	
Freshman-senior change: Outcome expectancies	7299	-3.00	3.00	-0.14	1.03	
Perceived freshman-senior change in social problem understanding	7598	1.00	6.00	3.93	1.24	0.31
Volunteerism only	7649	0.00	1.00	0.64		
Service-learning only	7649	0.00	1.00	0.08		
Service-learning and volunteerism	7649	0.00	1.00	0.19		
Service type: Education	7709	0.00	1.00	0.62		
Service type: Healthcare	7709	0.00	1.00	0.14		
Service type: Social services	7709	0.00	1.00	0.46		
Service type: Public safety	7709	0.00	1.00	0.15		
Service type: Environment	7709	0.00	1.00	0.28		
Service type: Community Relief	7709	0.00	1.00	0.23		
Service type: Political	7375	0.00	1.00	0.04		
Service type: Sports	7375	0.00	1.00	0.11		
Service type: Other	7709	0.00	1.00	0.39		

- Table Continues -

Table 1 (*continued*)

	Valid	Min	Max	Mean	SD	CV
Service duration	7104	0.00	6.00	3.16	2.10	0.66
Service duration: Less than 1 month	7104	0.00	1.00	0.18		
Service duration: 1-3 months	7104	0.00	1.00	0.17		
Service duration: 4-6 months	7104	0.00	1.00	0.15		
Service duration: 7-9 months	7104	0.00	1.00	0.08		
Service duration: 10-12 months	7104	0.00	1.00	0.06		
Service duration: More than 12 months	7104	0.00	1.00	0.26		
Major: Applied health	6383	0.00	1.00	0.05		
Major: Arts	6383	0.00	1.00	0.03		
Major: Biology	6383	0.00	1.00	0.10		
Major: Business	6383	0.00	1.00	0.19		
Major: Economics	6383	0.00	1.00	0.03		
Major: Education	6383	0.00	1.00	0.05		
Major: Engineering	6383	0.00	1.00	0.04		
Major: Humanities	6383	0.00	1.00	0.18		
Major: Physical science and math	6383	0.00	1.00	0.06		
Major: Political science	6383	0.00	1.00	0.09		
Major: Psychology	6383	0.00	1.00	0.09		
Major: Social sciences	6383	0.00	1.00	0.04		

- Table Continues –

Table 1 (*continued*)

	Valid	Min	Max	Mean	SD	CV
Major: Applied technology or other	6383	0.00	1.00	0.05		
Diversity workshop	7709	0.00	1.00	0.30		
Diversity coursework	7709	0.00	1.00	0.46		
Frequent cross-racial interactions	7631	0.00	1.00	0.48		
Prosocial ethos	7709	4.20	6.41	5.06	0.29	0.06
Valid N (listwise)	5200					

Note. The CV refers to the coefficient of variation (SD/mean). The CV can only be computed for variables with mean values that do not approximate zero.

A prosocial value measure was defined as the sum of the prosocial item and the reverse-coded egoistic item, wherein higher scores reflect greater relative importance assigned to prosocial values (e.g., Sheldon, Sheldon, & Osbaldiston, 2000). This variable is only a proxy to a more valid measure, such as Schwartz's (1994) measure that reflects a broader range of prosocial values (e.g., world at peace, social justice, equality, protecting the environment, helpful) and egoistic values (e.g., social power, authority, wealth, preserving public image, pleasure, ambition). A pre-test measure was constructed with identical items in the Freshman Survey.

Psychological Assets

Psychological asset variables include proxy measures of empathy, existential engagement, prosocial outcome expectancies, and understanding of social problems. All survey items are derived from both the 1991 administration of the Freshman Survey and the 1995 administration of the College Senior Survey, with the exception of social

problem understanding (which appeared only on the College Senior Survey). Gain scores were computed as the difference between freshman and senior year items (see Table 1).

Empathy.

The disposition for empathy was assessed by the survey item, "Rate yourself on each of the following traits as compared with the average person your age. We want the most accurate estimate of how you see yourself… Understanding of others." This item was scored as "Lowest 10%, below average, average, above average, or highest 10%" (1-5). This item is similar to such validated survey items as "I sometimes try to understand my friends better by imagining how things look from their perspective" (Davis, 1980).

Existential engagement.

Existential engagement was measured by the survey item, "Please indicate the importance to you of each of the following… Developing a meaningful philosophy of life." This item was scored as not important, somewhat important, very important, or essential (1-4). This item is similar to items in Morgan and Farsides' (2009) "principled life" orientation in their *Meaningful Life Measure*, such as "I have a philosophy of life that really gives my living significance."

Prosocial outcome expectancies.

The presence of prosocial outcome expectancies was measured by the belief that "Realistically, an individual can do little to bring about changes in our society." This variable was reverse coded since it was scored as disagree strongly, disagree somewhat, agree somewhat, or agree strongly (1-4). This item is similar to items used in Reeb et al.'s (2010) self-efficacy scale, which combines efficacy and outcome expectations (e.g.,

"I am confident that, through community service, I can make a difference in my community").

Understanding of social problems.

Two survey items on the College Senior Survey assessed students' self-perceived change in social problem understanding, "Compared with when you entered college as a freshman, how would you now describe your:… Understanding of the problems facing your community…Understanding of social problems facing our nation." Items were scored as "much weaker, weaker, no change, stronger, much stronger" (1-5). The variable was computed as the sum of both items (α= .73).

Undergraduate Experience

Undergraduate experience variables reflect potential educative conditions for prosocial value development, including academic major, diversity, community service, and a prosocial ethos. All variables were derived from the 1995 College Senior Survey.

Academic major.

Students identified their major from a list of 84 options, which were dummy-coded into 13 major groups: applied health (nursing, therapy, social work, medicine, dentistry, veterinarian, occupational therapy); arts (fine arts, music, theater); biological sciences (general biology, biochemistry, botany environmental science, marine science, microbiology, zoology, other biological science); business (accounting, business administration, finance, international business, marketing, management, secretarial studies, or other business); economics; education; engineering; humanities (English, history, language/literature, philosophy, speech, theology, and other arts/humanities);

physical science and math (physical sciences, computer science, mathematics); political

science; psychology; social sciences (anthropology, ethnic studies, geography, sociology,

women's studies, other social science); and applied technical or other (building trades,

data processing, drafting, mechanics, communications, law enforcement, architecture,

journalism, home economics, health technology, other field). Business fields constituted

the initial reference category (final analyses combined business and economic fields as

the reference category).

Social and cultural diversity.

Three variables represent exposure to social and cultural diversity. Engagement in

cross-racial interactions was measured by the item, "For the activities listed below, please

indicate how often you engaged in each during the past year… Socialized with someone

of another racial/ethnic group." This item was scored as "not at all, occasionally, or

frequently" (0=not at all or occasionally; 1= frequently). Participation in a diversity

workshop was indicated by the item, "Since entering college have you…attended a

racial/cultural awareness workshop" (0=no, 1=yes). The completion of diversity

coursework was measured by the items, "Since entering college have you…enrolled in an

ethnic studies course; enrolled in a women's studies course" (0=none, 1= at least one).

Community service.

Measures of community service include curricular integration, service type, and

duration. Participation in service-learning relative to volunteerism and non-volunteerism

was indicated by the item, "Was your community/volunteer service performed:… as part

of a class or course; as part of a collegiate-sponsored activity; independently through a

non-collegiate group?" (0= did not participate, 1= participated). This variable was

dummy-coded as service-learning only (service as part of class=1; other service =0);

service-learning and volunteerism (service as part of class=1; other service =1);

volunteerism only (service as part of class=0; other service =1); and no service. Non-

service students were identified by responses to two service participation questions: (a)

"For the activities listed below, please indicate how often you engaged in each during the

past year… performed volunteer work;" and (b) "Since entering college, have you

participated in any of the following community service/volunteer activities?...(list of

activities)." Non-service students were identified by both a negative response to the

former question and non-response to the latter question (HERI treats non-response as a

negative response on the latter question).

The type of service was assessed by two questions regarding the service activity

and location: (a) "Since entering college, have you participated in any of the following

community service/volunteer activities?" and (b) "Where have you performed

community service/volunteerism?" Responses from both activity and location questions

were coded into several variables to reflect various types of service: educational

(tutoring/teaching, planning curriculum or policy, educational counseling/mentoring,

other education); healthcare (providing health education, providing medical/health

service); social services (personal counseling/mentoring, providing childcare, providing

homeless/shelter support); environmental protection (teaching environmental awareness,

conservation activities); community relief (community cleanup/rebuilding); public safety

(crime prevention, conflict mediation training, substance abuse awareness or counseling);

sports/recreational; political; and other. Each variable is dichotomous (0= did not participate, 1= participated). (Dummy-coding was initially attempted with this variable, but it resulted in unacceptably low frequencies for each category.)

Service duration was measured by the item, "What was the total duration of all of your community/volunteer service activities?" Possible responses included less than 1 month, 1-3 months, 4-6 months, 7-9 months, 10-12 months, or more than 12 months (1-6). A continuous variable (0-6) and dummy-coded variable (0/1) were created. The reference category contains non-service students (coded as zero in the continuous variable).

Prosocial ethos.

A prosocial ethos measure was computed as the institutional mean of the prosocial value measure during the freshman year. This measure is thus an institution-level variable that remains constant for all students within a shared institution. Appendix B provides a frequency distribution for this variable.

Student Background Variables

Student background variables included gender, ethnicity, socioeconomic status, first-generation status, religiosity, secondary school control, and academic aptitude. All survey items were derived from the 1991 administration of the Freshman Survey, with the exception of academic aptitude. Gender was coded as a dichotomous variable (male=0, female=1). Ethnicity was coded with White students as the reference group relative to students of American Indian, Asian, Black, Hispanic, other, and two or more race/ethnicities. Socioeconomic status was measured by the highest level of educational

attainment among the student's parents: grammar school or less, some high school, high

school graduate, postsecondary school other than college, some college, college degree,

some graduate school, or graduate degree (1-8). First-generation status was derived from

the question regarding parental education, wherein having parents with at least "some

college" is coded as the reference category. Religiosity was assessed by the item,

"Indicate which activities you did during the past year… attended a religious service"

(not at all, occasionally, frequently, 1-3). Secondary school control was coded with

"public" as the reference group relative to private denominational or private

nondenominational. Academic aptitude was assessed by the item on the senior year

survey, "Your average grade average: A, A- or B+, B, B- or C+, C, C- or less" (coded 6-1

respectively).

Institutional Variables

Institutional variables include control, type, and selectivity. All survey items are

derived from the 1991 administration of the Freshman Survey. Institutional control was

coded as a dichotomous variable (private=0, public=1). Private institutions constituted

the reference group since public institutions only comprised 8 percent of the sample.

HERI designated institutional type as either a "four-year" baccalaureate college or a

masters/research "university." This dichotomous variable was coded with baccalaureate

colleges as the reference group (four-year baccalaureate college=0, masters/research

university=1). Institutional selectivity is a CIRP variable that reflects the average

freshman SAT composite score (ACT scores were converted to SAT scores), ranging

from 615 to 1250 (48 values).

Data Analysis

Three types of analyses were conducted to test the research hypotheses. First, multiple regression with SPSS 20 was used to examine the relationship between psychological assets and value orientation. Multiple regression was selected because the central analytical challenge is to determine whether empathy, existential engagement, prosocial expectancies, and social problem understanding predict senior-year value orientation while holding constant freshman-year value orientation, the seven student background characteristics, and the three institutional variables. This analysis reduces the likelihood that any associations detected between psychological assets and senior-year value orientation are merely due to correlations with freshman-year value orientation or other potentially confounding variables. Although multiple regression makes the assumption of interval-level data, Jaccard and Wan (1996, p. 4) have noted that ''for many statistical tests, rather severe departures (from intervalness) do not seem to affect Type I and Type II errors dramatically.''

Second, multiple regression was used to evaluate the direct associations among educative conditions and the prosocial value measure. Multiple regression was selected to determine the extent to which variables pertaining to academic major, community service, diversity, and a prosocial ethos predict variation in senior-year value orientation, while holding constant freshman-year psychological asset scores, freshman-year value orientation, student background characteristics, and institutional variables. This analysis attempts to ensure that potential associations between educative conditions and subsequent value orientation are not due to correlations with initial student and

institutional attributes (e.g., highly prosocial students may be more likely to engage in community service).

Third, path analysis using Mplus 6.1 was used to evaluate a model of 27 direct and 31 indirect associations among educative conditions, psychological assets, and senior-year value orientation. Path analysis was selected to examine the hypothesis that academic major, community service, diversity, and prosocial ethos variables predict senior-year proxies for empathy, existential engagement, prosocial expectancies, and social problem understanding, which in turn are postulated to predict prosocial value prioritization. Path analysis permits the simultaneous estimation of these indirect and direct associations.

The estimates in all analyses were computed by using a complex samples option that utilizes a maximum likelihood estimator with robust standard errors and institutional clusters. Institutional clusters were specified by a unique identification number assigned to each institution. A sandwich estimator was used to generate consistent estimates of the covariance matrix, thereby adjusting for non-independence of errors that may result from the fact that students were clustered in institutions in the survey sample (see Muthén & Satorra, 1995). Since the regression analysis with standard error adjustments in SPSS only provides unstandardized regression coefficients, all continuous variables were standardized prior to multiple regression in the first two analyses. Standardized coefficients are preferable for the purpose of gauging the relative importance of predictors.

Chapter 4

Results

This chapter summarizes the results of several analyses. First, missing data and regression assumptions are evaluated. Second, the relationship between psychological assets and value orientation is examined. Third, several regression models are developed to estimate the predictive significance of academic major, diversity, community service, and prosocial ethos. Fourth, a path model is tested to assess the direct and indirect associations among psychological assets, educative conditions, and value orientation.

Evaluation of Missing Data and Regression Assumptions

The nature of missing data and assumptions underlying multiple regression were evaluated and addressed prior to analysis. Assumptions that were tested included those pertaining to normality, linearity, the absence of outliers, and the absence of multicollinearity.

Missing data.

Complete data were available for several variables, and most variables had no more than 4 percent of cases with missing data. However, the academic major variable from the College Senior Survey was missing 17 percent of cases. An analysis of missing values with separate variance t-tests indicated that missingness was unassociated with the dependent variable, with the exception of prosocial outcome expectations and service-learning. Specifically, students with missing data on the outcome expectancy variable (n= 268) had lower scores (*M*= .20) on the dependent variable than students with complete data (n= 7,441; *M*= .38), *p*= .04. Nonresponse on this variable may reflect apathy towards

the possibility of "making a difference," which is consistent with a postulated positive

correlation between prosocial expectancies and value orientation. Students with missing

data on the service-learning variable (n= 421) had lower scores (*M*= .08) on the

dependent variable than students with complete data (n= 7,288; *M*= .48), *p*< .001.

Nonresponse on this variable may reflect non-participation in service-learning, which is

consistent with a postulated positive correlation between service-learning and value

orientation. In both cases, nonresponse may result in the overall attenuation of the

association with senior-year value orientation. Sensitivity analyses using multiple

imputation indicated that average estimates over five imputed data sets did not differ

significantly from analyses that omit cases with missing data. Cases with missing data

were thus deleted listwise.

Normality and Linearity.

Two continuous variables were not normally distributed. A reflect and square root

function[11] was used for parents' highest educational attainment, which was moderately,

negatively skewed with outliers. A reflect and square root function was also used for

institutional selectivity, which was negatively skewed with outliers. Linearity was

examined through a residual scatterplot. The results indicated that the residuals were

normally distributed and linearly associated with the value measure.

Outliers.

The presence of multivariate outliers was examined with standardized residuals

(outlier > |2.95|), Mahalanobis distance (outliers at *p* < .001), and Cook's d (outlier > 4/n)

---

[11] Transformed x = $\sqrt{(\text{constant} - x)}$

(see Chatterjee & Hadi, 1988). Multivariate outliers, which ranged from 11 to 38 cases

across analyses, were deleted to ensure stability of regression solutions.

Multicollinearity.

The possibility of multicollinearity was examined with the variance inflation

factor (VIF). VIF values were below the recommended cut-off of 5.0 (O'Brien, 2007).

Bivariate Correlations

A preliminary analysis was conducted to examine the bivariate associations

between the predictor variables and the dependent variable. As indicated in Table 2, most

correlations were greater than zero but were "small" by Cohen's (1988) criteria of .10 for

weak relationships and .30 for moderate relationships. Only freshman value orientation

was strongly associated with senior-year value orientation ($r = .50$). Among the

psychological asset variables, the proxies for dispositional empathy were most weakly

associated with senior-year value orientation ($r = .12 - .15$), and proxies for existential

engagement exhibited the strongest correlations with senior-year value orientation ($r = .17$

- .25).

Table 2

Bivariate Correlations between Independent Variables and Senior-Year Value

Orientation

	Senior-year value measure
Freshman value measure	.50[**]
Freshman empathy	.12[**]
Freshman existential engagement	.17[**]
Freshman prosocial outcome expectancies	.16[**]
Senior empathy	.15[**]
Senior existential engagement	.25[**]
Senior prosocial outcome expectancies	.24[**]
Freshman-senior change: Empathy	.03[*]
Freshman-senior change: Existential engagement	.08[**]
Freshman-senior change: Outcome expectancies	.07[**]
Perceived freshman-senior change in social problem understanding	.19[**]
Major: Applied health	.07[**]
Major: Arts	-.00
Major: Biology	.08[**]
Major: Business	-.25[**]
Major: Economics	-.07[**]
Major: Education	.08[**]
Major: Engineering	-.05[**]
Major: Humanities	.10[**]
Major: Physical science and math	.00
Major: Political science	-.02

- Table Continues -

Table 2 (*continued*)

	Senior-year value measure
Major: Psychology	.05**
Major: Social sciences	.06**
Major: Applied technology or other	-.00
Diversity workshop	.17**
Diversity coursework	.14**
Frequent cross-racial interactions	.11**
Volunteerism only	.01
Service-learning and volunteerism	.15**
Service-learning only	.09**
Service type: Education	.18**
Service type: Healthcare	.11**
Service type: Social services	.23**
Service type: Public safety	.08**
Service type: Environment	.12**
Service type: Community Relief	.11**
Service type: Political	.03*
Service type: Sports	.02
Service type: Other	.13**
Service duration	.27**
Service duration: Less than 1 month	-.13**
Service duration: 1-3 months	-.03*
Service duration: 4-6 months	.01
Service duration: 7-9 months	.05**

- Table Continues -

Table 2 (*continued*)

	Senior-year value measure
Service duration: 10-12 months	.05[**]
Service duration: More than 12 months	.20[**]
Prosocial ethos	.20[**]
Female	.16[**]
Non-white ethnicity	-.04[**]
SES (Parent education)	.06[**]
First-generation student status	-.05[**]
Religiosity	.14[**]
Private high school	-.04[**]
Academic achievement (College GPA)	.13[**]
Public college/university	-.01
Institutional selectivity	.02
Masters/research University	-.04[**]

* Correlation is significant at the 0.05 level (2-tailed).

**Correlation is significant at the 0.01 level (2-tailed).

The correlation coefficients for academic major categories reflect the relationship between senior-year value orientation and a particular major relative to all other majors. Notably, majoring in business was negatively associated with the value orientation measure ($r= -.25$). The correlation coefficients observed among other majors were much smaller, though specific contrasts may yield larger associations (e.g., applied health versus business).

Among the diversity variables, participation in a diversity workshop was most strongly associated with the prosocial value measure ($r= .17$), followed by the completion of diversity coursework ($r= .14$) and a high frequency of cross-racial interactions ($r= .11$). Among the community service variables, participation in a combination of service-learning and volunteerism relative to other conditions (i.e., volunteerism only, service-learning only, non-volunteerism) was positively associated with senior-year value orientation ($r= .15$). Service through a humanitarian organization- education healthcare, social service, environment, and community relief- yielded correlation coefficients of at least .10 ($r= .11 - 23$). In contrast, service through public safety, political, and sports organizations yielded coefficients less than .10 ($r= .00 - .08$). Service duration was positively associated with the prioritization of prosocial values ($r= .27$), though service of less than one month was negatively associated with the prosocial value measure relative to all other duration categories ($r= .13$). Finally, the freshman prosocial ethos variable was positively correlated with the senior-year value orientation ($r= .20$).

Psychological Assets as Predictors of Value Orientation

If psychological assets are conducive to prosocial value development, then changes in empathy, existential engagement, prosocial outcome expectancies, and social problem understanding should predict the prioritization of values of students as seniors. These hypothesized relationships were tested by examining the predictive significance of freshman-senior year gain scores in relation to senior-year value orientation. Variables were entered into a multiple regression model in two steps or blocks of variables: (1) control variables and freshman-senior year psychological asset gain scores, and (2)

control variables, freshman year psychological asset scores, and freshman-senior year gain scores. Freshman year asset scores were entered in the second step to reduce error caused by ceiling effects, wherein students who report high scores during the freshman year are unable to report increases during the senior year. Ceiling effects could otherwise bias the estimates of the relationship between gain scores and value orientation (see Taylor, 2010).

As indicated in Table 3, changes in psychological assets predict scores on the value orientation measure. The initial regression results indicated that ethnicity, socioeconomic status, first-generation status, attending a public institution, and institutional selectivity were nonsignificant predictors of senior-year value orientation ($p > .05$). These variables were thus dropped stepwise to generate a parsimonious model (i.e., a regression analysis was conducted before each variable was dropped).

Step 1 results indicate that increases in psychological assets between the freshman and senior year are positively associated with the prosocial value measure. Step 2 results indicate that increases in psychological assets between the freshman and senior year are positively associated with the prosocial value measure, while controlling for freshman year scores. However, the resulting beta coefficients were small.[12] Specifically, a one standard deviation increase in the gain scores for empathy ($\beta = .08$), existential engagement ($\beta = .14$), prosocial outcome expectancies ($\beta = .14$), and social problem understanding ($\beta = .09$) was associated with a .08-.14 standard deviation increase in prosocial value prioritization, while controlling for other variables in the model.

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[12] Following Vernez and Zimmer's (2007) criteria, beta weights can be classified accordingly: small (.05 to .10), medium (.15), and large (.25).

Table 3

Multiple Regression: Freshman-Senior Year Change in Psychological Assets as a

Predictor of Senior-Year Value Orientation (n=6,900)

	β	SE	Lower 95% CI	Upper 95% CI	p
Step 1					
(Intercept)	-.01	.04	-.09	.06	.692
Female	.10	.02	.07	.14	.000
Religiosity	.06	.01	.04	.09	.000
Private high school	-.11	.03	-.16	-.05	.000
Academic achievement	.07	.01	.05	.09	.000
Freshman value measure	.48	.01	.46	.50	.000
Empathy change	.05	.01	.03	.06	.000
Existential engagement change	.08	.01	.06	.11	.000
Outcome expectations change	.06	.01	.03	.08	.000
Social problem understanding perceived change	.12	.01	.10	.15	.000
Step 2					
(Intercept)	.00	.03	-.07	.07	.994
Female	.09	.02	.05	.12	.000
Religiosity	.06	.01	.03	.08	.000
Private high school	-.12	.02	-.17	-.07	.000
Academic achievement	.06	.01	.04	.08	.000
Freshman value measure	.43	.01	.41	.46	.000
Freshman empathy	.06	.01	.03	.08	.000
Freshman existential engagement	.11	.02	.08	.15	.000

- Table Continues -

Table 3 (*continued*)

	β	SE	Lower 95% CI	Upper 95% CI	p
Freshman outcome expectancies	.13	.01	.11	.16	.000
Empathy change	.08	.01	.06	.10	.000
Existential engagement change	.14	.02	.10	.19	.000
Outcome expectations change	.14	.01	.11	.16	.000
Social problem understanding perceived change	.09	.01	.06	.11	.000
R-square step 1	.32				
R-square step 2	.34				
F (12, 53) step 3	335.84				.000

Undergraduate Experiences as Direct Predictors of Value Orientation

The second set of analyses examined the relationship between various educative conditions and students' subsequent value orientation as seniors. Multiple regression was used to assess the predictive significance of an academic major, community service, diversity, and a prosocial ethos. A final model is progressively developed with each analysis. Specifically, statistically significant variables were retained, and nonsignificant variables were dropped using the stepwise procedure.

Academic major.

Students who major in the humanities, social sciences, and caring-oriented fields (i.e., education and applied health) were hypothesized to make greater gains in prosocial development than students who major in business, economics, and engineering fields.

Majoring in political science should also yield lower gains on the prosocial value measure relative to majoring in other social sciences. First, the hypothesized effect of majoring in fields other than business was examined by comparing business majors to all other majors. As demonstrated in Table 4, majoring in any field other than economics, relative to majoring in business, was positively associated with the prosocial value measure during the senior year. Particularly strong statistical effects were observed among students who majored in applied health (β= .45), biology (β= .43), education (β= .46), the humanities (β= .37), psychology (β= .38), and social sciences (β= .50). Moreover, this analysis suggests that business and economics majors can be treated as a single reference category for other majors, since the predictive significance of majoring in economics did not differ from that of majoring in business.

Majoring in engineering was also hypothesized to be less conducive to prosocial value development than majoring in fields other than business. The results in Table 5 support this hypothesis. Majoring in applied health (β= .22), biology (β= .20), education (β= .23), the humanities (β= .14), psychology (β= .15), and social sciences (β= .26) were positively associated with the prosocial value measure relative to majoring in engineering. In addition, the analysis suggests that majoring in the arts, political science, science/math, and applied technical fields did not predict senior-year value orientation relative to majoring in engineering.

Table 4

Multiple Regression: Academic Majors Relative to Business Major as Predictors of

Senior-Year Value Orientation (n=5,948)

	β	SE	Lower 95% CI	Upper 95% CI	p
(Intercept)	-.27	.03	-.33	-.20	.000
Female	.06	.02	.02	.10	.002
First-generation status	-.08	.02	-.13	-.03	.003
Religiosity	.07	.01	.04	.09	.000
Private high school	-.10	.02	-.14	-.06	.000
Academic achievement	.06	.01	.04	.09	.000
Freshman value measure	.42	.01	.39	.45	.000
Freshman existential engagement	.04	.01	.02	.06	.000
Freshman outcome expectancies	.05	.01	.03	.07	.000
Major: Applied health	.45	.05	.36	.54	.000
Major: Arts	.25	.06	.13	.37	.000
Major: Biology	.43	.04	.35	.52	.000
Major: Economics	-.02	.04	-.10	.07	.727
Major: Education	.46	.06	.34	.58	.000
Major: Engineering	.23	.05	.14	.33	.000
Major: Humanities	.37	.03	.31	.44	.000
Major: Political science	.24	.05	.15	.33	.000
Major: Psychology	.38	.04	.30	.46	.000
Major: Science/math	.26	.04	.18	.35	.000
Major: Social science	.50	.06	.39	.61	.000
Major: Applied tech or other	.27	.06	.15	.39	.000
R-square	.32				
F (20,45)	212.27				.000

Note. Business majors constitute the reference group.

Table 5

Multiple Regression: Academic Majors Relative to Engineering Majors as Predictors of

Senior-Year Value Orientation (n=5,948)

	β	SE	Lower 95% CI	Upper 95% CI	p
(Intercept)	-.03	.06	-.15	.08	.558
Female	.06	.02	.02	.10	.002
First-generation status	-.08	.03	-.13	-.03	.003
Religiosity	.07	.01	.04	.09	.000
Private high school	-.10	.02	-.14	-.06	.000
Academic achievement	.06	.01	.04	.09	.000
Freshman value measure	.42	.01	.39	.45	.000
Freshman existential engagement	.04	.01	.02	.06	.000
Freshman outcome expectancies	.05	.01	.03	.07	.000
Major: Applied health	.22	.07	.07	.36	.004
Major: Arts	.02	.07	-.11	.15	.778
Major: Biology	.20	.06	.08	.32	.001
Major: Business/economics	-.24	.05	-.33	-.14	.000
Major: Education	.23	.08	.07	.39	.005
Major: Humanities	.14	.06	.03	.25	.016
Major: Political science	.00	.07	-.13	.13	.944
Major: Psychology	.15	.06	.03	.26	.012
Major: Science/math	.03	.06	-.09	.15	.629
Major: Social Science	.26	.07	.13	.40	.000
Major: Applied tech or other	.04	.07	-.11	.18	.618
R-square	.32				
F (19,46)	227.34				.000

Note. Engineering majors constitute the reference group.

While the preceding analysis seems to resolve the third research question about

the relative effect of majoring in political science, a direct contrast was performed for

verification (i.e., majoring social sciences relative to the reference category of majoring

in political science). The results indicated that political science majors differ from other social science majors with respect to changes in value orientation. Specifically, majoring in other social sciences was positively associated with prosocial value prioritization relative to majoring in political science, β= .26, *t*= 3.92, *p*<.001.

Social and cultural diversity.

Students who are exposed to various forms of diversity should make greater gains in prosocial value development than students who are deprived of diversity experiences. The results in Table 6 support this notion. The addition of the diversity variables increased the r-square value from .315 to .320. Participation in diversity workshops (β = .16), the completion of diversity coursework (β = .06), and frequent cross-racial interactions (β = .11) were uniquely associated with prosocial value prioritization during the senior year.

Community Service.

Participation in volunteerism and service-learning were hypothesized to be positively associated with prosocial value prioritization during the senior year relative to no service. Table 7 indicates that participation in volunteerism was associated with a .20 standard deviation increase in the prosocial value measure during the senior year. In contrast, service-learning relative to no service was not reliably associated with the prosocial value measure during the senior year. The combination of service-learning and volunteerism exhibited the largest association with prosocial value prioritization (β= .33). (Diversity coursework was no longer significant and was thus dropped from the model.)

Table 6.

Multiple Regression: Diversity Experiences as Predictors of Senior-Year Value

Orientation (n=5,931)

	β	SE	Lower 95% CI	Upper 95% CI	p
(Intercept)	-.35	.04	-.43	-.26	.000
First generation status	-.08	.03	-.13	-.02	.011
Religiosity	.07	.01	.04	.10	.000
Private high school	-.10	.02	-.14	-.06	.000
Academic achievement	.07	.01	.05	.09	.000
Freshman value measure	.41	.01	.38	.44	.000
Freshman existential engagement	.03	.01	.02	.05	.000
Freshman outcome expectancies	.04	.01	.02	.06	.000
Major: Applied health	.48	.05	.38	.58	.000
Major: Arts	.24	.06	.12	.36	.000
Major: Biology	.43	.04	.34	.51	.000
Major: Education	.47	.06	.34	.60	.000
Major: Engineering	.22	.05	.13	.31	.000
Major: Humanities	.35	.03	.28	.41	.000
Major: Political science	.22	.04	.13	.30	.000
Major: Psychology	.36	.04	.28	.44	.000
Major: Science/math	.26	.04	.18	.34	.000
Major: Social sciences	.45	.06	.34	.56	.000
Major: Applied tech/other	.26	.06	.13	.39	.000
Diversity workshop	.16	.02	.12	.21	.000
Diversity coursework	.06	.02	.01	.11	.013
Frequent cross-racial interaction	.11	.02	.06	.15	.000
R-square	.32				
F (21,44)	230.23				.000

Note. The reference group for academic majors is business/economics.

Table 7

Multiple Regression: Volunteerism and Service-learning Relative to No Service as

Predictors of Senior-Year Value Orientation (n=5,919)

	β	SE	Lower 95% CI	Upper 95% CI	p
(Intercept)	-.52	.04	-.61	-.43	.000
First generation status	-.08	.03	-.13	-.02	.009
Religiosity	.06	.01	.03	.08	.000
Private high school	-.09	.02	-.13	-.05	.000
Academic achievement	.06	.01	.04	.08	.000
Freshman value measure	.40	.02	.37	.43	.000
Freshman existential engagement	.03	.01	.01	.05	.001
Freshman outcome expectancies	.04	.01	.02	.06	.000
Major: Applied health	.44	.05	.34	.53	.000
Major: Arts	.29	.06	.18	.41	.000
Major: Biology	.42	.04	.34	.50	.000
Major: Education	.45	.06	.32	.58	.000
Major: Engineering	.21	.05	.10	.32	.000
Major: Humanities	.36	.03	.30	.42	.000
Major: Political science	.22	.04	.13	.30	.000
Major: Psychology	.35	.04	.27	.42	.000
Major: Science/math	.24	.04	.17	.32	.000
Major: Social sciences	.46	.05	.35	.56	.000
Major: Applied tech/other	.25	.06	.13	.37	.000
Diversity workshop	.15	.02	.11	.19	.000
Frequent cross-racial interaction	.11	.02	.06	.15	.000

- Table Continues -

Table 7 (*continued*)

	β	SE	Lower 95% CI	Upper 95% CI	p
Volunteerism only	.20	.06	.09	.32	.001
Service-learning only	.11	.06	.00	.23	.060
Service-learning and volunteerism	.33	.07	.19	.47	.000
R-square	.33				
F (23,42)	168.94				.000

In order to determine whether the outcomes of each condition differ from each other, a second analysis was conducted by changing the reference categories in the model. Specifically, service-learning conditions were compared to the reference category of volunteerism only, and service-learning only was compared to the reference category of the combination of service-learning and volunteerism. It was hypothesized that the combination of service-learning and volunteerism should be more strongly associated with the prioritization of prosocial values during the senior year relative to volunteerism alone or service-learning alone. Since service-learning experiences are frequently of briefer duration than volunteer experiences, duration was entered into the model as a control. The results confirmed the hypothesis (results are not reported separately in a table). The combination of service-learning and volunteerism was positively associated with the prosocial value measure relative to volunteerism only, β= .08, t= 2.40, p< .01. However, the association between participation in service-learning relative to volunteerism only and the prosocial value measure was not statistically significant, β= -.09, t= -1.97, p > .05. Finally, the service-learning only condition was negatively

associated with the prosocial value measure relative to the combination of service-learning and volunteerism, $\beta = -.17$, $t = -3.62$, $p < .01$.

The effect of community service was also postulated to differ by organizational type and duration. Service through organizations with strong prosocial ideals (humanitarian organizations) should promote prosocial development, but service through organizations that pursue other ideals (e.g., power, leisure, and security) was expected to be unassociated with prosocial value development. The results in Table 8 confirm that service through humanitarian organizations (community relief, education, healthcare, and social services) but not sports, political, or public safety organizations predicted prosocial value prioritization. Volunteerism involving social services (e.g., homeless shelter support, childcare, personal counseling/mentoring) yielded the strongest association with prosocial value prioritization ($\beta = .15$). However, environmental volunteerism was not associated with value orientation during the senior year. (First-generation status was no longer statistically significant and was thus dropped from the model.)

Table 8

Multiple Regression: Type of Service as Predictor of Senior-Year Value Orientation

(n=5,781)

	β	SE	Lower 95% CI	Upper 95% CI	p
(Intercept)	-.53	.03	-.60	-.47	.000
Religiosity	.06	.01	.03	.08	.000
Private high school	-.08	.02	-.12	-.04	.000
Academic achievement	.06	.01	.05	.08	.000
Freshman value measure	.39	.02	.36	.42	.000
Freshman existential engagement	.03	.01	.01	.05	.001
Freshman outcome expectancies	.03	.01	.01	.06	.001
Major: Applied health	.40	.06	.28	.52	.000
Major: Arts	.32	.05	.21	.43	.000
Major: Biology	.40	.04	.32	.48	.000
Major: Education	.42	.06	.29	.55	.000
Major: Engineering	.25	.05	.14	.35	.000
Major: Humanities	.38	.03	.32	.44	.000
Major: Political science	.23	.04	.15	.32	.000
Major: Psychology	.35	.04	.26	.43	.000
Major: Science/math	.27	.04	.20	.34	.000
Major: Social sciences	.48	.05	.39	.58	.000
Major: Applied tech/other	.26	.07	.13	.39	.000
Diversity workshop	.11	.02	.06	.16	.000
Frequent cross-racial interaction	.10	.02	.06	.14	.000
Service-learning and volunteerism	.07	.03	.01	.12	.016

- Table Continues -

Table 8 (*continued*)

	β	SE	Lower 95% CI	Upper 95% CI	p
Service type: Education	.09	.03	.03	.15	.003
Service type: Healthcare	.08	.03	.02	.14	.011
Service type: Social services	.15	.02	.11	.19	.000
Service type: Public safety	-.01	.03	-.08	.06	.821
Service type: Environment	.01	.02	-.03	.05	.730
Service type: Community relief	.10	.02	.06	.14	.000
Service type: Political	.01	.06	-.11	.12	.929
Service type: Sports/recreation	.05	.04	-.02	.12	.161
Service type: Other	.07	.02	.03	.11	.001
R-square	.34				
F (29,36)	166.19				.000

The duration of service was postulated to be positively associated with the prosocial value measure. As noted earlier, students reported the total duration of all service activities during college, which was subsequently coded as: no service, less than 1 month, 1-3 months, 4-6 months, 7-9 months, 10-12 months, or more than 12 months (0-6). As indicated in Table 9, a one standard deviation increase in duration was associated with a .09 standard deviation increase in the prosocial value measure. However, participation in educational service, healthcare service, and "other" service types were no longer uniquely associated with prosocial value prioritization ($p > .05$) and thus these variables were dropped from the model.

Table 9

Multiple Regression: Duration of Service as Continuous Predictor of Senior-Year Value

Orientation (n=5,592)

	β	SE	Lower 95% CI	Upper 95% CI	p
(Intercept)	-.41	.03	-.48	-.35	.000
Religiosity	.06	.01	.03	.08	.000
Private high school	-.08	.02	-.12	-.04	.000
Academic achievement	.07	.01	.05	.09	.000
Freshman value measure	.39	.02	.35	.42	.000
Freshman existential engagement	.03	.01	.01	.05	.005
Freshman outcome expectancies	.03	.01	.01	.05	.002
Major: Applied health	.43	.06	.32	.55	.000
Major: Arts	.33	.06	.21	.44	.000
Major: Biology	.42	.04	.34	.50	.000
Major: Education	.47	.06	.35	.59	.000
Major: Engineering	.27	.05	.16	.38	.000
Major: Humanities	.38	.03	.32	.45	.000
Major: Political science	.23	.04	.15	.32	.000
Major: Psychology	.34	.04	.26	.42	.000
Major: Science/math	.31	.04	.23	.38	.000
Major: Social sciences	.50	.05	.40	.59	.000
Major: Applied tech/other	.27	.07	.13	.40	.000
Diversity workshop	.11	.02	.06	.16	.000
Frequent cross-racial interaction	.10	.02	.06	.14	.000
Service-learning and volunteerism	.07	.03	.00	.13	.035

- Table Continues -

Table 9 (*continued*)

	β	SE	Lower 95% CI	Upper 95% CI	p
Service type: Social services	.12	.02	.08	.16	.000
Service type: Community relief	.10	.02	.06	.14	.000
Service duration	.09	.01	.06	.12	.000
R-square	.34				
F (23,42)	236.94				.000

Although the continuous duration variable predicted value orientation, it is possible that short-term service yields little benefit beyond no service at all. Indeed, Table 10 demonstrates that each duration category yielded progressively larger coefficients: 1-3 months (β= .11), 4-6 months (β= .17), 7-9 months (β= .19), 10-12 months (β= .21), and more than 12 months (β= .26). However, service duration of less than 1 month was not associated with senior-year value orientation relative to no service.

The potential benefits of long-term over mid-term service can be further examined through direct contrasts. Table 11 shows that service for seven months or more was unassociated with prosocial value prioritization relative to service lasting more than 12 months.

Table 10

Multiple Regression: Service Duration Categories Relative to No Service as Predictor of

Senior-Year Value Orientation (n=5,592)

	β	SE	Lower 95% CI	Upper 95% CI	p
(Intercept)	-.56	.04	-.64	-.47	.000
Religiosity	.06	.01	.03	.08	.000
Private high school	-.08	.02	-.12	-.04	.000
Academic achievement	.07	.01	.05	.09	.000
Freshman value measure	.39	.02	.36	.42	.000
Freshman existential engagement	.03	.01	.01	.05	.005
Freshman outcome expectancies	.03	.01	.01	.05	.002
Major: Applied health	.43	.06	.31	.55	.000
Major: Arts	.33	.06	.21	.44	.000
Major: Biology	.42	.04	.33	.50	.000
Major: Education	.47	.06	.34	.59	.000
Major: Engineering	.28	.05	.17	.38	.000
Major: Humanities	.38	.03	.31	.44	.000
Major: Political science	.23	.04	.15	.32	.000
Major: Psychology	.34	.04	.26	.42	.000
Major: Science/math	.31	.04	.23	.38	.000
Major: Social sciences	.49	.05	.40	.59	.000
Major: Applied tech/other	.27	.07	.13	.40	.000
Diversity workshop	.11	.02	.06	.16	.000
Frequent cross-racial interaction	.10	.02	.06	.14	.000
Service-learning and volunteerism	.06	.03	.00	.12	.042

- Table Continues -

Table 10 (*continued*)

	β	SE	Lower 95% CI	Upper 95% CI	p
Service type: Social services	.12	.02	.08	.16	.000
Service type: Community relief	.10	.02	.06	.14	.000
Service duration: Less than 1 month	.03	.06	-.09	.15	.578
Service duration: 1-3 months	.11	.05	.01	.22	.031
Service duration: 4-6 months	.17	.07	.03	.30	.015
Service duration: 7-9 months	.19	.08	.03	.35	.023
Service duration: 10-12 months	.21	.05	.11	.31	.000
Service duration: 13+ months	.26	.06	.13	.39	.000
R-square	.34				
F (28,37)	220.58				.000

Table 11

Multiple Regression: Service Duration Categories Relative to Long-term Service as

Predictor of Senior-Year Value Orientation (n=5,592)

	β	SE	Lower 95% CI	Upper 95% CI	p
(Intercept)	-.30	.04	-.39	-.21	.000
Religiosity	.06	.01	.03	.08	.000
Private high school	-.08	.02	-.12	-.04	.000
Academic achievement	.07	.01	.05	.09	.000
Freshman value measure	.39	.02	.36	.42	.000
Freshman existential engagement	.03	.01	.01	.05	.005
Freshman outcome expectancies	.03	.01	.01	.05	.002
Major: Applied health	.43	.06	.31	.55	.000
Major: Arts	.33	.06	.21	.44	.000
Major: Biology	.42	.04	.33	.50	.000
Major: Education	.47	.06	.34	.59	.000
Major: Engineering	.28	.05	.17	.38	.000
Major: Humanities	.38	.03	.31	.44	.000
Major: Political science	.23	.04	.15	.32	.000
Major: Psychology	.34	.04	.26	.42	.000
Major: Science/math	.31	.04	.23	.38	.000
Major: Social sciences	.49	.05	.40	.59	.000
Major: Applied tech/other	.27	.07	.13	.40	.000
Diversity workshop	.11	.02	.06	.16	.000
Frequent cross-racial interaction	.10	.02	.06	.14	.000
Service-learning and volunteerism	.06	.03	.00	.12	.042

- Table Continues -

Table 11 (*continued*)

	β	SE	Lower 95% CI	Upper 95% CI	p
Service type: Social services	.12	.02	.08	.16	.000
Service type: Community relief	.10	.02	.06	.14	.000
No service	-.26	.06	-.39	-.13	.000
Service duration: Less than 1 month	-.22	.03	-.29	-.16	.000
Service duration: 1-3 months	-.15	.04	-.22	-.07	.000
Service duration: 4-6 months	-.09	.03	-.15	-.02	.008
Service duration: 7-9 months	-.07	.05	-.16	.02	.133
Service duration: 10-12 months	-.05	.05	-.14	.04	.295
R-square	.34				
F (28,37)	220.58				.000

Note. Reference category is service duration: 13+ months.

Prosocial ethos.

Exposure to a prosocial ethos was hypothesized to be positively associated with the prioritization of prosocial values during the senior year. This hypothesis was tested by adding to the base model a variable reflecting the institutional mean for the freshman-year prosocial value measure. In order to reduce the correlation between the individual- and institutional-level freshman year scores, the individual-level score was centered with the institutional mean (i.e., freshman individual-level value score – freshman institutional-mean value score). The results in Table 12 indicate that exposure to a prosocial ethos is a significant predictor of senior-year value orientation, while holding constant other variables in the model. Specifically, a one standard deviation increase in

the prosocial ethos score was associated with a .14 standard deviation increase in subsequent prosocial value prioritization.[13]

The results in Table 12 also demonstrate the degree to which the various types of undergraduate experiences are *uniquely* associated with the prosocial value measure when compared to each other. Overall, the results suggest that academic major is the strongest predictor of the prosocial value measure (β= .22 - .45). Freshman prosocial ethos was a moderately strong predictor (β= .14), followed by community service (social services organization, β= .12), and diversity experiences (diversity workshop, β= .11).[14]

Path Analysis of Direct and Indirect Associations

The preceding analyses demonstrated that freshman-senior year change in psychological assets and various undergraduate experiences predict senior-year value orientation (β= .07 - .45). Insofar as the undergraduate experiences also foster psychological assets, it was hypothesized that empathy, existential engagement, prosocial outcome expectancies, and social problem understanding may partly mediate the associations between educative conditions and the prioritization of prosocial values. In order to test this hypothesis, a path model was developed in which freshman-year psychological asset scores and particular educative conditions predict senior year psychological asset scores, which in turn predict senior-year value orientation.

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[13] A sensitivity analysis indicated that using multilevel modeling with two intercepts does not significantly alter the estimate for prosocial ethos.
[14] A sensitivity analysis demonstrated that entering all variables simultaneously and dropping nonsignificant variables stepwise did not alter the results.

Table 12

Multiple Regression: Prosocial Ethos as Predictor of Senior-Year Value Orientation

(n=5,569)

	β	SE	Lower 95% CI	Upper 95% CI	p
(Intercept)	-.39	.03	-.46	-.33	.000
First generation status	-.06	.02	-.11	-.01	.012
Religiosity	.05	.01	.02	.08	.000
Private high school	-.07	.02	-.12	-.03	.001
Academic achievement	.06	.01	.04	.08	.000
Freshman value measure	.36	.01	.34	.39	.000
Freshman existential engagement	.03	.01	.01	.05	.005
Freshman outcome expectancies	.03	.01	.01	.05	.002
Major: Applied health	.43	.06	.32	.55	.000
Major: Arts	.29	.06	.18	.40	.000
Major: Biology	.40	.04	.32	.49	.000
Major: Education	.45	.05	.34	.56	.000
Major: Engineering	.26	.05	.16	.37	.000
Major: Humanities	.36	.03	.29	.42	.000
Major: Political science	.22	.04	.14	.31	.000
Major: Psychology	.32	.04	.24	.40	.000
Major: Science/math	.29	.04	.21	.36	.000
Major: Social sciences	.44	.05	.34	.54	.000
Major: Applied tech/other	.27	.06	.14	.40	.000
Diversity workshop	.11	.02	.07	.16	.000
Frequent cross-racial interaction	.10	.02	.06	.14	.000

- Table Continues -

Table 12 (*continued*)

	β	SE	Lower 95% CI	Upper 95% CI	p
Service-learning and volunteerism	.07	.03	.01	.12	.028
Service type: Social services	.12	.02	.07	.16	.000
Service type: Community relief	.10	.02	.06	.15	.000
Service duration	.09	.01	.06	.11	.000
Prosocial ethos	.14	.02	.10	.19	.000
R-square	.34				
F (25,40)	243.95				.000

The direct effects portion of the path model incorporated all predictors from the model in Table 12. However, an initial analysis indicated that freshman-year psychological asset scores were not statistically significant predictors of senior-year value orientation when including senior-year psychological asset scores as direct predictors of senior-year value orientation. These freshman-year predictors were thus included only in the indirect effects portion of the model. Model fit was tested with the root mean square error of approximation (RMSEA), the comparative fit index (CFI), and the standardized root mean square residual (SRMR) (Hu & Bentler, 1999). Following Sivo et al. (2006), the cut-off scores for acceptable model fit were set at .07 for the RMSEA, .94 for the CFI, and .08 for the SRMR. The chi-square test of model fit is not reported since it is known to be highly sensitive to samples of over 200 subjects (Kenny, 2012).

Table 13 portrays the results of the hypothesized model, which exhibited a marginally acceptable level of fit, RMSEA= .04, CFI= .89, and SRMR= .02. Based on

the Modification Index (Silvia & MacCallum, 1988), several paths were added to improve model fit: (a) senior-year existential engagement: freshman empathy, senior-year perceived change in social problem understanding, arts major, biology major, and psychology major; and (b) senior-year perceived change in social problem understanding: senior empathy, arts major, engineering major, and sciences major. Nonsignificant predictors were then dropped stepwise to produce a parsimonious model. This process did not affect the estimates of the original hypothesized model, as indicated by the correlation between the estimates in common between the full and reduced models, $r(52)= .99$, $p<. 001$.

Table 14 provides the results of the final path model that includes only statistically significant associations. This final model exhibited an acceptable degree of fit, RMSEA=.03, CFI= .95, SRMR= .01. Table 14 contains five models of independent variables (e.g., freshman year psychological asset score, undergraduate experiences) that predict senior-year value orientation and psychological asset variables. Each set of predictors explained a small to moderate amount of variance in the respective dependent variables: senior-year value measure (r-square = .37); senior-year empathy (r-square = .16); senior-year existential engagement (r-square = .20); senior-year prosocial outcome expectancies (r-square = .13); and senior-year perceived change in social problem understanding (r-square = .10). Figures 2-5 depict each segment of the path model.

Table 13

Regression Path Analysis: Hypothesized Model of Direct and Indirect Associations

(n=5,584)

	b	SE	p
Senior-Year Value Measure			
Intercept	.12	.46	.790
First-generation status	-.05	.03	.068
Religiosity	.08	.02	.001
Private high school	-.10	.02	.000
Academic achievement	.08	.01	.000
Freshman value measure	.36	.01	.000
Senior-year empathy	.07	.02	.000
Senior-year prosocial expectancies	.12	.02	.000
Senior-year existential engagement	.14	.01	.000
Senior-year social problem understanding perceived change	.06	.01	.000
Major: Applied health	.49	.06	.000
Major: Arts	.31	.06	.000
Major: Biology	.45	.05	.000
Major: Education	.51	.06	.000
Major: Engineering	.35	.06	.000
Major: Humanities	.37	.04	.000
Major: Political science	.20	.04	.000
Major: Psychology	.34	.05	.000
Major: Science/math	.38	.04	.000
Major: Social sciences	.47	.06	.000

- Table Continues -

Table 13 (*continued*)

	b	SE	p
Major: Applied tech/other	.31	.07	.000
Diversity workshop	.07	.03	.004
Frequent cross-racial interaction	.09	.03	.001
Service-learning and volunteerism	.05	.03	.107
Service type: Social service	.11	.03	.000
Service type: Community relief	.09	.03	.001
Service duration	.04	.01	.000
Prosocial ethos	.57	.09	.000
Senior-Year Empathy			
Intercept	2.59	.05	.000
Freshman empathy	.34	.01	.000
Freshman value measure	.01	.01	.305
Major: Psychology	.09	.03	.001
Diversity workshop	.09	.02	.000
Frequent cross-racial interaction	.06	.02	.004
Diversity coursework	.05	.01	.000
Service type: Social service	.05	.01	.000
Service type: Community relief	.03	.02	.219
Service duration	.01	.00	.001
Senior-Year Existential Engagement			
Intercept	1.71	.05	.000
Freshman existential engagement	.36	.02	.000

- Table Continues -

Table 13 (*continued*)

	b	SE	p
Freshman value measure	.04	.01	.000
Major: Humanities	.21	.03	.000
Service type: Social service	.11	.03	.000
Service type: Community relief	.11	.02	.000
Service duration	.02	.01	.014
Senior-Year Prosocial Outcome Expectancies			
Intercept	.63	.01	.000
Freshman-year prosocial expectancies	.24	.02	.000
Freshman value measure	.05	.01	.000
Senior-year social problem understanding perceived change	.10	.01	.000
Major: Political science	.12	.03	.000
Major: Social science	.03	.05	.571
Service type: Social service	.09	.02	.000
Service type: Community relief	.06	.03	.076
Service duration	.03	.01	.000
Senior-Year Social Problem Understanding (Perceived Change)			
Intercept	3.48	.05	.000
Freshman value measure	.05	.01	.000
Major: Political science	.48	.10	.000
Major: Social science	.42	.09	.000
Diversity coursework	.26	.04	.000
Service-learning and volunteerism	.20	.06	.000

- Table Continues -

Table 13 (*continued*)

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	b	SE	p
Service type: Social service	.19	.03	.000
Service type: Community relief	.14	.05	.005
Service duration	.04	.01	.000
R-SQUARE			
Senior-Year Value Measure	.36		
Senior-Year Empathy	.16		
Senior-Year Existential Engagement	.17		
Senior-Year Prosocial Outcome Expectancies	.13		
Senior-Year Social Problem Understanding Perceived Change	.07		
RMSEA	.039		
CFI	.881		
SRMR	.019		

Note. Estimates are unstandardized.

Table 14

Regression Path Analysis: Final Model of Direct and Indirect Associations (n=5,616)

	b	SE	β	p
Senior-Year Value Measure				
Intercept	.07	.45		.874
Religiosity	.08	.02	.07	.000
Private high school	-.10	.02	-.08	.000
Academic achievement	.08	.01	.06	.000
Freshman value measure	.36	.01	.36	.000
Senior-year empathy	.08	.02	.05	.000
Senior-year prosocial expectancies	.12	.02	.10	.000
Senior-year existential engagement	.14	.01	.10	.000
Senior-year social problem understanding perceived change	.06	.01	.06	.000
Major: Applied health	.50	.06	.43	.000
Major: Arts	.31	.06	.27	.000
Major: Biology	.46	.05	.39	.000
Major: Education	.52	.06	.45	.000
Major: Engineering	.35	.06	.30	.000
Major: Humanities	.38	.04	.33	.000
Major: Political science	.20	.04	.17	.000
Major: Psychology	.36	.05	.31	.000
Major: Science/math	.38	.04	.33	.000
Major: Social sciences	.47	.06	.41	.000
Major: Applied tech/other	.31	.07	.27	.000
Diversity workshop	.07	.03	.06	.005

- Table Continues -

Table 14 (*continued*)

	b	SE	β	p
Frequent cross-racial interaction	.09	.02	.07	.000
Service type: Social service	.11	.02	.10	.000
Service type: Community relief	.09	.03	.08	.000
Service duration	.04	.01	.08	.000
Prosocial ethos	.57	.09	.15	.000
Senior-Year Empathy				
Intercept	2.58	.05		.000
Freshman empathy	.34	.01	.35	.000
Major: Psychology	.09	.03	.12	.002
Diversity workshop	.08	.02	.12	.000
Frequent cross-racial interaction	.06	.02	.08	.003
Diversity coursework	.05	.01	.06	.001
Service type: Social service	.06	.01	.08	.000
Service duration	.01	.00	.04	.001
Senior-Year Existential Engagement				
Intercept	.25	.25		.303
Freshman existential engagement	.33	.02	.33	.000
Freshman value measure	.03	.01	.04	.002
Freshman empathy	.06	.01	.05	.000
Senior-year social problem understanding perceived change	.14	.01	.17	.000
Major: Arts	.30	.07	.31	.000
Major: Biology	.16	.04	.16	.000
Major: Humanities	.24	.03	.24	.000

- Table Continues -

Table 14 (*continued*)

	b	SE	β	p
Major: Psychology	.11	.04	.12	.005
Service type: Social service	.08	.03	.08	.005
Service type: Community relief	.10	.02	.10	.000
Prosocial ethos	.15	.05	.05	.003
Senior-Year Prosocial Outcome Expectancies				
Intercept	1.73	.07		.000
Freshman-year prosocial expectancies	.24	.02	.24	.000
Freshman value measure	.05	.01	.07	.000
Senior-year social problem understanding perceived change	.10	.01	.15	.000
Major: Political science	.12	.04	.14	.001
Service type: Social service	.10	.02	.11	.000
Service duration	.03	.01	.07	.000
Senior-Year Social Problem Understanding Perceived Change				
Intercept	2.58	.10		.000
Senior empathy	.25	.02	.15	.000
Freshman value measure	.04	.02	.03	.015
Major: Arts	-.30	.11	-.25	.009
Major: Engineering	-.43	.06	-.35	.000
Major: Sciences	-.34	.06	-.28	.000
Major: Social Science	.37	.09	.30	.000
Major: Political Science	.44	.10	.36	.000
Diversity coursework	.22	.04	.18	.000

- Table Continues -

Table 14 (*continued*)

	b	SE	B	p
Service-learning and volunteerism	.18	.05	.15	.000
Service type: Social service	.15	.03	.12	.000
Service type: Community relief	.14	.04	.11	.002
Service duration	.05	.01	.05	.005
R-SQUARE				
Senior-Year Value Measure	.37			
Senior-Year Empathy	.16			
Senior-Year Existential Engagement	.20			
Senior-Year Prosocial Outcome Expectancies	.13			
Senior-Year Social Problem Understanding Perceived Change	.10			
RMSEA	.026			
CFI	.952			
SRMR	.012			

Figure 2.

Path Model Results: Educative Conditions via Senior-Year Empathy.
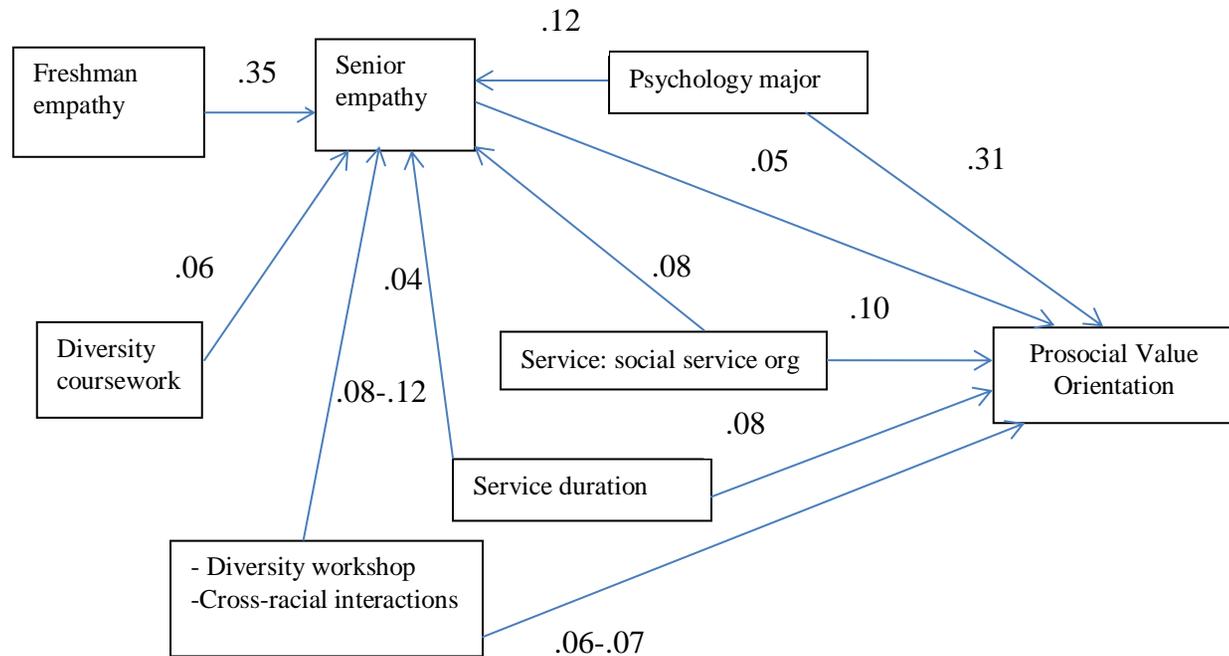
Note. All beta coefficients are significant at *p*<.05.

Figure 3.

Path Model Results: Educative Conditions via Senior-Year Existential Engagement.
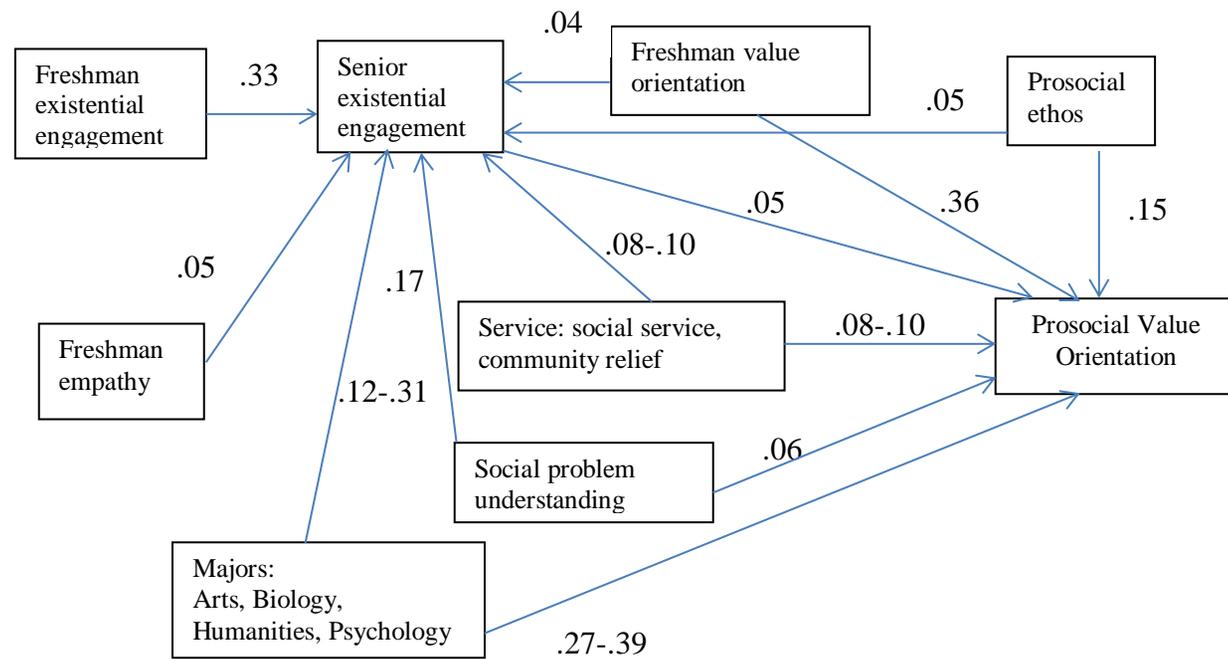
Note. All beta coefficients are significant at *p*<.05.

Figure 4.

Path Model Results: Educative Conditions via Senior-Year Outcome Expectancies.

Note. All beta coefficients are significant at *p*<.05.

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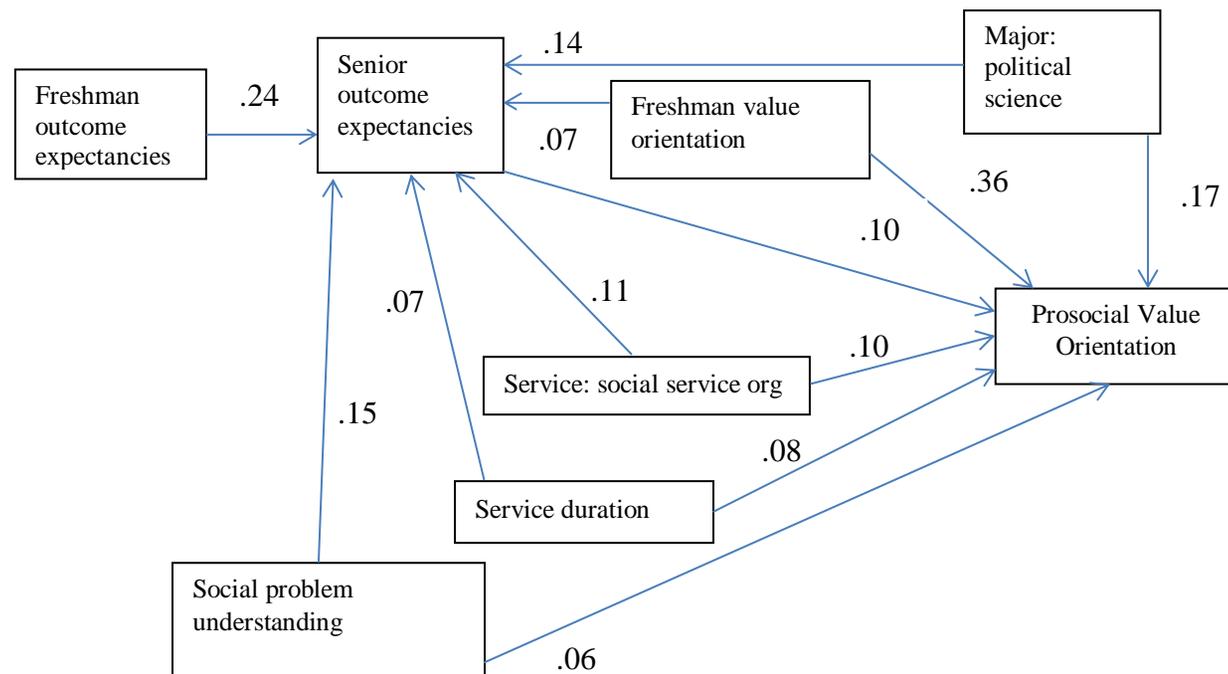
Figure 5.

Path Model Results: Educative Conditions via Perceived Change in Social Problem Understanding.
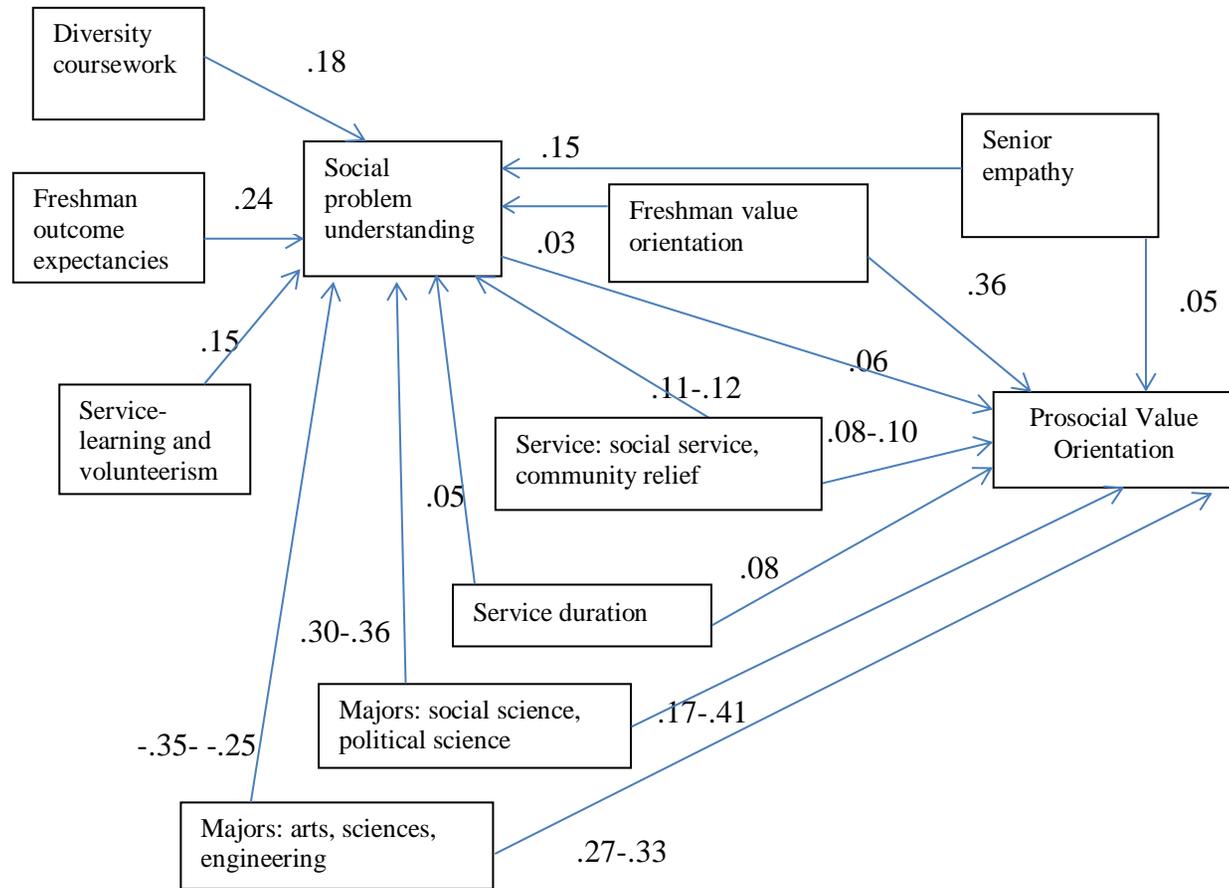
Note. All beta coefficients are significant at *p*<.05.

Table 15 indicates that all indirect associations were statistically significant, with the exception of the total indirect association between arts major and value orientation during the senior year. The results were consistent with most hypotheses, though the size of the associations is quite small.[15] Freshman-year value orientation was hypothesized to be indirectly associated with the senior-year value orientation via psychological assets. In addition, prosocial outcome expectancies during the senior year were thought to mediate the relationship between social problem understanding and senior-year value orientation. Tables 14 and 15 provide partial support for these hypotheses. Freshman-year value orientation predicted senior-year existential engagement, prosocial outcome expectancies, and social problem understanding (but not senior-year empathy), which were in turn positively associated with prosocial value prioritization during the senior year (total indirect effect= .01, p <.001). Perceived change in social problem understanding was positively associated with prosocial outcome expectancies (β= .10) and existential engagement (β= .14), both of which predicted scores on the prosocial value measure (total indirect effect= .03, p <.001).

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[15] Kenny (2013) has suggested that indirect effect sizes be classified accordingly: small (.01), medium (.09), and large (.25).

Table 15

Specific and Total Indirect Association Estimates Derived from Final Path Model:

Psychological Assets and Educative Conditions Predicting Senior-Year Value

Orientation

	Indirect β	SE	p
Effects from Freshman Value Orientation			
Freshman value orientation via senior existential engagement	.004	.00	.003
Freshman value orientation via senior outcome expectancies	.007	.00	.000
Freshman value orientation via social problem understanding	.002	.00	.020
Sum of indirect	.013	.00	.000
Effects from Freshman Empathy			
Freshman empathy via senior empathy	.016	.00	.000
Freshman empathy via senior existential engagement	.005	.00	.000
Sum of indirect	.021	.00	.000
Effects from Freshman Existential Engagement			
Freshman existential engagement via senior existential engagement	.035	.01	.000
Effects from Freshman Outcome Expectancies			
Freshman outcome expectancies via senior outcome expectancies	.025	.00	.000
Effects from Change in Social Problem Understanding			
Social problem understanding via existential engagement	.018	.00	.000
Social problem understanding via outcome expectancies	.015	.00	.000
Sum of indirect	.033	.00	.000
Effects from Senior Empathy			
Senior empathy via change in social problem understanding	.009	.00	.000

- Table Continues -

Table 15 (*continued*)

	Indirect β	SE	p
Effects from Arts Major			
Arts major via senior existential engagement	.032	.01	.000
Arts major via change in social problem understanding	-.015	.01	.034
Sum of indirect	.017	.01	.117
Effects from Biology Major			
Biology major via senior existential engagement	.017	.01	.001
Effects from Engineering Major			
Engineering major via change in social problem understanding	-.022	.01	.001
Effects from Humanities Major			
Humanities major via senior existential engagement	.025	.00	.000
Effects from Political Science Major			
Political science major via outcome expectancies	.014	.00	.001
Political science major via change in social problem understanding	.021	.01	.001
Sum of indirect	.036	.01	.000
Effects from Psychology Major			
Psychology major via senior empathy	.006	.00	.024
Psychology major via senior existential engagement	.012	.00	.003
Sum of indirect	.018	.01	.000
Effects from Science/math Major			
Science/math major via senior existential engagement	-.016	.01	.002
Effects from Social Sciences Major			
Social sciences major via change in social problem understanding	.019	.01	.001

- Table Continues -

Table 15 (*continued*)

	Indirect β	SE	p
Effects from Diversity Workshop			
Diversity workshop via senior empathy	.005	.00	.002
Effects from Cross-racial Interactions			
Cross-racial interactions via senior empathy	.004	.00	.029
Effects from Diversity Coursework			
Diversity coursework via senior empathy	.003	.00	.009
Diversity coursework via change in social problem understanding	.011	.00	.000
Sum of indirect	.014	.00	.000
Effects from Community Relief Volunteerism			
Community relief volunteerism via senior existential engagement	.012	.00	.001
Community relief volunteerism via change in social problem understanding	.007	.00	.022
Sum of indirect	.017	.00	.000
Effects from Social Services Volunteerism			
Social services service via senior empathy	.004	.00	.002
Social services volunteerism via senior existential engagement	.008	.00	.024
Social services volunteerism via senior outcome expectancies	.011	.00	.000
Social services volunteerism via change in social problem understanding	.008	.00	.000
Sum of indirect	.031	.01	.000
Effects from Service Duration			
Service duration via senior empathy	.002	.00	.007
Service duration via senior prosocial outcome expectancies	.008	.00	.000

- Table Continues -

Table 15 (*continued*)

	Indirect β	SE	p
Service duration via change in social problem understanding	.003	.00	.009
Sum of indirect	.012	.00	.000
Effects from Service-learning and Volunteerism			
Service-learning and volunteerism via change in social problem understanding	.009	.00	.007
Effects from Prosocial Ethos			
Prosocial ethos via senior existential engagement	.005	.00	.013

Majoring in various fields relative to majoring in business or economics directly predicted greater prosocial value prioritization during the senior year. Academic majors were also differentially associated with senior-year psychological asset scores, though reference categories were more heterogeneous. The reference categories included: (a) senior-year empathy: all majors other than psychology; (b) senior-year existential engagement: applied health, education, engineering, political science, science/math, social sciences, applied tech/other, and business/economics; (c) senior-year prosocial outcome expectancies: all majors other than political science; and (d) perceived change in social problem understanding: applied health, biology, education, humanities, psychology, applied tech/other, and business/economics. A sensitivity analysis indicated that using a less parsimonious model that maintained the business/economics major as the sole reference category did not substantively alter estimates of hypothesized indirect associations.

Majoring in the humanities was postulated to be indirectly associated with the prioritization of prosocial values through existential engagement, and majoring in the social sciences through outcome expectancies and social problem understanding. The results partly supported these hypotheses. Majoring in the humanities predicted senior-year existential engagement, which in turn predicted senior-year value orientation (total indirect effect= .03, p <.001). Majoring in political science predicted both outcome expectancies and change in social problem understanding, which were positively associated with the prosocial value measure (total indirect effect= .04, p <.001). However, majoring in other social sciences only predicted perceived change in social problem understanding, which in turn predicted senior-year value orientation (total indirect effect= .02, p <.01).

Diversity experiences were hypothesized to be indirectly associated with senior-year value orientation via empathy; diversity coursework was also thought to increase social problem understanding. Indeed, participation in a diversity workshop was positively associated with the prosocial value measure via empathy (total indirect effect= .01, p<.01). Cross-racial interactions also predicted empathy, though the indirect effect estimate was less than .01. The completion of diversity coursework predicted both empathy and social problem understanding, which were associated with higher prosocial value scores (total indirect effect = .01, p<.001).

Service through a humanitarian organization and service duration were hypothesized to be partly indirectly associated with senior-year value orientation via each psychological asset. The results indicated that service through a community relief

organization was positively associated with existential engagement and perceived change in social problem understanding, which predicted senior-year value orientation (total indirect effect = .02). However, only service through a social services organization was positively associated with all psychological assets (total indirect effect= .03). Service duration was positively associated with each psychological asset with the exception of senior-year existential engagement (total indirect effect= .01).

The variable reflecting the combination of service-learning and volunteerism was only indirectly associated with value orientation via social problem understanding. Participation in a combination of service-learning and volunteerism was associated with a .15 standard deviation increase in perceived change of social problem understanding, which predicted higher scores on the prosocial value measure (total indirect effect= .01, p <.01).

Finally, an exploratory analysis indicated that a prosocial ethos is a significant predictor of existential engagement. A path was added to model an indirect association between ethos and value orientation via existential engagement. A chi-square difference test was conducted with the ethos variable constrained at zero, which indicated that model fit was improved with its inclusion (that is, model fit was worse without ethos as a predictor of existential engagement), $\chi^2(1) = 13.89$, p <.001. A one standard deviation increase in the prosocial ethos measure was associated with a .05 standard deviation increase in senior-year existential engagement. Table 15 indicates that a prosocial ethos was indirectly associated with value orientation via existential engagement (indirect effect estimate = .01, p<.01).

Chapter 5

Discussion

Past research has identified multiple intrapersonal and contextual sources of

prosocial development (Astin, 1993; Eisenberg et al., 2006; Pascarella & Terenzini,

2005). The purpose of this study was to evaluate the plausibility of various psychological

assets and undergraduate experiences as predictors of the prioritization of prosocial over

egoistic values during the senior year of college. Accordingly, longitudinal survey data

were examined from a sample of over 5,500 undergraduate students at 65 four-year

colleges across the United States. The first analysis focused on the relationship between

senior-year value orientation and freshman-to-senior gains in empathy, existential

engagement, prosocial outcome expectancies, and social problem understanding. In the

second set of analyses, a comprehensive model was developed of direct and indirect

associations between senior-year value orientation and four types of educative conditions:

academic major, diversity, community service, and a prosocial ethos. Overall, the

findings support the view that growth in psychological assets and certain undergraduate

experiences increase the propensity to adopt a prosocial value orientation.

Psychological Assets and Value Orientation

The first analysis demonstrated that gains in psychological assets predicted

prosocial value prioritization while controlling for initial value orientation and

background characteristics. Gains on proxy measures of empathy, existential

engagement, and prosocial outcome expectancies, as well as perceived gains in social

problem understanding between the freshman and senior years, predicted higher scores

on the prosocial value measure. These findings complement past research on college students and young adults demonstrating that prosocial values may influence the disposition for empathy (Silfver et al., 2008), prosocial expectancies (Feather, Woodyatt, & McKee, 2012), and social problem awareness (Schwartz, Sagiv, & Boehnke, 2000). Rather than conceptualizing this relationship as unidirectional, this study suggests that reciprocal influences are possible. A prosocial value orientation may indeed guide the self-regulated development of psychological assets, but the development of certain dispositions and beliefs may also influence the relative importance assigned to prosocial values. For instance, insofar as dispositional empathy increases awareness of those who are suffering (Davis, 1983; Eisenberg, 2000), prosocial ideals may be more readily imbued with a potent motivational basis in the experience of sympathy, guilt, or moral outrage. Alternatively, the relationship between empathy and the prioritization of values may be indirect via the development of moral reasoning (see Carlo et al., 2013). That is, individuals with higher levels of moral reasoning may be more likely to develop principled support for prosocial values in response to value challenges.

Existential engagement, as measured by the perceived importance of "developing a meaningful philosophy of life," also predicted prosocial value prioritization. Prosocial behavior and commitments to social causes arguably constitute an important source of personal well-being and meaning in life (Damon, Menon, & Cotton-Bronk, 2003). And thus, college students who seek to reflectively develop and enact a personal system of values may become more susceptible to increasing the importance of prosocial ideals and decreasing the significance of less intrinsically-rewarding pursuits related to wealth,

status, and power. Alternatively, existential engagement may operate by increasing the

accessibility of values and sensitivity to value dilemmas. In this vein, Schnell (2010)

found that the existentially indifferent exhibited low levels of self-knowledge, which is

arguably necessary for monitoring and evaluating the personal importance of values.

Further research is needed to identify factors that influence the propensity to choose

prosocial values as a fundamental source of meaning in addition to (or in lieu of) other

potential sources, such as religion (Emmons, 2003).

Prosocial expectancies, measured by the belief that people can "bring about

changes in our society," constituted a third correlate of prosocial value development.

Specifically, a greater sense that one can effect change in society was associated with

greater prosocial value prioritization. This finding is consistent with Schwartz and

Bardi's (1997) proposition that the perceived feasibility of realizing or expressing a

particular value partly determines its priority in the value hierarchy. College students may

ultimately downgrade the importance of such ideals as social justice, alleviating human

suffering, and protecting the environment if the only perceived means of action are

deemed futile. Indeed, the link between perceived self-possibilities and ideals of a life

worth living underscores the enabling and constraining influences of personal situations

and social contexts (Bardi & Goodwin, 2011), wherein a commitment to care and justice

may partly depend on one's financial resources, time, skills, supporting dispositions (e.g.,

self-discipline), and social capital (see Verba, Schlozman, & Brady, 1995). The

relationship between perceived possibilities and value commitments could be further

elaborated by examining both outcome expectancies and self-efficacy beliefs. Self-

efficacy beliefs are highly correlated with (and may partly affect) outcome expectancies, though they likely yield unique effects (Sheu et al., 2010).

Finally, perceived freshman-to-senior year changes in one's understanding of social problems was positively associated with prosocial value prioritization. An understanding of social problems likely furnishes a rational basis for prosocial ideals, which in turn might increase the importance assigned to prosocial values (Bernard, Maio, & Olson, 2003a) and provide individuals with a defense against attempts to subordinate prosocial to egoistic ideals (Bernard, Maio, & Olson, 2003b). Forming a virtuous circle, the cultivation of a prosocial value orientation could motivate college students to sustain their awareness of social problems (Schwartz, Sagiv, & Boehnke, 2000), and their understanding would underscore the social benefits rather than personal consequences of solving public problems (Sagiv, Sverdlik, & Schwarz, 2011). Furthermore, the path model results indicated that perceived change in social problem understanding was positively associated with prosocial outcome expectancies, which in turn predicted greater prosocial value prioritization. A critical component of social problem understanding may thus include an appreciation of levers for social change and effective means for alleviating human suffering. Indeed, future research might examine several types of beliefs that constitute an ideal understanding of social problems conducive to prosocial value development, including an accurate assessment of the role of social conditions in determining the plight of individuals and groups; the perception of one's own contribution to the maintenance, exacerbation, or amelioration of social problems; an acute awareness of the magnitude of problems; and some sense of the possible

solutions that can be promoted (e.g., Hanvey, 1976; UNESCO, 1995; Adams & Carfagna, 2006; National Leadership Council, 2007).[16]

While the associations between psychological assets and senior-year value orientation in this study were statistically significant, the magnitude of the beta coefficients ranged from .08 to .14. These effect sizes have been generally characterized as small but meaningful in the context of educational and psychological research (Vernez & Zimmer, 2007). Notably, this study may have underestimated associations between psychological assets and value orientation due to an exceedingly long time lag between survey administrations (i.e., four years), the exclusion of key interaction terms, and the use of an imprecise instrument (i.e., single-item proxies). Alternatively, small effect sizes may be perfectly consistent with a conception of psychological assets as neither sufficient nor necessary conditions for prosocial value development. Rather, the cultivation of psychological assets may only increase the propensity for adopting a prosocial value orientation, the realization of which is likely contingent on a myriad of factors that were not studied here (e.g., critical conversations with peers and faculty about value dilemmas).

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[16] These suggestions can be briefly elaborated. A conception of individuals embedded in social dynamics and the implication of the self in the causal chain of social problems (through inadvertent action or inaction) allows one to move beyond the tendency to blame the victim and opens the possibility of accepting personal responsibility. An evaluation of the magnitude or gravity of social problems as well as the identification of viable solutions further cultivates and affectively infuses the moral necessity of remedial action. The magnitude of social problems can be assessed through a moral perspective that takes into account rights, consequences, or human flourishing. Such perspectives pose the respective questions, "To what extent are human rights being violated? How much suffering exists and how many people (or other sentient beings) are affected? To what extent are conditions too impoverished for individuals to realize their potential?"

Academic Major

The analysis of academic major indicated that majoring in any field relative to business or economics predicted higher scores on the prosocial value measure. In particular, majoring in the humanities, psychology, social sciences, biology, and caring-oriented fields such as education and applied health yielded rather large positive associations with prosocial value prioritization. Majoring in such fields was associated with a .32 to .45 standard deviation increase in the prosocial value measure during the senior year. This pattern is similar to that revealed in past research demonstrating a positive relationship between such majors and the perceived importance of contributing to society (Mitchell et al., 2008). Moreover, similar results were observed when the point of reference was majoring in engineering, which predicted higher prosocial value scores relative to business majors but did not differ from majoring in the arts, political science, science/math, or applied technology. Although self-selection effects cannot be completely ruled out, the fact that freshman-year value orientation was controlled in the regression models provides some support for the view that various types of disciplinary study may differentially shape students' values through knowledge and skills conveyed via coursework as well as the influence of peers (Chatard & Selimbegovic, 2007). Notably, opportunities for prosocial value development appear to be most lacking in the fields of business and economics, wherein the accumulation of wealth is idealized and ontological assumptions about human nature and social systems cast doubt on the authenticity and rationality of altruistic behavior (Heyne, 2008).[17]

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[17] This is not to suggest that students should no longer major in business. Rather, the challenge is to integrate prosocial ideals within the business curriculum and departmental ethos.

Although the nature and particular mix of informational and normative influence remained unexamined in this study (e.g., course information, peer socialization, perceived disciplinary norms), it is conceivable that different majors promote prosocial value development in distinct ways. For example, students are likely exposed to the explicit endorsement of prosocial ideals in the fields of education and applied health (e.g., nursing, social work), wherein the coursework, practica, and ideals of vocational effectiveness typically emphasize the disposition and capacity for care. The strong association between majoring in biology and prosocial value prioritization may partly stem from an appreciation of interdependence and the challenges of environmental sustainability as well as the more general study of life (Wilson, 2003). Alternatively, pre-med majors in biology may infuse a care ethic in the peer socialization process.

Several academic majors were also indirectly associated with value development via psychological assets. First, majoring in the humanities predicted higher existential engagement scores, which in turn predicted higher prosocial value scores. To be sure, moral and ethical values are frequently brought to the fore in such fields as literature and philosophy, which may increase the likelihood that students reflectively evaluate their own value priorities in the context of concrete literary examples and rational argumentation. Second, majoring in political science or other social sciences was positively associated with perceived change in social problem understanding, which predicted higher scores on the prosocial value measure. This suggests that the increased knowledge of social problems conveyed through the social sciences is not inert but may be used to buttress prosocial ideals. But only majoring in political science (not other

social sciences) was indirectly associated with senior-year value orientation via outcome expectancies. This may be attributed to either differences in socialization among highly politically-engaged students or information about civic agency (e.g., activism, social movements, influential political figures). Finally, majoring in psychology was indirectly associated with the prosocial value measure via empathy, a disposition that students likely refine in preparation for prosocial professions (Harton & Lyons, 2003).

Finally, the prosocial learning opportunities in a second set of majors- engineering, arts, political science, science/math, and applied technology – may be less restricted than in business and economics but not relative to the humanities, psychology, social sciences, biology, and caring-oriented fields. This second set of majors may differ from business and economics in the positive sense that the profit motive is not normalized as a guiding principle for action. But other factors may limit prosocial learning opportunities, such as providing insufficient time in an overcrowded engineering curriculum (Vez, 2012), subordinating the ideal of civic engagement to the capacity for theoretical abstraction in political science (Schneider, 2005), perpetuating the ideal of value neutrality in the sciences, and relegating values to a matter of taste in the arts (Reuben, 1996). Here again, the underlying mechanisms remain a matter for speculation and future research. The relationship between political science and value orientation, for example, may be due less to formal instructional patterns and more to the socialization of pre-law students, wherein ideals of status, power, and social dominance are affirmed (see Sidanius et al., 1991).

Social and Cultural Diversity

The analysis of diversity experiences indicated that participation in diversity workshops, diversity coursework, and cross-racial interactions directly or indirectly predicted higher scores on the prosocial value measure during the senior year. This is consistent with past research that has linked exposure to diversity with civic attitudes and values (e.g., Zuniga, Williams, & Berger, 2005). Moreover, the path model results demonstrated that exposure to each form of diversity predicted higher prosocial value scores indirectly via empathy. Cross-racial interactions in particular are crucial for the reduction of prejudice through increased perspective-taking and the development of intercultural friendships (Pettigrew & Tropp, 2008). Participation in diversity workshops may also initiate a process of prejudice reduction through structured activities designed to promote perspective-taking and knowledge of other groups (see McCauley, Wright, & Harris, 2000). In contrast, diversity coursework was most strongly associated with the prosocial value measure via perceived change in social problem understanding, which likely stems from its emphasis on problems of social inequality and justice (Engberg, 2004). Taken together, the results support the contention that pedagogical approaches with both cognitive and interactive/affective components tend to be most effective in enhancing prosocial value development (see Denson, 2009).

Community Service

The analysis of community service demonstrated that variations in the service experience may influence prosocial value outcomes. In line with past research (Conway, Amel, & Gerwien, 2009; Pascarella & Terenzini, 2005), engaging only in volunteerism

predicted higher prosocial value scores, relative to not participating in any kind of community service during college. However, an examination of students who only engaged in service-learning (not volunteerism) yielded ambiguous results. On the one hand, participating only in service-learning did not reliably predict gains in prosocial value development relative to not engaging in any service. On the other, while controlling for service duration, the predictive significance of participating only in service-learning did not reliably differ from engaging only in volunteerism. While the latter finding follows past research demonstrating comparable citizenship outcomes among participants in service-learning and volunteerism (Conway, Amel, & Gerwien, 2009), the failure to detect reliable differences between the service-learning and non-service conditions may be due to variability in the quality of service-learning programs.

The potential significance of quality was evident in contrasts involving students who engaged in a combination of service-learning and volunteerism, which predicted greater gains in the prosocial value measure than did volunteerism alone or service-learning alone. Although neither program quality nor sequence of service experiences was directly measured, the combination condition may reflect exposure to a high-quality service-learning experience - including social support and meaningful activities - that induced students into subsequent volunteerism (Taylor & Pancer, 2007). It can be further speculated that a high-quality service-learning experience may improve outcomes not only for the associated course but also for subsequent volunteerism. For example, service-learning may foster the ability and disposition to critically integrate subsequent service experiences within a social policy framework. However, since students did not

report the chronological order of their volunteer and service-learning experiences, it is possible that prior volunteerism predisposed students to a positive service-learning experience.

The combination of service-learning and volunteerism, however, was not directly associated with value orientation in the path model. Rather, the relationship between the combination condition and prosocial value prioritization was fully mediated through perceived change in social problem understanding. Past research has also demonstrated a link between service-learning and similar cognitive outcomes (Yorio & Ye, 2012), though this study clarifies that such gains may influence the propensity to reflect upon and affirm prosocial ideals. Moreover, whereas service per se was a critical direct predictor of value orientation, the unique contribution of curricular integration resides with enhanced understanding of social problems.

As expected, the relationship between service and prosocial value development varied by type of service. Service through organizations that frequently pursue ideals of power, leisure, or security- political, sports/recreation, and public safety- was not uniquely associated with prosocial value development. Conversely, service through most humanitarian organizations that espouse prosocial ideals- education, healthcare, social services, and community relief- was positively associated with scores on the prosocial value measure. Accordingly, although service through both types of organizations involves prosocial behavior, only humanitarian organizations appear to provide conditions conducive to prosocial value development, including information flows relevant to social problems, activities that involve helping people in need, social

interactions with the less fortunate, and norms that reinforce prosocial ideals (Horn, 2012).

      The relationship between service through a humanitarian organization and value orientation, however, was not as uniform as anticipated. First, dissimilar to previous research (Horn, 2012), service through an environmental organization was not uniquely associated with prosocial value development. Future inquiries might examine potential factors that moderate the effect of serving though environmental organizations, such as the perceived balance between biospheric and altruistic values (see Stern et al., 1999). Second, service through educational organizations and service through healthcare organizations were shown to be less reliable predictors of prosocial value development after service duration was taken into account. The postulated effect of service through these two organizations during college may thus be partly attributed to the length rather than solely the nature of the service organization. Notably, past research has identified service through healthcare and educational organizations during secondary school as only marginally associated with prosocial value development (Horn, 2012).

      In a more positive departure from past research, this study established that the relationship between service through humanitarian organizations and value orientation may be partly mediated through the development of certain psychological assets. In particular, service through a social services organization (e.g., homeless shelter support, personal counseling/mentoring) predicted greater prosocial value prioritization during the senior year both directly and indirectly via gains in dispositional empathy, existential engagement, prosocial outcome expectancies, and perceived change in social problem

understanding. This is not to suggest that service through humanitarian organizations yields superior outcomes in all dimensions of student development. Astin and Sax (1998), for instance, demonstrated that service through public safety organizations was strongly associated with such outcomes as perceived leadership ability and conflict resolution skills. Future research might consider questions of "civic articulation" between secondary schools and college, such as the relative impact of continuity of service through humanitarian organizations during both secondary school and college (e.g., whether prior service accentuates the impact of subsequent service).

While controlling for organizational context, service duration was positively associated with prosocial value prioritization, which is consistent with past research (Astin & Sax, 1998). The significance of service duration arguably stems from its promotion of a prosocial identity (Piliavin & Callero, 1991), wherein the ideals of care and justice are integrated within one's sense of self (Colby & Damon, 1992). This study further demonstrated that the temporal extension of service is crucial for the development of psychological assets. Specifically, the path model results showed that duration predicted empathy, prosocial outcome expectancies, and social problem understanding, which in turn predicted higher scores on the prosocial value measure.

Although duration was positively associated with prosocial value development, the analysis of duration categories indicated that there is a minimum threshold and a point of diminishing returns. Service of at least one month but not less predicted higher scores on the prosocial value measure relative to no service. And participation in service that lasted 7-12 months did not differ from service lasting more than 12 months in terms of

prosocial value prioritization. This latter finding is remarkably similar to Conway, Amel, and Gerwien's (2009) estimate that service participation lasting more than 7.5 months ceases to yield larger effects than briefer terms. Less clear is how these parameters are contingent on service frequency (e.g., weekly, daily).

Prosocial Ethos

A student's peer group constitutes a critical influence on student development during college (Astin, 1993). Indeed, exposure to a prosocial ethos was positively associated with scores on the prosocial value measure. That is, the greater a student's peers valued prosocial ideals during the freshman year, the higher students scored on the prosocial value measure during the senior year. Although this finding does not demonstrate causality, it is at least consistent with the notion that the development of moral values is subjected to perceived norms and social influence (Berkowitz, 2002), the effect of which depends on the content of values within a community (Battistich et al., 1997). These results thus complement past research demonstrating that peer group values predict students' commitment to social activism (Sax, 2000), though the present study confirms that this association remains moderately strong after controlling for other sources of prosocial development. Moreover, an exploratory path analysis indicated that the relationship between a prosocial ethos and value orientation was partly mediated by existential engagement. Given the positive relationship between a sense of meaning and prosocial behavior (Morgan & Farsides, 2009), students within a prosocial ethos may be more likely to encounter peers who discuss and reflect on what makes life worth living.

A major limitation of this analysis was its focus on only one dimension of an institutional ethos vis-à-vis the character of the student body. The predominant value orientation of faculty, student affairs personnel, and other administrators arguably influences the degree to which prosocial ideals guide the design of the curriculum and co-curriculum; shape faculty research agendas; and influence institutional stories, symbols, and events (Colby et al., 2003). Future research might also examine the relative significance of different forms of social influence that underlie Astin and Panos's (1969) process of "progressive conformity" (e.g., modeling, reasoning).

Overall, although the analysis of educative conditions revealed statistically significant associations, many effect sizes were quite small. In the final model of direct effects, beta coefficients ranged from .22 to .45 for academic majors; .10 to .11 for diversity experiences; .07 to .12 for community service; and .14 for prosocial ethos. According to the model of indirect effects, the total effect sizes for educative conditions may increase by an additional .02 to .04 for several majors; .01 for diversity experiences; .01 - .03 for community service; and .01 for prosocial ethos. The total effect sizes, then, were small to medium for most educative conditions, though the effect sizes corresponding to academic major qualified as large (Vernez & Zimmer, 2007). Here again, the use of broad and imprecise measures may have resulted in the underestimation of effect sizes. For instance, there is arguably considerable variation in the behaviors and contexts subsumed within the categories of cross-racial interactions, service-learning, and service through a social services organization. Future research should employ more

refined indicators that assess such matters as programmatic quality, the timing of exposure, and the salience of value dilemmas.

Implications

The findings suggest that colleges and universities can enhance opportunities for the prosocial development of undergraduate students through the social context, curriculum, and co-curriculum. In general, strategic endeavors should focus on both prosocial values and the supporting constructs of empathy, existential engagement, prosocial outcome expectancies, and social problem understanding. First, this study suggests that prosocial learning opportunities need to be increased in several fields of study, assuming an ideal scenario of minimal differences across academic majors. Faculty should consider whether their discipline, department, and curriculum can more explicitly endorse the prioritization of prosocial ideals, promote a reasoned examination of ethical dilemmas, and connect specialized knowledge with social problems and solutions (Colby et al., 2003). The fields of business and economics are clearly most in need of an urgent infusion of prosocial ideals, particularly given the large percentage of students who pursue these majors. Specifically, 19 percent of students in this sample majored in business and 3 percent of students majored in economics. Yunus's (2007) conception of social entrepreneurship could potentially inform the alignment of business with prosocial ideals.

Second, this study affirmed the importance of exposure to a diverse learning context, including cross-racial interactions, diversity workshops, and diversity coursework. All forms of diversity were at least indirectly associated with the

development of dispositional empathy, which supports arguments in favor of social integration programs and admissions policies that ensure sufficient structural diversity on campus (Gurin et al., 2002). In fact, low structural diversity or the absence of social integration programs may partly explain the fact that less than half (48 percent) of students in this study reported frequent interactions with peers from diverse racial/ethnic backgrounds during their senior year. Diversity coursework (with a presumed emphasis on social justice) was mainly predictive of improvements in the understanding of social problems and should thus be a core element of a general civic education. Here again, less than half of students had completed such coursework by the senior year (46 percent).

Third, the findings suggest that curricular and co-curricular programs should include service-learning and volunteer opportunities, though there are several caveats. Although service-learning relative to no service was by no means detrimental, a positive effect was detected only among students who engaged in both service-learning and volunteerism. Service-learning courses should thus meet quality standards that facilitate the induction of students into future volunteerism, particularly social support and positive experiences (Taylor & Pancer, 2007). For the purposes of prosocial value development, students should be provided with multiple options to serve through humanitarian organizations defined by prosocial ideals (including social services and community relief organizations). Service through other types of organizations (public safety, political, recreational) neither promotes nor diminishes prosocial value development. Service experiences should be structured over the course of at least one month, and ideally over the course of a semester. Unfortunately, no more than 55 percent of students were

exposed to ideal service conditions in this study: service-learning and volunteerism (19 percent), service through a social services organization (46 percent), and service lasting at least one semester (55 percent).

Fourth, this study affirms the value of cultivating a campus community that expects and recognizes the pursuit of prosocial ideals. Although the complete institutionalization of prosocial ideals may pose a daunting challenge on some campuses, more modest steps could be taken by creating supportive micro-cultures through living-learning communities. This approach is exemplified in such living-learning programs as the Dorothy Day Social Justice Community at Marquette University; the Global Social Justice Community at Cedar Crest College; and the Race and Social Justice Community at Portland State University. The program at Portland State, for instance, promotes a "constant deep reflection on one's role and social responsibility in promoting social justice" (Portland State University, 2013). Admissions policies might also be used to encourage prosocial as well as academic preparation, thereby promoting a prosocial ethos. Prosocial admissions requirements might include an essay that encourages students to reflect on how they have cultivated their capacity for empathy, existential engagement, prosocial expectancies, and understanding of social problems as well as their rationale for supporting the ideals of care and justice as guiding principles.

More generally, the findings of this study should be used in conjunction with other strategies for promoting civic and moral development (e.g., Astin et al., 2000; Horn, Hendel, & Fry, 2011; Horn & Fry, 2012). For instance, Horn, Hendel, and Fry's (2011) study of internationalization strategies indicated that colleges and universities can

promote international civic engagement through study abroad and extensive internationalization on campus, such as having a high percentage of international students on campus and international general education requirements. Further, Horn and Fry's (2012) analysis of study abroad program characteristics suggested that the propensity for international civic engagement can be increased by encouraging students to study abroad in a developing country, participate in international service-learning, and choose longer- rather than shorter-term programs. To be sure, a central challenge for administrators and faculty involves the design of a developmental sequence of domestic and international experiences that optimize civic and prosocial development for local and global engagement.

Limitations

Several limitations of this study could be addressed in future research. First, the survey design did not employ true random sampling, and thus caution should be exercised in generalizing the results beyond the sample. For example, estimates of associations might differ in a sample containing a larger proportion of public institutions. Second, while this study would not have been possible without access to the HERI datasets, the surveys were not designed to fully measure the value orientations and psychological assets of students.[18] Consequently, the use of single-item proxy measures could have distorted the results, such as underestimating the association between service-learning only and value orientation. Third, the exclusion of key control variables (e.g., service motives, moral reasoning) might have resulted in excessive self-selection bias. Moreover, the design of this study only permitted estimates of correlation; confidence in

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[18] This type of limitation is also encountered in other national datasets (see Porter, 2011).

causal inference would be better secured through an experimental design. Fourth, the probability of Type I error (i.e., erroneously rejecting a true null hypothesis) was inflated due to the large number of hypotheses tested in this study, and thus any particular finding may be in fact spurious. Fifth, a four-year time lag between the freshman and senior survey administrations could have resulted in an underestimation of the associations among psychological assets, educative conditions, and value orientation. Sixth, data limitations precluded the examination of several undergraduate experiences thought to be sources of civic and prosocial development during college, such as study abroad (Horn & Fry, 2012) and comprehensive internationalization (Horn, Hendel, & Fry, 2011; see Hudzik, 2011). Seventh, the datasets used in this study were obtained when less institutional attention was given to fostering civic outcomes. A replication with more recent data could determine whether the nature of the relationship between educative conditions and prosocial value development has changed over time. Finally, this study did not examine the underlying mechanisms through which value change might have occurred, such as priming or reflective evaluation.

This study's use of data from the 1990s in particular poses a question of how college students and educative conditions might have changed over the past two decades. Unfortunately, the challenge of cultivating a prosocial value orientation has only increased. Past cross-generational research of college students has demonstrated declines in dispositional empathy (Konrath et al., 2011) as well as increases in ascription to the just-world hypothesis (Malahy et al., 2009), and the perceived importance of wealth (Twenge, Campbell, & Freeman, 2012). In their analysis of the HERI Freshman Survey

data, Twenge, Campbell, and Freeman (2012) found that the percent of freshmen rating "being very well off financially" as "very important" or "essential" increased from 71 percent among Generation X students (born 1965 – 1984) to 74 percent among Generation Y students (born 1985 – 2004). Conversely, a comparable rating for "helping others in difficulty" increased only from 64 percent to 65 percent. Moreover, average scores on their multi-indicator index of "concern for other" decreased slightly across these generations (d= -.04).

While the value orientation of college freshmen appears to have become more egoistic over time, many colleges have improved their capacity to effect positive change in student development. Faculty support for promoting moral development in the curriculum has risen (Astin, Korn, & Dey, 1990; DeAngelo et al., 2008); strategic initiatives for cultivating civic outcomes have emerged (The National Task Force on Civic Learning and Democratic Engagement, 2012); and efforts to increase public engagement among faculty and students have grown (Boyer, 1996). Colby et al. (2003) identified 12 cases in which civic aims assumed a relatively high institutional priority: Alverno College, California State University- Monterey Bay; the College of St. Catherine; Duke University; Kapi'olani Community College; Messiah College; Portland State University; Spelman College; Turtle Mountain Community College; Tusculum College; the United States Air Force Academy; and the University of Notre Dame. Furthermore, the Carnegie Foundation introduced in 2006 an elective classification for community engagement, which is based on evidence that institutional activities promote civic outcomes. Over 250 institutions had been awarded the classification by 2010.

The nature and prevalence of educative conditions in this study have thus likely changed over the past two decades. Many have advocated for the integration of service-learning within the business curriculum (e.g., Godfrey, Illes, & Berry, 2005). The student body on many campuses has grown more diverse (NCES, 2012c), thereby presenting students with more opportunities for diverse interactions (Chang, 1999). The concerted efforts of the Campus Compact have coincided with an increase in the service participation rate among college students (Campus Compact, 2013) and possibly enhanced the quality of service-learning. The only negative change that has likely occurred on average regards exposure to a prosocial ethos, which simply follows from a more egoistic freshman student body. To be sure, the present study may serve as an interesting point of comparison for future research on the relationship between contemporary educative conditions and prosocial value development.

Conclusion

The revival of the civic mission of higher education is a central challenge confronting educators, scholars, and policymakers in the United States (National Task Force on Civic Learning and Democratic Engagement, 2012). A critical aim in this regard is the cultivation of civic dispositions for moral and ethical civic engagement, such as a prosocial value orientation. This study suggests that several facets of the undergraduate experience may be conducive to priming prosocial values, promoting reflection upon value priorities, and expanding students' understanding of the necessity, possibility, and desirability of being prosocial. Such experiences included various types of disciplinary study and socialization; formal and informal engagement with social and

cultural diversity; participation in community service through humanitarian organizations; positive service-learning experiences; and exposure to a prosocial ethos. Moreover, this study supports a conception of prosocial value development that locates values within a nomological network of reciprocally determined constructs (Goodwin, Polek, & Bardi, 2012), including empathy, existential engagement, prosocial expectancies, and social problem understanding. Students must thus be afforded opportunities to both reflectively endorse a prosocial value orientation and cultivate the psychological assets that inform their decisions. Whether colleges and university ultimately meet this challenge will influence not only which students are engaged with public problems, but whether the quality of their participation is marked by an ethic of care, tolerance, and justice that sustains a democratic society in spirit and not just in name.

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Appendix A

Response from Institutional Review Board Human Subjects Committee

IRB review necessary? 📁 Inbox x

Aaron Horn <horn0178@umn.edu>
to irb

Greetings,

I'm wondering whether I need to undergo the IRB approval process if I am using a publicly accessible database. Here is the dataset:

http://www.heri.ucla.edu/archives.php

Thanks,

Aaron

...

Christina Dobrovolny <dobrovca@umn.edu>
to me

Aaron,

You do not need IRB review when using a publicly accessible database. Thank you for your query.

Sincerely,

Christina Dobrovolny, CIP
Research Compliance Supervisor

Appendix B

Institutional Frequency Distribution of Prosocial Ethos Variable

Mean = 5.11
Std. Dev. = .397
N = 65