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Innovations in Research and Scholarship Feature

The Relationship Between Students' Interactions With Student Affairs Professionals and Cognitive Outcomes in the First Year of College

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This study explored the impact of students' interactions with student affairs professionals and growth on cognitive outcomes in the first year of college. Interactions with student affairs professionals were associated positively with growth on measures of need for cognition, attitude toward literacy, and academic motivation. A small, negative relationship was found between

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*interactions with student affairs professionals and students' critical thinking.
Implications for student affairs research and practice are discussed.*

The *Student Personnel Point of View* (SPPV; American Council on Education [ACE], 1937) implored educators to view college students as a whole: "his [sic] intellectual capacity and achievement, his emotional make up, his physical condition, his social relationships, his vocational aptitudes and skills, his moral and religious values, his economic resources, and his aesthetic appreciations" (p. 39) and to educate students in every facet of their lives. Over 70 years later, newer documents such as *The Student Learning Imperative* (American College Personnel Association [ACPA], 1996), *Powerful Partnerships* (American Association for Higher Education, ACPA, & National Association of Student Personnel Administrators [NASPA], 1998), *Learning Reconsidered* (Keeling, 2004), and *Learning Reconsidered 2* (Keeling, 2006) have recommitted the student affairs field to the student personnel philosophy by placing student learning at the center of student affairs work. Evans and Reason (2001) indicated that, although the language of "student learning" as an outcome of student affairs professionals' engagement with students may sound new, learning has been an unwavering core value of the student affairs field for the last 100 years.

Student success in the first year of college is intimately tied to the holistic learning objectives set forth in the SPPV (ACE, 1937). As noted in Upcraft, Gardner, Barefoot and colleagues (2005), first-year student success is marked by the development of intellectual and academic competence, specifically defined as critical thinking, problem solving, and reflective judgment, among other areas. In the last 20 years, student affairs professionals and their academic counterparts have made great gains in supporting student learning particularly in the first year of college through the initiation of learning-centered residential programs, targeted student support services, first-year seminars, and new approaches to orientation and academic advising, to name a few (Upcraft, Gardner et al., 2005).

Research on the college experience has found both in- and out-of-class engagement to be associated with student learning and development. In particular, scholars have noted positive relationships between several activities developed and supervised by student affairs professionals (e.g., living in an on-campus residence, volunteering in the community, participating in a leadership development program) and cognitive outcomes (see Astin, Sax, & Avalos, 1999; Kuh, 1995; Pascarella & Terenzini, 1991, 2005; Terenzini, Pascarella, & Blimling, 1996). Although research on first-year college students and their experiences has increased substantially in recent years (Upcraft, Gardner, et al., 2005), little empirical research has examined the direct relationship between first-year college students' interactions with student affairs professionals, who develop and supervise many of these activities, and student learning. The continued lack of research in this area makes Love's (1995) call for this research focus as prescient today as it was 15 years ago.

The field of student affairs has long recognized the need to use systematic inquiry to improve performance (Pascarella & Whitt, 1999), steward resources to achieve institutional mission

and goals (Reisser & Roper, 1999), and respond to calls for accountability (Blake, 2007; Hernandez, Hogan, Hathaway, & Lovell, 1999; Mann, 2008; Moore, Lovell, McCann, & Wyrick, 1998). Given the economic downturn and the concomitant reduction in university budgets, Upcraft and Schuh's (1996) acknowledgement that rigorous assessment of how student affairs divisions foster student learning is critical for the field's survival. Thus, the warrant for this study is threefold. First, this study is grounded in the field's historical commitment to educating students (e.g., ACE, 1937; ACPA, 1996; Keeling, 2004). Second, little empirical work has examined the direct relationship between first-year students' interactions with student affairs professionals and measures of student learning (Love, 1995). Third, the economic reality within higher education has placed systematic inquiry and its connection to institutional improvement and responsible stewardship of resources as necessary determinants for student affairs' viability (Bresciani, Moore Gardner, & Hickmott, 2009; Upcraft & Schuh, 1996).

Drawing from this warrant, the purpose of this study was to explore the direct relationship between students' interactions with student affairs professionals and measures of cognitive outcomes in the first year of college. The following research questions guided the study: (a) controlling for key background characteristics and experiences (e.g., gender, race/ethnicity, parental education, high school involvement, high school achievement, pretest score, and institutional type), do students' interactions with student affairs professionals have an effect¹ on cognitive outcomes such as critical thinking, need for cognition, and academic motivation? and (b) if there is an effect, is it mediated by particular experiences (e.g., participating in an academic living-learning community, holding a leadership position, participating in cocurricular activities, and volunteering in the community), which may provide students with more frequent exposure to student affairs professionals?

Conceptual Framework

Inputs–Environment–Outcomes

According to the SPPV (ACE, 1937), "the task of colleges and universities is . . . to assist the student in developing to the limits of his [sic] potentialities and in making his contribution to the betterment of society" (p. 3). Implicit in this statement is the assumption that attending college should influence students' learning and development, the hallmark of college impact theories (see Astin, 1977, 1991, 1993; Pascarella, 1985; Weidman, 1989). A critical component of such theories is the notion that students' background characteristics and experiences prior to college must be accounted for if one is to isolate the impact of college attendance on learning and development. Following recommendations of assessing the first year of college (Upcraft, Ishler, & Swing, 2005), we used Astin's (1991) I–E–O (inputs, environment, outcomes) model as a conceptual guide for

¹We use the term "effect" not in the casual sense of the word but in the statistical sense. Due to the pretest–posttest longitudinal design and host of confounding influences for which we were able to statistically control, effect refers to that part of the variance in y that we can attribute to x (Shadish, Cook, & Campbell, 2002).

this study. As such, we accounted for an extensive host of students' background characteristics (e.g., inputs) in investigating the extent to which interacting with student affairs professionals and participating in activities designed and supervised by student affairs professionals (e.g., environment) influenced students' cognitive growth defined as increased critical thinking, need for cognition, positive attitude toward literacy, and academic motivation (e.g., outcomes). In the next section, we describe cognitive growth as the outcome of interest and the process by which student affairs professionals and other educators may foster students' cognitive growth and development.

Fostering Cognitive Development

King (2009) noted the important distinction that Feldman and Newcomb (1969) as cited in King, 2009) drew in their classic, *The Impact of College on Students*, between "change (a difference of an attribute over time), growth (an increase of an attribute over time)" (p. 598), and development. Drawing from the constructive developmental tradition, King defined development "as the evolution of skills (defined broadly to include abilities, capacities, ways of understanding) over time where early level skills are reorganized into higher-level skills that allow individuals to manage more complex units of information, perspectives, and tasks" (p. 598). Cognitive development focuses on how people progressively use more complex and nuanced organizations and meaning-making structures in what they know and believe. According to King, educators can foster students' cognitive development by helping them understand their decision-making process, exploring alternative decision-making processes and approaches, and discussing the criteria used to compare the validity of alternative explanations.

King's (2009) suggestions to promote cognitive development can be enacted by applying the learning partnerships model principles (Baxter Magolda & King, 2004). The learning partnerships model calls on educators to (a) help students see themselves as capable of knowing (validating the learners' capacity to know), (b) recognize that personal experience is a valid context from which to create knowledge (situating learning in the learner's experience), and (c) realize that knowledge is created through an iterative exchange of ideas and perspectives (mutually constructing meaning). In many ways, the principles of the learning partnerships model further operationalize Sanford's (1967) theory of challenge and support. Student affairs professionals support students in understanding their decision-making process by validating their capacity to know and situating learning in their experience. Student affairs professionals challenge students by mutually constructing meaning with them through the exploration of alternative decision-making processes and discussion of the criteria used to compare the validity of alternative explanations.

The outcomes in the study reported in this article are measures of cognitive growth in that we ascertained the increase between students' level of the attribute at the beginning of college and at the end of the first year. To the extent student affairs professionals' practice reflects the learning partnerships model, we assert that these interactions may be related to cognitive development. The literature reviewed in the next section examines the relationship between the programs and

experiences pertinent to our study that are typically developed and supervised by student affairs professionals and students' cognitive outcomes.

Review of Literature

Research examining the direct relationships between students' interactions with student affairs professionals and cognitive development is underdeveloped in the field. There is, however, research that examined the relationships between a number of out-of-class experiences and student learning and development (see Pascarella & Terenzini, 1991, 2005 for an extensive overview). The following review summarizes the out-of-class experiences, where first-year students are more likely to have substantial contact with student affairs professionals. Through these interactions, students are more likely to experience the principles of the learning partnership model and grow cognitively. These experiences were also examined in the present study and included (a) participating in an academic living-learning community, (b) holding a leadership position, (c) participating in student clubs and organizations, and (d) volunteering in the community.

In recent decades, living-learning communities have blossomed across the United States and particularly at large institutions where they serve to make the campus feel more intimate and manageable (Inkelas & Weisman, 2003). These communities vary in their goals and structure and are organized typically within academic affairs or student affairs but rarely as a full collaboration between the two divisions (Inkelas, Soldner, Longerbeam, & Leonard, 2008). In one of the few multi-institutional studies comparing students in a living-learning program to those in a traditional residence hall, Inkelas, Vogt, Longerbeam, Owen, and Johnson (2006) developed multiple outcomes to measure cognitive growth. They found that students in the living-learning program reported increased critical thinking and analysis abilities (defined as students' ability to create meaning out of the learning experience). Students also enjoyed challenging intellectual endeavors (operationalized as students' enthusiasm for sustained academic challenge) and applied their knowledge abilities (representing students' perception of applying knowledge across contexts) more than their peers did. But the living-learning community residents did not differ from their peers in their personalization of knowledge abilities (defined as students' embrace of knowledge that is personalized) or growth in cognitive complexity (characterized as students' perceptions that they grew in their ability to critically analyze, learn on their own, and understand relationships between ideas). Although Inkelas and colleagues' (2006) findings are mixed, in the main, these findings support previous research by Tinto (2000) and Terenzini et al. (1996), which found living-learning communities encourage participants to engage with peers, faculty, and student affairs professionals in ways that foster cognitive growth.

Less research has specifically examined the connection between students who hold leadership positions and cognitive growth. Kuh (1995) found those who held a leadership position in a campus organization reported greater levels of cognitive complexity, a scale representing both reflective thought and application of knowledge, than did their peers. Looking more broadly at

the overall extent of engagement in campus clubs and organizations and various cognitive measures, several studies found positive associations among these variables (Edison, 1997; Gellin, 2003; Inman & Pascarella, 1998).

A considerable amount of research, particularly in the last decade, has focused on the relationship between engaging in service learning and cognitive outcomes (see Novak, Markey, & Allen, 2007; Steinke & Buresh, 2002). A number of studies have investigated the influence of community service participation and volunteerism on a variety of learning outcomes including cognitive outcomes (see Kezar, 2002). Researchers found the influence of community service participation to have significant positive relationships with cognitive academic development (Astin & Sax, 1998), critical thinking skills (Dey, 1991), and cognitive outcomes up to nine years after college (Astin et al., 1999).

The study discussed in this article differs from previous research in that the focus was not on the degree to which participation in a certain experience influenced cognitive growth but on the extent to which increased interactions with student affairs professionals influenced cognitive growth. This study detects whether interactions with student affairs professionals directly influenced growth on a variety of cognitive outcomes irrespective of first-year students' participation in student affairs developed and supervised programs and experiences. This inquiry sheds light on the importance of student affairs professionals' meaningful interactions with *all* first-year students as a means to promote cognitive growth.

Method

Sample

The sample consisted of first-year undergraduate students attending 26 higher education institutions participating in the Wabash National Study of Liberal Arts Education (the Wabash National Study) between fall 2006 and spring 2008. The first cohort of institutions that began the study in 2006 were selected from a pool of over 60 institutions that responded to a national call to participate. The second cohort of institutions received a grant from a regional foundation, which funded their participation. The Wabash National Study is a longitudinal, multi-institutional exploration of the factors related to outcomes of a liberal arts education (Center of Inquiry in the Liberal Arts at Wabash College, 2009). Using the 2007 Carnegie Classification of Institutions, 5 out of the 26 participating institutions were research universities, 5 were regional universities that did not grant the doctorate, 2 were 2-year community colleges, and 14 were liberal arts colleges. The institutions varied in terms of their control, size, region, and student residential patterns. The current analysis is one of many that have been conducted from the data collected as part of the Wabash National Study.

The initial student sample was gathered in one of two ways. We randomly selected first-year students from the incoming first-year class at larger institutions. The one exception to this was at the largest institution in the study, where we selected students from the entering first-year class

in the College of Arts and Sciences. This institution was significantly larger than the other research universities participating in the study; randomly selecting students from the College of Arts and Sciences within this institution gave us a manageable pool of students to sample. At the smaller, liberal arts institutions, we invited all students in the first-year class to participate in the study.

Data Collection

The initial data collection occurred with 4,501 students from 19 institutions participating in fall 2006 and 3,375 students from 8 institutions participating in fall 2007. One institution participated in both fall 2006 and fall 2007 data collections. Students participating in the 2006 cohort received a \$50 stipend from the Wabash National Study for participating. Participants in the 2007 cohort did not receive incentives from the Wabash National Study, but many institutions chose to offer incentives to encourage participation in the study. Collected data included a precollege survey that gathered information on student demographic and background characteristics and a series of instruments that measured various cognitive outcomes along such dimensions as critical thinking, need for cognition, positive attitude toward literacy, and academic motivation.

The follow-up data collections were conducted in spring 2007 and spring 2008, respectively, and lasted about 2 hours. Participants in the spring 2007 follow-up received an additional \$50 stipend from the organization funding the study, whereas participants in the spring 2008 follow-up collection were not compensated from the study's funders but may have received an incentive from their institution. Two types of data were collected during the follow-up: (a) data on students' college experiences using the National Survey of Student Engagement (NSSE; Kuh, 2001) and the Wabash Student Experiences Survey (WSES) and (b) posttest data using a series of instruments measuring aspects of students' intellectual and personal development. The American College Testing Program (ACT) administered both data collections.

Out of the original respondent pool of 4,501 students in the fall 2006 data collection,² 3,081 students participated in the follow-up data collection in spring 2007. This resulted in a return response rate of 68.5%. Participants in the fall 2007 data collection numbered 3,375. Of these, 1,064 students participated in the follow-up data collection in spring 2008. This resulted in a return response rate of 31.5%. Data from both cohorts resulted in useable data for 3,999 students. Because of the time involved to finish each instrument, only half of the sample completed the critical thinking module from the Collegiate Assessment of Academic Proficiency (CAAP), resulting in useable data for 1,942 students. We created a weighting algorithm to adjust the respondent pool to better reflect the population from which the sample was drawn. Information supplied by the institution on sex, race, and ACT score (or equivalent assessment) was used to weight students who participated in

²Actual response rates for the sample from invitation to actual participation are difficult to calculate. This is due to the fact that ACT, who managed the data collection, estimated that between one third and one half of those who were invited to participate may have not received the initial invitation.

the spring follow-up up to the first-year student undergraduate population of each institution. Although using this weighting procedure results in the total respondent pool approximating the invited sample and population, it cannot adjust for nonresponse bias. Examining the demographics for the weighted analytic sample, 44.7% were male; 5.9% identified as Asian/Pacific Islander; 10.7% identified as African American/Black, non-Hispanic; 4.4% identified as Hispanic; 1.3% identified as Race/Ethnicity unknown; and 77.2% identified as White, non-Hispanic.

Dependent Variables

The Wabash National Study, of which the present analysis was one within a full research agenda, used the CAAP critical thinking module (ACT, 1991) to measure critical thinking. The 32-item instrument measures one's ability to clarify, analyze, evaluate, and formulate arguments (internal consistency reliabilities range from .81 to .82; ACT, 1991).

The Wabash National Study employed several instruments to measure other cognitive outcomes. First, the 18-item Need for Cognition Scale (NCS) measures an individual's desire to participate in challenging cognitive activities (Cacioppo, Petty, Feinstein, & Jarvis, 1996). People with a high need for cognition "tend to seek, acquire, think about, reflect back on information to make sense of stimuli, relationships, and events in their world" (Cacioppo et al., 1996, p. 198). In contrast, those with a low need for cognition are more likely to rely on others, cognitive heuristics, or social comparison processes to make sense of their world. Cronbach alpha reliabilities range from .83 to .91 in samples of undergraduate students. Second, the six-item Positive Attitude Toward Literacy (PATL) scale measures the extent to which students enjoy reading for pleasure across many genres and expressing their ideas in writing. The internal consistency of the PATL scale ranges from .69 to .72.

Finally, the eight-item academic motivation scale asked participants to indicate the extent to which they agree or disagree (ranging from *strongly agree* to *strongly disagree*) with statements about their academic motivation. The academic motivation scale incorporates items related to one's willingness to work hard, read more for class than is required, and enjoyment of academic challenge. The internal consistency reliability for the scale ranges from .69 to .74 (Pascarella & Colleagues, 2007). Validity information for each dependent measure is available in the full methods report for the Wabash National Study (Pascarella & Colleagues, 2007). In essence, both the NCS and the PATL reflect students' curiosity toward learning.

Independent Variables

The independent variable of interest was a five-item scale measuring the frequency of students' interactions with student affairs professionals in their first year of college. We collected information for this scale from the WSES that all students completed during the spring follow-up data collection. The interactions with student affairs staff scale had an internal consistency reliability of .85. Items in the scale included: (a) How often have you discussed a personal problem or concern with student affairs professionals? (b) How often have you had serious discussions with

staff whose political, social, or religious opinions were different from your own? (c) How often have you talked about career plans with student affairs professionals? (d) How often have you discussed ideas from readings or classes with student affairs professionals? and (e) How often have you discussed grades or assignments with student affairs professionals? A parenthetical expression was included in each item to provide examples of student affairs professionals. For example, one item read: "How frequently have you talked about career plans with student affairs professionals (e.g., residence hall staff, career counselor, student union or campus activities staff)?" The response set for each item was a five-point Likert-type scale ranging from *never* to *very often*.

Potential mediating variables. Because students who participate in college experiences developed and supervised by student affairs personnel may have greater frequency of interacting with them, we employed additional independent variables to explore the potential mediating effects that certain college activities in which students might have higher exposure to student affairs professionals may have on our relationship of interest. These potential mediating variables included participation in community service, holding a leadership position in a student organization, hours per week spent involved in cocurricular activities, and participation in a living-learning community where one's residence was connected to an academic program. We acknowledge prior research highlighting the complexities of classifying living-learning communities and the variation in outcomes based on size of program, resources available, and degree of collaboration between student and academic affairs (Inkelas et al., 2008). We employed the variable from the Wabash National Study for these communities because we believed that students who participated in an academic living-learning community have a greater likelihood of increased interactions with student affairs professionals, due to the residential component of the experience, than do those in a traditional learning community. Approximately 713 (17.8%) students participated in an academic living-learning community, 2,122 (53.0%) students reported volunteering, and 924 (23.1%) students reported holding a leadership position during their first year of college. With regards to cocurricular involvement, 769 (19.2%) students indicated that they participated in cocurricular activities more than 10 hours per week, 744 (18.6%) students reported participating between 6 and 10 hours per week, 1,533 (38.3%) students reported participating between 1 and 5 hours per week, and 953 (23.8%) students reported that they did not participate in cocurricular activities during the first year of college.

Control Variables

A particular methodological strength of the Wabash National Study is that it is longitudinal in nature (Astin & Lee, 2003; Pascarella, 2006; Seifert, Pascarella, Erkel, & Goodman, 2010). This permitted us to introduce a wide range of statistical controls for the following background characteristics:

- sex (male vs. female),
- race (created as a series of dichotomous variables for Asian/Pacific Islander,

African American, Latino, and race other/unknown³ with White as the reference group),

- ACT score (or equivalent), and
- average parental education (computed as the average of the respondent's parents' education provided the student gave a response for at least one parent).

We included two items to control for cocurricular involvement in high school including how often students engaged in extracurricular activities and how often they engaged in community service and volunteering in high school. We also included three dichotomous variables to control for the type of institution each respondent attended (regional university, research university, or community college) with liberal arts colleges as the reference group.

Because data were collected on participants in two separate academic years and different compensation was offered to each cohort of participants, we created a variable to control for the cohort in which students entered the study. Finally, and perhaps most importantly, we employed a parallel precollege measure of each dependent variable in the study. One of the most powerful ways to account for selection bias is through a pretest–posttest longitudinal research design (Astin & Lee, 2003; Pascarella, 2006; Seifert et al., 2010).

Analyses

We used ordinary least squares regression to estimate the relationships between students' interactions with student affairs professionals and each of our four cognitive outcome measures. We ran each analysis in three stages. In the first stage, we regressed our dependent variable on students' demographic and background characteristics. In the second stage, we added the frequency of students' interactions with student affairs staff scale to our model. In stage three, we added the four potential mediating variables of activities developed and supervised by student affairs, thus providing students with greater exposure to student affairs professionals. This allowed us to estimate the total and direct effects of the frequency of interactions with student affairs staff on each outcome (Alwin & Hauser, 1975). We anticipated that with the college experiences in the equations, any significant total effects of interactions with student affairs staff would be reduced to nonsignificance. This would indicate that the relationship between the frequency of interactions with student affairs staff was mediated through (or accounted for) by students' involvement in activities developed and supervised by student affairs.

Because data were collected across 26 institutions, we ran the risk of overestimating the individual student level effects if the nested nature of the data was not taken into account (i.e., students within institutions are more likely to be similar than those from different institutions; Groves et al., 2004). We employed statistical measures to account for the nesting effect of this complex survey design. In addition, we standardized (converted to *z* scores) the dependent variables and all continuous independent variables. Therefore, the *b* coefficients indicated the amount

³Native American responses, due to their low number, were combined in the "other race" category.

of standard deviation change in each outcome score for a one-unit change in the independent variables. All analyses were based on the weighted sample estimates adjusted to the actual sample size to obtain correct standard errors.

Results

Descriptive data for variables in the fully specified regression model (Model 3) used in this study is provided in Table 1. To assess multicollinearity, we ran correlations of the independent variables used in our analyses. None of our model variables exceeded .44, indicating that the independent variables were not too correlated for inclusion in our analyses. A full correlation matrix of the independent variables in this study is available from the first author upon request. Further,

Table 1

Descriptive Statistics for Direct Effects Model Variables

Variables	M	SD	Minimum	Maximum
Dependent variables				
Critical thinking	62.05	5.92	47.00	73.00
Academic motivation	3.34	0.60	1.00	5.00
Need for cognition	3.36	0.62	1.00	5.00
Positive attitude toward literacy	3.13	0.82	1.00	5.00
Independent Variables				
Male (vs. female)	0.45	NA	0.00	1.00
Asian Pacific Islander (vs. White)	0.06	NA	0.00	1.00
African American (vs. White)	0.11	NA	0.00	1.00
Hispanic (vs. White)	0.04	NA	0.00	1.00
Race unknown (vs. White)	0.01	NA	0.00	1.00
Parental education	15.14	2.20	11.00	20.00
ACT score (or equivalent)	24.38	4.94	13.00	36.00
High school (HS) volunteering	3.06	1.12	1.00	5.00
HS out-of-class activities	3.60	1.29	1.00	5.00
Cohort 2007 (vs. cohort 2006)	0.27	NA	0.00	1.00
Critical thinking pretest	61.75	5.44	48.00	73.00
Academic motivation pretest	3.53	0.57	1.13	5.00
Need for cognition pretest	3.37	0.61	1.22	5.00
Positive attitude toward literacy pretest	3.17	0.77	1.00	5.00
Regional university (vs. liberal arts college [LAC])	0.29	NA	0.00	1.00
Research university (vs. LAC)	0.37	NA	0.00	1.00
Community college (vs. LAC)	0.10	NA	0.00	1.00
Interaction with student affairs staff	10.96	4.66	5.00	25.00
Living-learning (L-L) community	0.17	NA	0.00	1.00
Leadership position	0.20	NA	0.00	1.00
College community service	0.46	NA	0.00	1.00
Participated in cocurricular activities 1–5 hours per week (vs. no participation)	0.34	NA	0.00	1.00
Participated in cocurricular activities 6–10 hours per week (vs. no participation)	0.16	NA	0.00	1.00
Participated in cocurricular activities more than 10 hours per week (vs. no participation)	0.17	NA	0.00	1.00

Table 2

Estimated Effects of Interaction With Student Affairs Professionals on Cognitive Outcomes

Independent variables	Critical thinking (N = 1,942)			Academic motivation (N = 3,999)			Need for cognition (N = 3,999)			Positive attitude toward literacy (N = 3,999)		
	Model 1	Model 2	Model 3	Model 1	Model 2	Model 3	Model 1	Model 2	Model 3	Model 1	Model 2	Model 3
Male (vs. female)	-.075	-.072	-.052	-.026	-.046	-.047	.004	-.003	-.011	-.023	-.038	-.037
Asian Pacific Islander ^a	.046	.043	.056	.080	.084	.077	-.034	-.034	-.032	.069	.070	.064
African American ^a	.142	.144	.144	.121	.131	.123	.058	.063	.066	.135**	.142**	.133**
Hispanic ^a	-.046	-.037	-.030	.078	.065	.045	.123*	.118*	.125*	.181**	.170**	.160**
Race unknown ^a	.001	-.006	.027	-.097	-.055	-.062	-.152	-.134	-.141	.009	.040	.037
Parental education	.002	.001	.006	.010	.004	.001	.031*	.029*	.026	.017	.013	.011
ACT score ^b	.307**	.306**	.305**	-.014	.011	.010	.122**	.133**	.127**	.072**	.091**	.099**
HS (high school) volunteering ^b	.014	.018	.012	.010	-.004	-.010	.012	.007	.005	-.016	-.027	-.032
HS activities ^b	.017	.024	.033	-.016	-.031	-.034	.037**	.031**	.025*	.003	-.009	-.011
Cohort 2007	-.059	-.054	-.056	.206**	.191**	.193**	.017	.011	.014	.074**	.061**	.065**
Pretest ^b	.520**	.517**	.519**	.531**	.515**	.514**	.668**	.662**	.662**	.707**	.698**	.696**
Regional university ^c	-.199*	-.198*	-.205*	-.079	-.087	-.092	-.081	-.084	-.076	-.091*	-.095*	-.100*
Research university ^c	.007	.006	.006	-.143*	-.146**	-.156**	-.129**	-.131**	-.127**	-.118**	-.121*	-.130**
Community college ^c	-.188*	-.202*	-.226*	.249**	.296**	.320**	.109*	.127*	.153*	-.133*	-.098	-.087
Student affairs interactions ^b		-.040*	-.033		.137**	.127**		.052**	.046**		.098**	.092**
L-L community			-.015			.128*			-.029			.055
Co-curricular act. 1-5 hrs per wk ^d			-.063			-.016			.102*			-.015
Co-curricular act. 6-10 hrs per wk ^d			-.146*			.010			.052			.013
Co-curricular act. >10 hrs per wk ^d			-.111*			-.023			.070			-.049
Leadership position			-.065			.106*			.054			.106**
College community service			.106**			.028			-.029			.026
R²	.666	.667*	.671**	.312	.329**	.333*	.549	.552**	.554*	.534	.542**	.545*

^aReference group is White or Caucasian. ^bVariable has been standardized. ^cReference group is liberal arts colleges. ^dReference group is Did not participate in cocurricular activities per week.

* $p < .05$. ** $p < .01$.

the variance inflation factors (VIF) were all under 2.0, well below the suggested VIF limit of 10.0 (Stevens, 2002).

In Table 2 is a summary of the three regression models across four cognitive measures: critical thinking, academic motivation, need for cognition, and positive attitude toward literacy. Model 1 presents the standardized coefficients for each control variable in the study. For each measure, adding the interactions with student affairs professionals scale into the model increased the amount of explained variance (see R^2 for Model 2). In three of the four measures, a positive relationship existed between interaction with student affairs professionals and the cognitive outcomes. For example, students' interactions with student affairs professionals yielded significant positive relationships on academic motivation (0.14 of a standard deviation), need for cognition (0.05 of a standard deviation), and positive attitude toward literacy (0.10 of a standard deviation). Students' interactions with student affairs professionals, however, did not always have a positive association with students' cognitive growth. Adding the interactions with student affairs professionals scale to Model 2 for critical thinking yielded a small decrease in students' critical thinking skills ($SD = -0.04$). In other words, as the frequency with which students reported interacting with student affairs professionals increased, their critical thinking scores slightly decreased in the first year of college.

Mediating Effects

Model 3 incorporated four college activities (i.e., participation in an academic living-learning community, number of hours participating in co-curricular activities, holding a leadership position, and community service involvement) in which students would likely have a higher exposure to student affairs professionals. This allowed us to explore the potential ways these variables may mediate the relationships found between interactions with student affairs professionals and the cognitive outcomes in Model 2. The addition of these four college activities significantly increased the amount of explained variance (R^2) for all four cognitive outcomes measures.

The negative effect of student affairs interactions on critical thinking, although small but statistically significant in Model 2, was reduced to nonsignificance when we added the block of first-year college experiences (Model 3). This finding suggests there is shared variance between student affairs interactions and the block of first-year college experience variables. This does not come as a surprise, as a series of modest statistically significant bivariate correlations existed between the student affairs interactions scale and the block of first-year college experience variables (Pearson's r ranged from $-.15$ to $.14$; a full correlation matrix is available from the first author by request). Model 3 showed that engaging in cocurricular activities more than 6 hours a week was related to a significant decrease in students' critical thinking, holding all else constant. However, engaging in volunteer community service was associated with higher critical thinking.

Turning to academic motivation, students' interactions with student affairs staff was associated positively with students' academic motivation. This positive relationship persisted in

Model 3, which suggests that interactions with student affairs professionals was associated with higher levels of academic motivation at the end of the first year of college irrespective of whether students participated in first-year experiences where they were more likely to interact with student affairs staff. Students who participated in a living-learning community and those who held a leadership position in their first year of college reported higher levels of academic motivation than did their peers who do not engage in these activities.

The interactions with student affairs professionals scale was associated positively with students' need for cognition at the end of their first year of college, controlling for all other variables in the model. This small positive relationship remained when we entered the block of variables for first-year college experiences to the model. Of the first-year college experience variables, only participating in cocurricular activities for 1–5 hours a week (compared to not at all) was related to a statistically significant difference in the criterion measure ($b = .102, p < .05$).

Finally, we found increased interactions with student affairs professionals positively related to students' positive attitude toward literacy, holding all else constant. Moreover, adding the block of variables for first-year college experiences to the model did not reduce this relationship to nonsignificance, although having a leadership position also was associated with a positive increase in students' positive attitude toward literacy scores.

Discussion

Some have questioned the role of student affairs programs, services, and professionals in advancing student learning (National Association of Scholars, 2008), whereas others have called for student affairs professionals to demonstrate their influence on student learning clearly and directly (Blake, 2007; Hernandez et al., 1999; Love, 1995). This study addressed these calls by exploring the direct relationship between students' interactions with student affairs professionals and their cognitive growth in the first year of college. This study differed from prior research in that it focused less on the extent to which participation in a certain college experience influenced cognitive growth but rather on the extent to which increased interactions with student affairs professionals in the first year of college influenced this growth. Controlling for students' background and precollege characteristics, we found first-year students who reported more interactions with student affairs professionals gained on three of the four cognitive outcomes. Moreover, these findings hold even when accounting for student participation in activities typically organized and supervised by student affairs professionals. This suggests that irrespective of whether or not first-year students participate in activities, which increase their opportunity to interact with student affairs professionals, interactions with these professionals contributed significantly to students' cognitive growth. The interactions with student affairs professionals scale was positively associated with increases in students' need for cognition, positive attitude toward literacy, and academic motivation. Each of these outcomes measured students' interest in seeking out more than what they already know, whether it be in terms of developing a more nuanced understanding of

relationships, reading unassigned material, or learning for the sake of new knowledge. To this end, our findings suggest that student affairs professionals may have a positive influence on students' curiosity within the cognitive domain. The influence on students' curiosity manifests in students' interest in seeking out multiple perspectives to make sense of the world around them (e.g., need for cognition), whereas other times it manifests through students' enjoyment of reading and writing (e.g., positive attitude toward literacy). Although the relationships between interactions with student affairs professionals and students' increases in need for cognition and positive attitude toward literacy are not trivial, the strongest relationship in these findings was the positive relationship between interactions with student affairs professionals and increases in students' academic motivation. This measure was defined primarily in terms of students' intrinsic motivation to work hard in academic endeavors and value academic challenge.

Because these constructs are associated with intrinsic attitudes and values, these positive findings may imply a unique niche for student affairs professionals to influence cognitive growth. For example, perhaps by focusing on developing students' sense of curiosity, openness to a variety of perspectives, and motivation and interest in effortful academic experiences, student affairs professionals can enact the espoused commitment to enhance student learning reflected in the philosophical documents of the field (e.g., ACE, 1937; ACPA, 1996; Keeling, 2004). Moreover, Elias and Loomis (2002) demonstrated that high levels of need for cognition are associated with academic achievement. Student affairs professionals may have a unique opportunity to influence first-year students' academic achievement by creating an environment that motivates and inspires students to engage in learning—where curiosity, asking questions, considering alternative perspectives, and developing new ideas is encouraged rather than stifled. Academic advisors may harness this curiosity by challenging students to consider a more diverse variety of courses, undergraduate research opportunities, and study abroad. Orientation staff can support students' curiosity by deconstructing “rites of passage” and other traditions into what these mean, who they benefit, and who they exclude, developing new traditions where appropriate. Further, although the foundation may exist for student affairs professionals to have a positive impact on these three outcomes, it is important to note that the effects found in this study, although significant, were modest. Perhaps an intentional focus on student affairs practice and research on how professionals can best engage in a learning partnership with students to develop their curiosity, interest in learning, and motivation to learn is warranted.

In this study, adding particular college experiences (e.g., cocurricular involvement, holding a leadership position, participation in community service, participation in a living–learning community) to the regression models did not reduce the impact of students' interactions with student affairs professionals to nonsignificance on academic motivation, positive attitude toward literacy, or need for cognition. This suggests that first-year students who had increased frequency of interacting with student affairs professionals showed greater growth on three of four outcomes irrespective of their involvement in activities often associated with the first-year experience. These

findings should not be taken as refuting the efficacy of numerous institutional campaigns encouraging students to get involved as a means of connecting to the campus. These clearly matter as was evidenced by the general positive effects of the experience variables on the outcome measures. Yet, it is important to note that, for those first-year students who did not choose to get involved in these types of activities, simply interacting with student affairs professionals appeared to make a difference in their cognitive growth.

These findings begin to address Love's (1995) call for research on the direct impact of student affairs professionals on college students' learning and development. In addition, they may cause some student affairs professionals to reconsider their practice. Re-orienting student affairs work from highly structured interactions (as a club/organization advisor, a community service placement provider, or a living-learning residence coordinator) to more unstructured opportunities could have profound effects on how student affairs professionals help students achieve desired learning outcomes. It is important to note that this study explored only one possible learning outcome of higher education: cognitive growth. Future research should investigate the impact student affairs professionals have on other aspects of student learning and development.

Considering the criticism levied against student affairs professionals as failing to contribute to postsecondary education's academic mission (National Association of Scholars, 2008), we find the evidence from this study particularly salient in refuting that charge. Taken together, these findings affirm the role student affairs professionals play in facilitating students' curiosity and interest in developing a more thorough and contextualized understanding of their world. Further, in the broader context of higher education, these findings affirm the role of student affairs professionals in helping college students develop desirable educational outcomes (see, for example, Pascarella & Terenzini, 1991, 2005 for a taxonomy of educational outcomes). Higher education's economic reality demands that student affairs divisions assess and evaluate their effectiveness in contributing to the institutional mission. Overall, these findings offer evidence of the active role played by the educators behind many out-of-class activities in enhancing student learning. Moving beyond student satisfaction data, colleges and universities should consider exploring the influence of student affairs professionals on students' attainment of desirable educational outcomes through institutional and student affairs assessment efforts.

Challenging and Supporting College Students

Although the interactions with student affairs professionals scale measured the frequency with which students interacted with student affairs professionals, we posit that a challenge and support orientation within a learning partnership (Baxter Magolda & King, 2004; Sanford, 1967) might have served as the foundation for these interactions and be the mechanism behind the relationships identified in this study. One may consider the positive relationships with need for cognition and positive attitude toward literacy as partially due to student affairs professionals challenging students to consider multiple perspectives and supporting them as they incorporate

a diversified set of perspectives in their thinking and behavior. Similarly, one can envision student affairs professionals challenging and supporting students' curiosity to deepen their learning and understanding. If a challenge and support orientation within a learning partnership is the mechanism behind these relationships, then the slight negative association between interactions with student affairs professionals and critical thinking raises the question as to how student affairs professionals can best challenge and support students' growth in critical thinking. In this study, accounting for mediating effects of particular college activities (e.g., cocurricular involvement, holding a leadership position, participation in community service, participation in a living learning-community) reduced the negative impact on critical thinking to nonsignificance. In particular, participation in community service was found to be positively associated with higher scores in critical thinking, consistent with prior research (Astin & Sax, 1998; Dey, 1991). Although participation in community service may appear to offset this negative impact on critical thinking, we think it is imperative to further explore the professional conditions that might influence how student interactions with student affairs professionals influence students' critical thinking.

Critical reflective practice calls on professionals to continually rethink the "why" behind their everyday actions and practices (Senge, 1990). Challenging and supporting students to think critically within a learning partnership may begin with a more intentional effort on the part of student affairs professionals to reflect critically on their practice with students as well as the institutional processes and policies that have become tacit and unquestioned. For example, when students inquire about the reasoning behind institutional policies and attempt to critically question them, how do student affairs professionals respond? Do they take a challenge and support a learning partnership approach, inherent in critical reflective practice, validating students' capacity to know and engaging them in conversation to learn more about their perspective? Do they rationally discuss reasons behind policy while remaining open to learning about unintended policy consequences so as to mutually construct meaning with the students? Or do they simply dismiss student inquiries or, worse, encourage student dissent but identify hurdles to overcome in order to have their voice heard? To best facilitate the development of students' critical thinking skills, student affairs professionals should welcome and make a critical examination of policies, procedures, and practices commonplace. Through their actions, student affairs professionals can demonstrate the value of critical reflective practice to students, faculty, and colleagues.

Limitations

This study is not without limitations. Although we made an effort to select institutions that were diverse in various ways (e.g., type, control, region), institutions within our sample were keenly interested in participating in the Wabash National Study. Thus, the findings from our research may not generalize broadly to postsecondary institutions across the United States. It was important to account for the nested nature of our data within institutions. However, in order to do this we needed to include participants across two cohorts in the Wabash National Study to allow

us greater degrees of freedom in the analyses. Although we attempted to account for differences across cohorts by controlling for the cohort with which participants entered the study, the variety of incentives offered to participants across cohorts remains a limitation. It should also be noted that the majority of our sample (77.2%) identified as White. Therefore, these findings may not be generalizable to a more diverse sample. Future research on the impact of interactions with student affairs professionals should investigate the potential conditional effects of race, gender, and social class to gain a better understanding of how the effects of interacting with student affairs professionals on cognitive growth may differ based on students' background characteristics. We draw on our backgrounds as student affairs professionals in speculating that it may be the challenge and support orientation of the learning partnership undergirding the interactions students have with student affairs professionals that has contributed to the positive relationship with cognitive growth. Future research may use qualitative inquiry to better understand the nature of interactions with student affairs professionals and the mechanism within those interactions that foster student learning and development.

Summary

In this study, we used longitudinal data from a multi-institutional study to discern the unique relationship between students' interactions with student affairs professionals and students' cognitive growth. Taking into account a host of confounding influences, we found students' interactions with student affairs professionals was associated positively with increases in students' need for cognition, positive attitude toward literacy, and academic motivation but associated with lower levels of students' critical thinking skills. This study offers evidence to connect the interactions student affairs professionals have with students to the learning outcomes of higher education. As those in the field consider the future for higher education scholarship, it is important to examine broadly the educational role student affairs professionals play specifically in fostering cognitive outcomes as a part of holistic learning and development.

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