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CAREER ACADEMIES AS A PROFESSIONALLY ENGAGING AND SUPPORTIVE TEACHING EXPERIENCE

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The career academy experience challenges the assumptions of traditional high school about the role of schooling for students' career and college transitions and stresses contextual and integrated teaching. This alternative educational approach encourages teachers to focus more collectively on preparing students through their curriculum, instructional practices, and working relationships. The National Academy Foundation (NAF) supports an intensive and coherent academy model using teacher professional development, curriculum materials, technical assistance, and linkages to industry-specific employers. Using survey results of 34 teachers in 10 career academies and 26 comparison teachers in the same high schools, coupled with case study findings of the 10 academies, this article shows the positive relationship between commitment to the academy program focus, organizational support, teachers' collaborative work, and perceived effectiveness with students. NAF's resources uniquely influence these outcomes for participating teachers, demonstrating the added benefit of intermediary support in fostering instructional coherence, student-centered instruction, and teacher effectiveness.

Keywords: *teacher engagement; collaboration; career academy*

How teachers develop their professional identity, grow in their practice, work with one another, and foster student learning have become important design foci in school innovation and reform, particularly for urban high schools. A key assumption is that improving teachers' work through innovative curriculum and instructional strategies and organizational supports can positively affect teacher professionalism, practices, and student relationships, yielding better student learning. Moreover, teacher engagement in their work and collaboration with each other directly and indirectly benefit

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student learning (Dannetta, 2002; Silins, Mulford, & Zarins, 2002). Several high school reforms challenge traditional school designs by incorporating these as design features (Cannon & Reed, 1999; Castellano, Stringfield, & Stone, 2003; Legters, Balfanz, McPartland, 2002; Useem, Neild, & Morrison, 2001). Implicitly, these reforms encourage teachers to think differently about their individual and collaborative work for better student engagement, learning, and post-high school success. The career academy model, such as affiliated with the National Academy Foundation (NAF), provides one approach on how to effectively support and engage teachers in new instructional and collaborative practices while focusing content around a career theme. Despite its assumptions about teaching, its nationwide prevalence, and its common use as a component for high school reform, the career academy has not been well researched to examine its influences on teachers and their teaching practices.

THE CAREER ACADEMY MODEL

Career academies use an alternative educational approach to address the nature of teaching and how teachers work with both students and other teachers. Academies integrate strategies for student career and college preparation; diversify learning experiences within the classroom and through the workplace; organize learning around a thematic, career-focused curriculum; and prepare all students for college, regardless of their college-going intentions (Cannon & Reed, 1999; Maxwell & Rubin, 2000; Stern, Dayton, Lenz, & Tidyman, 2002; Stern, Raby, & Dayton, 1992). They commonly emphasize innovative instructional strategies that develop high-performance workplace skills—project-based and cooperative learning, in particular—and stress critical thinking and problem solving, all of which have become standards-based priorities for high school achievement (Castellano et al., 2003). Their small learning community structure potentially creates what Raywid (1996) describes as a more supportive student environment and highly effective work environment for teachers through a shared purpose, collaborative work, and more intimate knowledge of students' skills and needs.

Career academies, with their unique school organization and focus on teachers' expectations for student learning, instructional content, and relationships with each other, may positively challenge what Little (1993) terms "teachers' sense of professionalism." Professional development becomes critical in developing teachers' capacity to engage in understanding and undertaking the multiple challenges that these represent (Little, 1993).

Intermediary organizations can be well positioned to provide this type of professional development for innovative programs and strategies. One such intermediary, the NAF, is a national, nonprofit organization that sustains a network of almost 500 career academies in 39 states and the District of Columbia. NAF supports three career academy models—Academy of Finance (AOF), Academy of Travel and Tourism (AOTT), and its new Academy of Information Technology.

Similar to other career academies nationwide, the NAF academies operationalize a strong school-to-career preparation philosophy (www.naf-education.org). They combine school-based and work-based learning experiences and use an integrated, contextualized, and career-focused set of courses that provide an academic foundation in the designated career area, such as world finance and banking and credit for the academy of finance. Their high school curricula, internship models, and program operation strategies are designed and continuously updated through the collaboration of teachers, curriculum specialists, and corporate representatives. Students are selected based on their interest in the industry or the program's academic content, having average or better grades, good attendance, and teacher recommendations. NAF supports teachers in curriculum design, promotion of student-centered instruction, professional development, and business involvement, and academies have designated teachers who serve a common group of students, both college bound and non-college bound, who are somewhat motivated by the career area.

Unlike teachers in many other career academies nationwide, teachers in NAF-affiliated schools have access to extensive professional development opportunities through NAF's annual conference and other forums and a national network of teachers, with whom they exchange strategies and experiences. Teachers are linked to local employers within selected industries, who serve as consultants and advisors and sometimes offer professional learning experiences. NAF's curriculum and related instructional materials stress that teachers incorporate student-centered learning strategies, such as project-based learning and cooperative learning. These strategies reflect work-based readiness competencies stressed by the Secretary's Commission on Achieving Necessary Skills (SCANS, 1992) and are more likely to foster critical thinking and collaborative problem solving than more traditional strategies.

NAF believes that the academy's focus, partial school-within-a-school structure, and professional development foster an affiliation identity and collaboration and support among teachers within and across schools; encourage teachers to think more substantively about experiential learning strategies to improve student achievement; and improve teachers' effectiveness in

working with students. Yet, there is limited research on whether and how these elements create these results. Generally, career and technical education in high school reform is underresearched, and most existing research focuses on the student experience (Castellano et al., 2003).

RESEARCH FINDINGS ON CAREER ACADEMIES

Evaluation research demonstrates that students benefit from the career academy approach, as measured by improved student engagement, achievement, and post-high school outcomes (Kemple, 1997; Kemple & Snipes, 2000; Maxwell & Rubin, 2000; Orr, 1990; Orr & Fanscali, 1995; Orr, Bailey, Hughes, Karp & Keinzl, 2004; Stern, 2000). Such research included inquiry on how career academies influence student-teacher relationships and student engagement in learning. Manpower Demonstration Research Corporation's (MDRC) longitudinal random-assignment study in nine sites of different career academies found that academy students experienced higher levels of interpersonal support than the comparison group (Kemple, 1997). Students also increased their career awareness, enhancing their motivation and long-term educational and career goals.

In two separate evaluation studies, career academy seniors reported better teaching and teacher support than did their peers. Orr and Fanscali (1995), in their multisite study of NAF Academy of Travel and Tourism, found that academy seniors attributed their greater incentive to attend school regularly and apply themselves academically to the sense of community and support they received from their fellow AOTT students and teachers. Most surveyed seniors rated their teachers and the teaching style highly, their coursework as meaningful and important, their program experience enjoyable and useful for future career and college work, and their courses much more satisfactory than their nonacademy courses (Orr & Fanscali, 1995). More recently, Orr et al. (2004) found that academy seniors had significantly better teaching and teacher relationships than did nonacademy seniors. They rated their teachers higher (as much as twice as much) on their teaching—contextualizing subject matter and applying course content to problems and situations in an industry—support—getting to know them and helping them understand what they are learning—and preparing them for their futures—talking about job opportunities and helping them with college planning. Although such evidence strongly suggests that students perceive their academy teachers to be more effective than others, few studies directly examined the teachers' academy experiences and how these affect their engagement and effectiveness (Kemple, 1997; Orr et al., 2004).

This article provides evaluation results on the experiences and perspectives of academy and nonacademy teachers from 10 high schools with long-standing career academy programs, studied as part of a multipart evaluation conducted by the Institute on Education and the Economy (IEE), Teachers College, for NAF. These results examine how the academy focus, coupled with organizational supports—career academy affiliation, professional development, and frequent common meeting time—influence teaching practices and teacher relationships and, in turn, teachers' perceived effectiveness with students. It further explores the relationship between specific academy supports and resources and the impact on teachers and their work with students. The views presented in this article are those of the author and are not necessarily shared by IEE or NAF.

STUDY BACKGROUND

Two frameworks shape this inquiry on how the career academy model benefits teachers and improves their practice: (a) the program theory implicit in the career academy model and (b) the nature of teacher collaboration and engagement and factors that influence their development.

CAREER ACADEMIES AND TEACHER EFFECTS

Career academies are used nationwide in a variety of high school settings. They have rapidly grown as a high school reform model, from the first one established in 1969 in Philadelphia to several thousand by the year 2000 (Stern, 2000). Career academies represent a well-established, multifaceted approach to organizing student learning and experiences (Stern, 2000; Stern et al., 1992). They generally share three basic features that are designed to improve student learning but are likely to benefit teachers as well: (a) they are small learning communities, clustering a group of students with the same teachers and classes; (b) they combine an academic curriculum with a career theme (such as finance, travel and tourism, or health); and (c) they have employer partners, who often supply internships as well as other types of support (Kemple & Rock, 1996; Stern, 2000; Stern et al., 1992). In the 1990s, the career academy emerged as a substantive comprehensive program for school-to-work transition (see, e.g., Castellano et al., 2003; Legters, 1999; Legters et al., 2002; Pauly, Kopp, & Haimson, 1995; U.S. Department of Labor, 1992; Useem et al., 2001).

The underlying program theory (Weiss, 1998) is that by changing instructional content and practices and teaching relationships, teachers can better engage students, improve their academic learning, and prepare them better for their future college and careers. Career academies offer instructional coherence, which is instrumental in fostering student achievement generally (Newmann, Smith, Allensworth, & Bryk, 2001). Instructional coherence encompasses curriculum, instruction, assessment, and learning climate for students and staff over a sustained time. With coherence in professional development and coordinated work, teachers learn more and can apply more to their teaching and are more likely to pool their knowledge and resources and sustain their focus.

In a study of nine career academies nationwide, Kemple (1997) found evidence that academy affiliation benefited teachers by providing support and a satisfying instructional role and enabling teachers to support each other's work. Through a series of regression analyses, Kemple showed that measures of teacher collaboration, resource adequacy, and influence over work were significantly related to teacher community and teachers' personalized attention to students. All were significantly related to job satisfaction. In turn, job satisfaction and emphasis on personalized attention to students were both significantly related to self-reported effectiveness, but not the teacher learning community measure.

In comparison to other teachers, Kemple (1997) found that career academy teachers reported more opportunities to collaborate, more adequate teaching resources, and a greater ability to influence key decisions about instruction and administrative matters. They were more likely to describe themselves as being part of a strong teacher learning community, to emphasize personalized attention to students, and to have higher job and work environment satisfaction. Yet, Kemple found no relationship between teachers' academy affiliation and perceived effectiveness, although whether the influence of affiliation is mediated by other factors was not explored.

Despite the model's benefits for students and teachers, its implicit program theory challenges traditional teachers' work. Generally, Little (1993) found that reforms of this nature reflect "a substantial departure from teachers' prior experience, established beliefs, and present practice [and] an image of conditions of learning for children that their teachers have themselves rarely experienced" (p. 130). As Castellano et al. (2003) stressed in their review of research on career and technical education and comprehensive school reform, teachers need preservice and in-service teacher training on teaming, integrated curriculum, and collaborative work to implement such reforms. Otherwise, they are unlikely to implement the programs effectively

or gain their benefits of feeling more engaged, supported, or effective in their teaching.

IMPROVING TEACHING PRACTICE AND RELATIONSHIPS

Researchers have found several organizational supports that improve teachers' work and effectiveness, both individually and collectively. These supports include time for teachers to meet on a consistent basis (Bryk, Lee, & Holland, 1993; Newmann et al., 2001), a small school or school-within-a-school structure (Lee & Smith, 1995; Visher, Emanuel, & Teitelbaum, 1999), and enhanced teachers' knowledge and skills through professional development and connections with external expertise (Youngs & King, 2002). Similarly, Newmann et al. (2001) found that schools that foster collaboration through common planning periods, school-within-a-school structures, and a reinforcing culture were more likely to gain instructional coherence.

Teachers need to have regularized opportunities to share what they know, consult about problems of practice, and observe each other's teaching (Darling-Hammond, 1997; DuFour & Eaker, 1998; Newmann et al., 2001). Quality working relationships require time to be nurtured and supported. Silins et al. (2002) found that the level of organizational learning in a school affects teachers' instructional work and their effects on student participation and engagement in school. Such organizational learning occurred most often when teachers were given professional learning opportunities and sufficient time and resources to develop professionally.

Research on small learning communities has shown that smaller, more intimate structural designs are more effective in boosting student achievement, in part by improving teachers' working relationships (see, e.g., Lee & Smith, 1995; Visher et al., 1999). Visher et al.'s review of research found that small school size improves students' grades and test scores, engagement, and completion of college-level courses, as well as facilitating greater teacher collegiality and more personalized teacher-student relationships. Small school size also fosters professional community and consensus on educational and ethical principles, serving as a catalyst to help staff work more effectively on curriculum, planning, and professional development (Muir, 2000-2001).

The availability and nature of professional development can influence the effectiveness of teachers' learning and how they participate in new educational models and change their teaching as a result (Darling-Hammond, 1997; Dufour & Eaker, 1998; Fullan, 1991; Lieberman & Grolnick, 1997;

Little, 1993). Innovative professional development models, such as collaboratives and networks, can engage teachers substantively in curricular, pedagogical, and school organization questions and situate them in a broader professional community (Dufour & Eaker, 1998; Garet, Porter, Desimone, Birman, & Yoon, 2001; Lieberman & Grolnick, 1997; Little, 1993). The infusion of professional development into creating a professional learning community can lead to continuous collective improvement if it is sustained over time, is focused on content knowledge, engages collective participation, is job embedded, and fosters both individual and collective renewal (DuFour & Eaker, 1998; Garet et al., 2001).

Organizational supports are insufficient, however, without a unifying focus and shared culture. Research has shown that the quality of teacher working relationships depends on the intensity of their shared commitment and professional practice, their inclusivity as a teaching group, and a shared orientation of value dispositions and teaching expertise (Hausman & Goldring, 2001; Little & McLaughlin, 1993). Dannetta (2002) also found that teacher collegiality influences teacher commitment to student learning. Silins et al. (2002) showed that organizational learning also occurred most often in schools where teachers openly communicated, were supportive, and actively sought information to improve their work. Similarly, Lokon (2003) found that although organizing teachers into teams can create an ethos of collaboration, there needs to be leadership, organizational support, and other cultural and structural factors to transform how teachers work together.

The career academy model, particularly as emphasized by NAF, has a clearly defined theme and focus built around its industry affiliation and the related content knowledge. It draws on organizational supports—using professional development and networking to create the focus and shared means of teaching while enhancing professional community through its school-within-a-school structure and common meeting time—to use the shared educational purpose in improving teaching and educating students. Consequently, by participating in a career academy, teachers may become more likely to infuse this theme in their work individually and collectively, creating coherence and using collaboration to become more effective in working with students.

STUDY METHODS

Survey research methods were used to elicit information from academy teachers and similar nonacademy teachers at 10 high schools with

longstanding career academy programs. Respondents described their teaching and assessed their professional development, collaborative work, and effectiveness with students. Case study research at the same schools included supplemental teacher interview results on the same topics.

The research was guided by a conceptual design to determine how and in what ways teaching in a career academy benefits teachers, improving their sense of professional effectiveness. This design was tested in two ways. First, it was hypothesized that positive and significant relationships would exist among the teachers' organizational supports, their teaching practices and relationships, and their effectiveness with students, both generally and as enhanced by career academy affiliation. Second, NAF-facilitated professional development and support opportunities were thought to uniquely contribute to teachers' practices, relationships, and work with students. Thus, two primary questions were addressed: (a) How do career affiliation and other organizational supports—professional development and common meeting time—relate to teaching practices and teacher relationships and, in turn, their perceived effectiveness with students? and (b) How do career academy teachers' experiences with the career academy program features and NAF-influenced supports contribute to their teaching practices, relationships, and student work?

STUDY POPULATION AND SAMPLE

The study target population was a sample of noncareer academy teachers and all career academy teachers at the 10 selected high schools. The 10 high schools were selected to reflect a geographic and demographic cross-section of schools with long-term, well-implemented, NAF-affiliated career academy programs (see Orr et al., 2004, for a fuller methodology discussion).

Identifying who was an academy teacher turned out to be methodologically challenging. In all 10 schools, the academy program coordinators identified their academy teachers to be surveyed. In some schools, the coordinators selected only those who taught the core, elective academy courses, whereas in other schools, coordinators used a broader definition, including teachers who had one or more courses primarily filled with academy students (i.e., keyboarding or a designated English class). For survey purposes, teachers who self-identified as academy teachers and whose school coordinators identified them as such were used as the sample. The final sample, shown in Table 1, includes different representations from each school—that is, in some schools only those who taught the core academy courses were included, whereas in other schools other teachers were included as well.

TABLE 1
Academy and Nonacademy Teacher Survey Responses by Site

Site	Type of Academy	Year Began		Number of Core Academy Teachers		Number of Related Academy Teachers		Total Number of Academy Teachers		Number of Academy Teachers' Survey Responses		Number of Nonacademy Teachers' Survey Responses		
		NAF-Affiliated Program	—	Academy Teachers	—	Academy Teachers	—	Academy Teachers	Academy Teachers	—	Academy Teachers	—	Nonacademy Teachers	—
A	AOF	1988	—	2	—	0	—	2	—	2	—	2	—	2
B	AOF	1988	—	1	—	0	—	1	—	1	—	1	—	1
C	AOF	1989	—	3	—	1	—	4	—	4	—	4	—	4
D	AOF	1982	—	3	—	0	—	3	—	3	—	3	—	3
E	AOF	1988	—	4	—	0	—	4	—	4	—	4	—	3
F	AOF	1986	—	1	—	4	—	5	—	2	—	2	—	3
G	AOF	1987	—	1	—	6	—	7	—	7	—	7	—	3
H	AOTT	1991	—	9	—	1	—	10	—	7	—	7	—	3
I	AOTT	1991	—	8	—	8	—	16	—	7	—	7	—	3
J	AOTT	1987	—	4	—	1	—	5	—	3	—	3	—	1
Total	—	—	—	36	—	21	—	57	—	34	—	26	—	26
Academy Response Rate	—	—	—	60%	—	—	—	—	—	—	—	—	—	—

NOTE: NAF = National Academy Foundation, AOF = Academy of Finance, AOTT = Academy of Travel and Tourism.

There were estimated to be 57 (36 core subject and 21 related subject) career academy teachers in the 10 programs. A total of 34 academy teachers completed the survey, including almost all of the core academy teachers and less than half of the related academy teachers, yielding a 60% response rate.

To construct a comparison group of teachers, academy program coordinators were asked to identify teachers in their schools who would serve as matches based on their subject matter disciplines (primarily social studies) and types of teaching (traditional academic programs rather than programs serving specialized student groups). The coordinators excluded those in other career-focused programs. In all, 26 teachers were selected, all of whom completed a teacher survey.

It was assumed that no systematic bias was created by the sampling procedure. A statistical comparison of the two groups shows that they had similar demographic and teaching characteristics, although the academy teachers were somewhat more likely to be male, non-White, and have other teaching responsibilities (such as discipline, scheduling, and chairing a department) than were the nonacademy teachers, as shown in Table 2. Several academy teachers were more likely to be program coordinators and somewhat more likely to be social studies, history, and English or vocational education teachers. These differences were not statistically significant and were not thought to bias other comparisons of these two groups.

The two groups of teachers may differ on unmeasured attributes, although the case study research in the 10 schools did not reveal any. In contrast, the MDRC's research reported that their sampled academy teachers had greater flexibility, willingness to work with students and colleagues in different ways, and willingness to take on additional administrative responsibilities than their nonacademy teachers (Kemple, 1997). In some sites in this study, program coordinators had commented that the career academy teachers invested more time and effort in their work and that they recruited teachers for this quality. There are two other possible reasons the two groups of teachers in this study did not differ on the attributes as was found in the MDRC study. First, the sampled schools in this study generally were adopting more career academy-like attributes, such as offering other thematic curriculum concentrations; encouraging service learning, community service, and work-based learning options for students; and making the schools more intimate and supportive places to work generally. Second, some schools were experiencing staff turnover, both within the academies and elsewhere.

TABLE 2
Characteristics of Responding Academy and Nonacademy Teachers

<i>Characteristic</i>	<i>Academy</i>	<i>Nonacademy</i>
Number of teachers	34	26
Characteristics as a percentage of the total group		
Female	41	62
Nonwhite	29	15
Have other teaching responsibilities	65	58
Teach full-time	79	92
Teach social studies, English, history, vocational education	68	58
Taught in their academic department for less than 5 years	39	31

PROCEDURE

The teacher survey was constructed using questions drawn from other surveys of other high school teachers, including the National Education Longitudinal Study (NELS), prior studies of NAF academies conducted by the Academy for Educational Development (Orr & Fanscali, 1995; Orr, Fruchter, Thomas, & White, 1987), and MDRC's career academies study (Kemple, 1997). The survey questions were reviewed by NAF officials for their content validity. The finalized surveys were administered by the academy coordinator in each high school to all academy teachers and sampled nonacademy teachers in spring 2000. The primary independent and dependent measures are summarized in Table 3 and their scale items are listed in the appendix.

The research design was supplemented with qualitative case study research on the 10 academy programs, including the teaching experiences in spring and fall 2000. Most academy teachers were observed and interviewed about their teaching, their sense of affiliation, and how academy teaching contrasts with other, more traditional teaching experiences.

CONCEPTUAL DESIGN AND MEASURES

The teacher survey was designed to examine the relationship between teacher participation in NAF-affiliated and other professional development and academy and nonacademy-related supports and their influence on teachers' beliefs in career academy-like program attributes, student-centered teaching practices, collaborative work, and perceived effectiveness in working with students, as shown in Figure 1. The reliability of the survey measures

TABLE 3
Attributes, Descriptive Statistics, and Reliabilities for Various Measures and Scales ($n = 60$ teachers)

<i>Measures and Scales</i>	<i>Attributes</i>	<i>M</i>	<i>SD</i>	<i>Reliability^a</i>
Frequency of common teacher planning and management time	One scale item ranging from <i>never</i> (1) to <i>daily</i> (6)	3.69	1.43	—
Number of types of other professional development in past 5 years	Average number of nine possible professional development activities (1 = ever, 0 = never)	5.38	1.92	—
Sense of belonging with other teachers	Average agreement about six attributes of perceived belonging and support with other teachers in their program or department, rated from 1 = <i>strongly disagree</i> to 5 = <i>strongly agree</i>	3.94	0.91	0.834
Extent of collaborative work teachers share	Average use of 11 types of collaborative activities rated from <i>never</i> (1) to <i>very frequently</i> (5)	1.84	0.89	0.931
Satisfaction with being part of an academy or department	One scale item ranging from <i>not at all</i> (1) to <i>very satisfied</i> (4)	3.48	0.81	—
Commitment to academy program-like approach	Average commitment rating of three possible academy-like attributes, from <i>not at all</i> (1) to <i>a great deal</i> (4)	3.29	0.57	0.699
Use of student-centered instructional practices	Average frequency of use of six student-centered instructional practices rated from <i>never</i> (1) to <i>2+ times per week</i> (4)	2.70	0.54	0.713
Perceived effectiveness with students ^b	Average effectiveness rating of eight ways of helping students, rated from <i>strongly disagree</i> (1) to <i>strongly agree</i> (5)	4.21	0.68	0.921

a. Cronbach's alpha.

b. Extent to which teachers agree that being part of the academy or their department encourages them to . . .

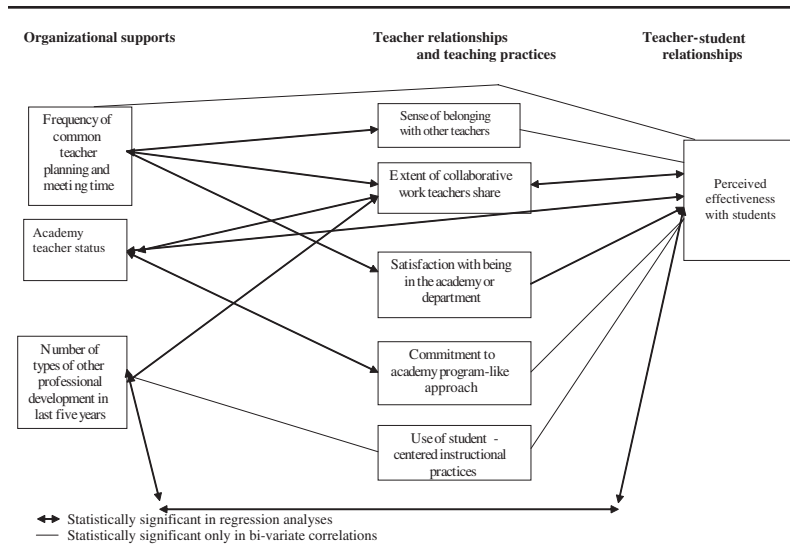


Figure 1: Relationship Among Organizational Supports and the Nature of Teacher, Teaching Relationships, and Teacher-Student Relationships

was evaluated using Cronbach's coefficient alpha, and only those with alphas of more than 0.6 were included in statistical analysis. The measures, their accompanying items, and factor loadings are presented in the appendix.

Two sets of statistical analyses were conducted. The first set of analyses, using both career academy and other teachers, used bivariate correlations and regression analyses to investigate how academy affiliation and organizational supports—non-NAF professional development and frequent common program or department meeting time—contributed to student-centered teaching practices and collaborative teaching relationships. In turn, the analysis looked at how these contributed to teachers' perceptions of their effectiveness in working with students. The second set of analyses used bivariate correlations to look further at the relationship among academy-related professional development experiences of career academy teachers and their teaching and teacher relationships.

The first analysis uses three sets of measures. The first are three types of institutional support: (a) being a career academy teacher—a dichotomous measure; (b) extent to which they had frequent common teacher planning and meeting time using a 6-point ordinal time scale (ranging from *never* to *daily*) on how frequently they met as academy teachers or with their academic departments; and (c) number of type of other professional development

participation in the past 5 years, based on a range of learning-centered professional development experiences (e.g., school or district-sponsored activities or content institutes, professional reading, university courses, study groups, and teacher networks). Overall, teachers averaged moderate ratings on the latter two measures, with sizable variability (see Table 3).

The second set of measures was of teaching and teacher relationships. Three measures of teachers' working relationships were created. First, teachers rated their sense of belonging with other teachers in their academy or department using a 5-point Likert agreement scale on six items about their relationship with other teachers. Second, teachers' ratings of how frequently they collaborated with other teachers in their academy or department on 11 teaching and student support activities were averaged as the extent of collaborative work teachers share. Third, teachers' 5-point Likert scale rating on satisfaction with others in their academy or department was used. Average ratings of teachers' sense of belonging and satisfaction were moderate to high, with some variability, whereas their average collaboration rating was low to moderate (1.84 on a 5-point scale, for 11 types of collaboration).

Two measures of teaching practices were constructed: (a) average commitment to academy program-like approach: teachers' ratings of their commitment to applied curriculum, project-based learning, and career exploration were averaged as an overall score; and (b) use of student-centered instructional practices: teachers' frequency rating of their use of six student-centered instructional practices (e.g., projects, small group work, and games) were averaged as a measure of student-centered instructional practice. Overall, teachers' commitment to an academy-like approach was high (3.29 on a 4-point scale) but their frequent use of student-centered instructional practices was moderate (2.7 on a 4-point scale for six practices), with little variability.

The dependent measure used in these analyses was teacher-perceived effectiveness with students. This scale was constructed by averaging teachers' 5-point Likert agreement ratings on eight ways in which the academy or their department influenced their work with students. The teachers averaged a moderate to high average rating (4.21 on a 5-point scale) with modest variability.

For the second analysis, additional measures were created on the attributes of academy affiliation that were hypothesized to positively affect teachers' work and relationships. Two are count measures: (a) shared program responsibilities: a count of up to 21 different program operations responsibilities academy teachers as a group had and (b) number of NAF conferences attended in the past 10 years. Their means and standard deviations are in Appendix Table A-3, showing modest averages and wide variability on both

measures. Two others measures were based on scales of professional development and affiliation. The average beneficial employer-based professional learning experiences were an average of academy teachers' 5-point Likert scale rating of six employer-based professional learning experiences. The measure of NAF affiliation as a professional community averaged teachers' 3-point Likert rating of the extent to which they felt part of an NAF-encouraged professional group, based on five affinity characteristics. As shown in Appendix Table A-4, the teachers' averages on these two scales are low to moderate, with wide variability.

Three academy teacher characteristics were included as moderator variables: (a) whether they taught a core academy course (from the NAF-required courses) or a related course, such as English or computer, which served primarily academy students; (b) the number of years they had taught in the academy program; and (c) the percentage of their time spent teaching academy courses weekly. As shown in Appendix Table A-3, the teachers averaged 5 years of teaching in the academy, primarily taught a core academy subject, and did the majority of their teaching in the academy. Although less than half used the NAF curriculum as their primary course basis, 53% used half or more of the NAF curriculum in their courses.

Job satisfaction, although found to be significant in the MDRC study of career academy teachers (Kemple, 1997), was not investigated in this study. Almost all surveyed teachers had very high ratings for job satisfaction (3.4 and 3.6 on a 4-point scale for academy and nonacademy teachers, respectively) and were more satisfied with teaching generally (3.6) than with teaching in their school (3.3). Consequently, there was little variance to be explained by analyzing how job satisfaction related to selected teaching experiences and perceptions. More germane for this study as well is how teaching practices and relationships and organizational supports influences how teachers work with students.

STUDY 1: DESCRIPTIVE STATISTICS

Table 3 summarizes the descriptive statistics for all measures in the first part of this study, along with their scale or measure attributes. Teachers tended to rate their attitudes and beliefs highly, as reflected in the measures of belonging, satisfaction, commitment, and perceived effectiveness. They were more modest in their reported experiences of frequent shared meeting time, student-centered instructional practices, and participation in various types of professional development in recent years. Finally, they averaged few

shared collaborative activities. The largest variation in teacher ratings was the number of types of professional development in the past 5 years.

STUDY 1: BIVARIATE CORRELATIONS AMONG STUDY VARIABLES

Table 4 summarizes the bivariate correlations among all measures in the first set of analyses on all teachers. The dependent measure—teacher-perceived student effectiveness—was significantly correlated with all the other measures, ranging from *modest* to *high* (.289 to .643). The strongest relationships among the measures and scales were for measures of teacher relationships—sense of belonging, number of collaborative activities, and satisfaction with being part of an academy or department (which had moderate to high correlations)—with the frequency of common teacher planning time (ranging from .400 to .726). A more modest relationship existed between types of professional development experiences and use of student-centered instructional practices (.264) and between being an academy teacher and being committed to academy program-like attributes (.323). Finally, teacher commitment to academy program-like attributes was moderately correlated with measures of teacher collaboration and satisfaction in working with teachers in their department or academy (ranging from .279 to .375).

STUDY 1: MULTIPLE REGRESSION ANALYSES

Multiple regressions were used to determine the relationship between teacher-perceived student effectiveness and measures of institutional support, student-centered teaching practices, and collaborative and supportive teaching relationships. Table 5 presents the regression analysis results predicting teacher-perceived student effectiveness. The analysis was done in a two-step process: first, using all measures, and then second, using only the teaching practices and relationship measures. Both models were statistically significant ($p < .0001$).

In the first model, the strongest predictor of teacher-perceived student effectiveness was being an academy teacher ($\beta = .354, p = .001$), suggesting that academy teachers are much more likely to work with each other on supporting students and find ways to teach and support students well (as shown in Table 6). The next strongest predictor is the average number of

TABLE 4
Intercorrelations Among Major Study Measures for All Teachers ($n = 60$ teachers)

Measures	1	2	3	4	5	6	7	8	9
1. Academy teacher or not	.119								
2. Frequency of common teacher planning and management time	-.212	.229							
3. Number of types of other professional development in past 5 years	.104	.424**	.144						
4. Sense of belonging with other teachers	.109	.616**	.452**	.565**					
5. Extent of collaborative work teachers share	.149	.400**	.151	.726**	.462**				
6. Satisfaction with being part of an academy or department	.323*	.216	.049	.375**	.279*	.316*			
7. Commitment to academy program-like approach	-.116	-.162	.264*	.185	.104	.222	.230		
8. Use of student-centered instructional practices	.391**	.376**	.348**	.591**	.643**	.619**	.489**	.289*	
9. Perceived effectiveness with students									

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

TABLE 5
Regression Equations for Teacher-Perceived Student Effectiveness

<i>Model</i>		<i>df</i>	<i>M</i> ²	<i>F</i>	<i>R</i> ²	<i>Adjusted R</i> ²	<i>Standard Error</i>
1: Full model	Regression	8	2.164	13.622	.712	.660	.399
	Residual	44	.159				
2: Teaching relationships and practices, only	Regression	5	3.152	16.221	.614	.576	.441
	Residual	51	.194				

NOTE: All *F* statistics are significant at .0001.

collaborative activities that teachers share ($\beta = .344, p < .001$), suggesting a relationship between how much teachers work with each other on their teaching practices and how much they focus together on serving students well. The third strongest predictor was satisfaction in being part of an academy or department ($\beta = .289, p < .05$) and (almost) the number of types of professional development in the past 5 years ($\beta = .193, p < .06$). All β values, except one, were positive. Only the frequency of teacher planning and management time was not, suggesting that how frequently teachers meet is less relevant than what they meet about. This model explains 66% of the variance in teacher-perceived student effectiveness.

When organizational supports—being in an academy, frequency of common meeting time, and the number of types of professional development—were excluded, the regression model remained statistically significant. The amount of overall variance explained was slightly reduced to 58%. The average number of collaborative activities teachers share and the extent of their satisfaction with being part of an academy or department remained significant predictors. The extent of teacher commitment to academy program-like attributes became a significant predictor ($p < .05$), suggesting that it is teachers' commitment to the academy-like philosophy (applied curriculum, project-based learning, and career exploration) and the coherence it engenders that is uniquely important to their perceived effectiveness with students. Two measures—perceived belonging and support and use of student-centered instructional practices—were not significant in the regression analysis, although they are positively correlated with the dependent measure.

This analysis suggested that measures of organizational supports may be influential through their relationship with measures of teaching practices and

TABLE 6
Regression Analysis Predicting Teacher-Perceived Effectiveness With Students ($n = 60$ teachers)

<i>Measures and Scales</i>	<i>Full Model</i>				<i>Teaching Relationships and Practices Only Model</i>			
	<i>Unstandardized Coefficients</i>				<i>Unstandardized Coefficients</i>			
	<i>b</i>	<i>SE</i>	β	<i>t</i>	<i>b</i>	<i>SE</i>	β	<i>t</i>
Academy teacher or not	.482	.131	.353	3.68**				
Frequency of common teacher planning and management time	-.041	.052	-.086	-.780				
Number of types of other professional development in past 5 years	.068	.035	.192	1.93†				
Sense of belonging with other teachers	.054	.098	.073	0.55	.009	.106	.011	.081
Extent of collaborative work teachers share	.261	.095	.348	2.74**	.301	.080	.405	3.76**
Satisfaction with being part of an academy or department	.236	.099	.292	2.38*	.259	.107	.316	2.41*
Commitment to academy program-like approach	.165	.122	.134	1.35	.282	.113	.239	2.50*
Use of student-centered instructional practices	.193	.120	.153	1.61	.146	.112	.118	1.30
Constant	1.136	.435		2.61*	1.400	.428		3.27*

NOTE: Dependent variable is student-teacher effectiveness (q34).
 † $p < .06$. * $p < .05$. ** $p < .01$.

working relationships rather than directly with the dependent measure of perceived effectiveness with students. To test this, the three institutional support measures were regressed against the five teaching practices and working relationships in separate analyses. The regression models using the three measures of working relationships as separate dependent measures were all significant, as shown in Table 7. The measure of how frequently teachers meet together was significant in all three models, whereas professional development participation was only significant for the measure of teachers' collaborative work. Being an academy teacher was not significant in any model.

The regression models using teaching practices as separate dependent measures are shown in Table 8. Only the model using teacher commitment to academy program-like teaching practices was statistically significant and being an academy teacher was statistically significant in this model. These two sets of analyses suggest that organizational supports are indirectly contributory—through their influence on teacher relationships and teaching practices—as well as directly to teacher-perceived effectiveness with students. These relationships are shown graphically in Figure 1.

STUDY 2: AN IN-DEPTH LOOK AT THE CAREER ACADEMY TEACHING EXPERIENCE

Although the above analysis demonstrates that academy participation is related to teaching practices, teaching relationships, and perceived effectiveness with students, further analyses were conducted to explore the nature of this teaching, particularly given NAF's aims for professional development and community within and among academy teachers.

This analysis is done in three parts. The first is a description of the nature of teaching and working conditions in the 10 career academies for the surveyed teachers, illustrating the variability and common elements. The second is a correlational analysis of the relationship among key attributes of career academy teaching and teacher outcomes, showing how this variability is correlated with study measures. Third is a qualitative analysis of the case study data to explore these relationships further based on the teacher interviews and observations.

TABLE 7
**Multiple Regression Analyses of Institutional Support Measures and
 Intermediate Measures of Teacher Relationships (n = 60 teachers)**

Independent Measures	Sense of Belonging				Average Extent of Collaborative Work Teachers Share				Satisfaction With Being Part of an Academy Team or Department			
	Unstandardized Coefficients				Unstandardized Coefficients				Unstandardized Coefficients			
	B	SE	β	t	B	SE	β	t	B	SE	β	t
Being an academy teacher	.107	.247	.058	0.43	.218	.192	.122	1.14	.172	.227	.103	0.76
Frequency of common planning and management time	.278	.085	.433	3.28**	.326	.066	.520	4.94**	.219	.078	.374	2.79**
Number of other types of professional development in past 5 years	.014	.066	.030	0.22	.163	.050	.355	3.24**	.027	.060	.062	0.45
Constant	2.739	.459		5.97**	-.373	.351		-1.06	2.408	.416		5.79**
R^2	.203*				.485**				.170*			
Adjusted R^2	.155				.455				.121			
SE	.849				.660				.783			

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

TEACHER WORK AND WORKING CONDITIONS

The 36 surveyed career academy teachers worked in NAF-affiliated programs of different settings and conditions. Most had taught in their academies for at least 3 years and almost half of the core academy teachers had taught more than 10 years. Their weekly program teaching time ranged from less than 30% (for 37% of the teachers) to 80% or more (for 17%). Seven programs had onsite coordinators; the teachers in the three other sites shared the coordination work. Almost half of the core academy course teachers were affiliated with vocational education and the others with history, English, or mathematics (not shown).

The programs were organized in one of three ways: (a) six were partial schools within schools, whereby teachers taught part-time in the program and part-time elsewhere; (b) three were career magnet programs or schools, where some teachers taught exclusively and others only part-time; and (c) two were primarily a social studies course of study handled by one teacher, whereas other teachers taught career academy students in related courses, such as English and keyboarding, and did not function as a team. Other factors limited the program's uniqueness in some sites. One site used a community college curriculum rather than the NAF curriculum, limiting its affiliated identity with the program. In two sites, some academy teachers also were responsible for other partial school-within-a-school programs, such as law, dividing their attentions and teaching community. Teachers in one site were strongly aligned with a nationally based student business club, which seemed to swamp the career academy identity and purpose, muddling the teachers' separate identity with the career academy model. Furthermore, teachers in three programs did not have a separate physical location or definable area for their academy and three programs lacked a program office, limiting teacher informal interactions and opportunities to work together. Consequently, although the teachers commonly participated in an academy program, their program affiliation varied widely.

The teachers all shared a commitment to the program's aims, their responsibility for the program, and had extensive professional development opportunities, but some differentiation existed. From onsite interviews and focus group discussions within and among the sites, teachers differed in their views on the program's purpose for college or career preparation and their commitment to integrating courses with related learning experiences. Although all programs had a partial school-within-a-school structure, the sites differed in how frequently teachers met together and shared program responsibilities. The teachers had opportunities for extensive professional development through NAF and affiliated employers but varied in their participation. More

TABLE 8
Multiple Regression Analyses of Institutional Support Measures and Intermediate Measures of Teaching Practices

<i>Independent Measures</i>	<i>Commitment to Academy Program-Like Teaching Practices</i>			<i>Use of Student-Centered Instructional Practices</i>		
	<i>Unstandardized Coefficients</i>			<i>Unstandardized Coefficients</i>		
	B	SE	t	B	SE	t
Being an academy teacher	.383	.151	.349	2.54*	.151	2.54*
Frequency of common teacher planning and meeting time	.058	.052	.151	1.12	.052	1.12
Number of other types of professional development in past 5 years	.029	.040	.104	0.74	.040	0.74
Constant	2.725	.276		9.86**	.276	9.86**
R^2	.154*					
Adjusted R^2	.104					
SE	.520					

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

experienced teachers and those who taught more in the academy participated more in professional development activities and experienced more benefits than did other teachers. Finally, although all teachers reported that they were committed to academy teaching (100% were very committed), only 53% used the NAF curriculum half or more of the time in their courses.

CORRELATION ANALYSES

Correlation coefficients (Pearson r) were used to assess bivariate relationships among major study measures. The measure of teachers' perceptions of their effectiveness with students was significantly related to only some independent measures, primarily those related to commitment to the academy approach, collaboration, belonging and support, and professional development (NAF-related and others), as shown in Table 9. The magnitude of the significant correlations was moderate to high (.357 to .626). The various measures of teacher relationships—collaboration and support and belonging—were significantly correlated ($r = .549$) and were significantly related to how often the teachers met for common planning and management (.496 and .698). The moderate to high magnitude of these relationships suggests that the institutional support of common meeting time was instrumental for their professional community building. Similarly, the teachers' shared focus—as reflected in the measure of commitment to the academy program—like attributes—was both moderately to highly correlated with the organizational supports of common meeting time and NAF professional development participation—and with their collaborative work and sense of belonging and support ($r = .406$ to .520). This suggests that the shared focus coupled with the organizational supports gave the shared work meaning and purpose. Finally, the professional development participation—both through NAF and otherwise—were significantly related to how much the teachers used the NAF curriculum in their courses ($r = .446$) but not their instructional practices.

COMPARISON OF SURVEY RESPONSES TO QUALITATIVE FINDINGS

The case study research in the 10 schools underscored the relationships among organizational supports, teaching practices, and teacher outcomes found in the teacher survey analysis. The effect of NAF and employer-sponsored professional development on teachers' teaching practices was evident in almost all teacher interviews. For example, a travel and tourism academy teacher described using conferences to attend behind-the-scenes

TABLE 9
Intercorrelations Among Independent and Dependent Measures for Academy Teachers Only (N = 34)

Measures	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1. Teaches core academy courses															
2. Number of years taught in the academy	-.433*														
3. Percentage of time teach weekly	-.130	.264													
4. Frequency of common teacher planning and meeting time	.074	.013	.138												
5. Number of other types of professional development in past 5 years	.192	-.346	-.172	.228											
6. Number of NAF conferences attended in the past 10 years	-.364*	.712**	.406*	.009	-.132										
7. Average beneficial employer-based professional learning experiences	-.089	.160	.273	-.139	-.015	.301									
8. NAF affiliation as a professional community	.104	.126	.402	.119	.186	.407	.174								
9. Commitment to academy program-like approach	-.241	.248	.412*	.411*	.092	.406*	.420*	.452*							
10. NAF curriculum used as the primary course content	-.415*	.521**	.449*	.091	-.371*	.446**	.295	.195	.413*						
11. Student-centered instructional practices	-.134	.076	-.075	-.206	.201	.249	.456**	.322	.047	.101					
12. Extent of collaborative work teachers share	.226	-.074	.258	.698**	.465**	-.021	.292	.148	.474**	.059	.000				
13. Shared program responsibilities	-.017	-.043	.159	.107	.149	.163	.338	.164	.436**	.056	.227	.275			
14. Sense of belonging with other teachers	.188	.141	.138	.496**	.176	.297	.233	.398	.520**	.069	.089	.549**	.103		
15. Teacher-perceived effectiveness with students	-.118	.056	.234	.423*	.400*	.187	.339	.491*	.626**	.308	.270	.601**	.357*	.475**	

NOTE: NAF = National Academy Foundation.

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

visits to various tourist spots set up by NAF, which he then integrated into his lessons. Another teacher said that attending and presenting at NAF conferences “broadened my own teaching skills.”

Only a few teachers worked in schools with an official, regularly scheduled meeting time for career academy teachers, and most teachers had limited career academy program responsibilities—typically related to student recruitment and selection. Despite the lack of a common meeting time and limited shared responsibilities, career academy teachers reported that they often worked collaboratively during their spare time and available opportunities. For some, this involved talking about problem students or planning field trips during their lunchtime or overlapping planning time. For others, it involved planning joint lessons and interdisciplinary projects.

Most interviewed teachers described their collaboration, whether formal or informal, as increasing their effectiveness with students. Academy teachers reported using each other as a resource and support on a number of instructional and other related efforts. One teacher, who was new to the profession, told researchers that at first, teaching was really tough, but he stayed “because of the academy.” Interviewed academy teachers stressed their sense of closeness and collegiality with each other. As one academy teacher described himself and his colleagues, “The AOTT teachers are friends” and “they really do like each other.” According to him, the teachers really go above and beyond, doing program-related work after their regular teaching day is over. As he explained further, “It’s a very unique relationship and bond.”

Project work, extracurricular academy work, internship preparation, and their focus on college and career planning seemed to give teachers the opportunity to engage in innovative educational strategies while developing more intimate relationships with academy students. One teacher explained, “You’re getting closer to the kids in a personal way.”

Virtually every teacher interviewed told touching stories of students’ growth through the academy, and each took great pride in describing the transformative effect of the academy experience. Their commitment to teaching was evident throughout the interviews; most teachers attributed it to their academy participation. For many, teaching in the academy was the condition on which they remained in the profession. They explained, “I don’t think I’d still be teaching if it weren’t for the academy”; starting the academy was like a “transfusion in my arm”; the academy “let me change my career path without changing my career path”; and “It is so much fun to teach in the academy!” Thus, being able to experience such significant and personally important contributions to the growth and development of students appears

to be very highly rewarding and engaging, especially when working in some of the challenging urban schools in this study.

Finally, several sampled schools emphasized the same instructional practices encouraged by NAF, and some schools fostered close, intimate teaching communities through small learning community structures or other affiliation strategies. At one school, for example, the academy coordinator and other teachers described passionately the school's long history of close teacher-teacher and teacher-student affinity and support, exemplified by teacher maintenance of school grounds and hallways with flowers and plants and the pervasive commitment to community service within the building and community at large. Another school has a long tradition of constructivist teaching, flexible scheduling, and independent study. This may explain why academy and nonacademy teachers were somewhat similar on their collaborative work, sense of belonging, and use of student-centered instructional practices.

DISCUSSION

Teachers perceive themselves to be professionally effective when they can engage students academically, find solutions for students with problems, help students become independent learners, and help them prepare for their college and career futures. Being effective in these ways can be challenging for high school teachers, particularly in urban areas such as those in this sample. As the study results show, however, sharing a common philosophy and curricular focus, collaborating, and having structured opportunities to learn and work together with other teachers is strongly associated with such effectiveness. It is likely that the relationship among these attributes is synergistic—that teachers who feel efficacious are better collaborators and more likely to engage in professional learning and shared work. Nonetheless, the strong relationship among these attributes reinforces the professional learning arguments that teachers' effective work with students is improved when they can work and learn with each other over time and share a commitment in focus and instructional approach (DuFour & Eaker, 1998; Fullan, 1991; Little, 1993; Newmann et al., 2001).

As shown here, teaching in a career academy can uniquely contribute to teachers' sense of professional identity, their teaching, their work with colleagues, and their focus on and support of students. The three primary components of career academy teaching—the underlying and unifying principles and philosophy of a career academy (particularly as well-defined as the

NAF-affiliated career academies), the structure of its small learning community environment, and its focused professional development—directly influences teachers' sense of effectiveness with students and indirectly through their unique contributing and reinforcing influences on teaching practices, sense of belonging, and collegial support. Being efficacious in one's work, with and through others, seems to be the central influence of academy teaching. NAF's professional development resources of conferences, network affiliation, and business involvement appears to uniquely contribute even further to focus, curriculum, and instructional practices.

Despite differences in sampling and timing of the studies, these results are similar to the MDRC teacher study (Kemple, 1997) in several ways. Both studies found teacher effectiveness with students to be positively and significantly related to the extent to which teachers participated in professional development, met for program planning, and undertook collaborative work with other teachers. This study found little difference in teachers' sense of belonging and support from their colleagues or job satisfaction, as the MDRC study found between academy and nonacademy teachers (Kemple, 1997). This may be due to differences in when the studies were conducted and that recently many career academy attributes have become more widely diffused in high schools (Castellano et al., 2003).

Generally, although this study's findings confirm that career academy affiliation is associated with both personal and professional benefits for teachers, the results must be interpreted with caution. First, the study is based on a small number of teachers in well-implemented programs, limiting generalizability to all career academy programs and increasing the likelihood that the findings may be idiosyncratic. Second, the comparison teachers were selected to be similar to the career academy teachers with respect to subject taught; thus, how much they represent all teachers generally is unclear. Third, several teachers in the selected academies would have difficulty evaluating the extent to which the academy improved their sense of community and belonging or their teaching satisfaction because they were (a) new to teaching; (b) had taught in the program for so long that they had little comparison; or (c) were the only teacher in the program, and so had no colleagues. Fourth, in at least two schools, there were conditions that fostered a strong sense of community and belonging schoolwide, which limited how much benefit the academy affiliation could add. Fifth, some of the program participation and teaching experiences proved to be difficult to measure. It is unclear, therefore, whether the lack of strong relationships between the two types of measures are due to measurement difficulties or a weak association. Sixth, both this study and the MDRC study lacked sufficient method variance—the results are primarily based on teacher-reported information. The survey in

this study, however, combines both attitudinal information and behavior measures, which provides some measurement differentiation.

Confirmation of the survey findings with case study research provided a critical validity check, however. The case study research suggested that program model adherence and program conditions were contributory to the teachers' positive descriptions of their teaching and their sense of teacher collegiality and effectiveness with their students. Yet, as Firestone and Pennell (1993) stress in their review of research on teacher working conditions, not all teachers are interested in having more stimulating work and enhanced working conditions. Consequently, these findings may reflect initial differences in teacher interest for stimulating work rather than the actual influence of the academy conditions and professional development experiences.

CONCLUSION

Structuring teacher work as a small learning community—through formalized, common planning time and collaborative work on curriculum and instructional matters—and providing relevant professional development were found in this study to be significant influences on teacher effectiveness. These are the two primary mechanisms that educational reformers can use to focus and integrate teachers' work and positively influence their work with students. Their benefits, however, are dependent in part on their use in conjunction with an integrating theme to create coherence, such as the career academy. Whereas other research underscores the importance of leadership in developing this focus (Newmann et al., 2001; Silins et al., 2002), this study shows that intermediary resources can contribute, particularly in creating a unifying focus and reinforce professionalism.

It could be argued that teachers would seek out other similar opportunities to be effective with students in their school if the academy did not exist, particularly because so many high schools are now creating other small learning communities. Nonetheless, the teaching experience offered by the academy seems to be particularly meaningful as a way of focusing teachers' work and enhancing their effectiveness with students because of its contribution to students' college and career development and the professional teaching and business community affiliations.

Further research is needed to investigate these study findings and their generalizability to other types of career academy programs and school-within-a-school programs. Larger research samples may confirm the

generalizability of these findings and may make it possible to tease out the synergistic effects of integrating themes, organizational structure, and professional development in fostering teacher outcomes using more robust and inclusive regression models. Larger samples also can account better for differences in teacher program affiliation and other types of teaching, as well as differences by type and size of the high schools (e.g., comprehensive vs. magnet, small vs. large) and leadership actions to foster instructional coherence and professional community generally.

At the same time, however, these findings have positive implications for strategies to improve teachers' work and engagement in reform-based strategies. Creating commitment and coherence through a shared program focus and professional development aimed at improving students' college and career futures appear to encourage teacher collaboration in mutually reinforcing ways over a sustained period of time. The unique purpose of programs such as the career academies—with both national teacher networking and industry affiliations—seems to uniquely enhance these relationships. Although measuring the nature of and participation in various forms of professional development is challenging, even the rough measures used in this study underscore the importance of fostering professional learning through various communities of practice, particularly as offered through NAF's network and employer affiliations. Moreover, the results suggest that further professional development may improve teachers' use of student-centered instructional practices and lead to even stronger effects on teachers and their effectiveness with students.

APPENDIX

TABLE A-1

Independent Measures of Teaching Practices and Teacher Working Relationships for All Teachers (n = 60 teachers)

<i>Items by Measure</i>	<i>M</i>	<i>Factor Loadings</i>	<i>Percentage of Explained Variance</i>
Average commitment to the academy program-like approach	3.30		63%
Incorporation of an applied curriculum approach in teaching	3.39	.764	
Use of project-based learning strategies	3.22	.892	
Provision of opportunities for students to explore career opportunities in courses	3.27	.718	42
Average use of six student-centered instructional practices	2.70		
Working on projects that take several days	2.58	.455	
Reviewing and discussing the work of other students	2.81	.728	
Giving oral reports, presentations, or exhibitions	2.35	.718	
Playing educational games	2.31	.694	
Working in small groups	3.20	.530	
Writing, such as journals, essays, stories, and reports	2.95	.717	
Average teacher sense of belonging with other teachers in academy or department	3.94		66
Most teachers with whom they work are continually learning and seeking new ideas	4.09	.893	
They work closely with other teachers who support their efforts to try out new ideas	4.17	.867	
They can count on most to help out anywhere, anytime, even though it may not be part of their official assignment	4.21	.815	
There is a strong family-like atmosphere among most	4.28	.860	
They often seek each other's advice about professional issues and problems	2.80	.560	
They share similar views of students and how to relate to them	4.17	.821	
Average extent of collaborative work teachers share	1.84		58
Planning lessons together	1.60	.843	

Developing and sharing assessment tools and practices	1.95	.864
Reviewing curricula for alignment with district standards	1.83	.674
Identifying individual intervention strategies for students who need additional assistance	2.22	.789
Fostering articulation across courses	1.83	.736
Incorporating technology into teaching	2.68	.540
Using student-centered learning strategies	2.30	.786
Reviewing student work together	1.66	.793
Coteaching classes	.63	.682
Developing course content and materials based on the career academy focus	1.84	.821
Working together to create interdisciplinary curriculum content	1.56	.836
Reviewing patterns of student behavior problems to develop changes in instruction and content	1.85	.733

TABLE A-2

Dependent Measure of Teacher-Perceived Student Effectiveness (*n* = 60 teachers)

<i>Measures</i>	<i>M</i>	<i>Factor Loadings</i>	<i>Factor Variance Explained</i>
Average teacher-perceived effectiveness with students ^a	4.21		65%
Work with other teachers on identifying students' individual needs	3.88	.742	
Create a supportive learning environment for students	4.34	.805	
Help students be academically prepared for college-level work	4.47	.750	
Help students make the connection between academic work and future career opportunities	4.34	.764	
Find solutions for students encountering problems	4.22	.897	
Think differently about the role of education	3.97	.763	
Use more effective teaching strategies	4.24	.884	
Work to create lessons so their students will enjoy learning and become independent learners	4.25	.846	

a. Extent to which teachers agree that being part of the academy or their department encourages them to

TABLE A-3
Independent Measures of Academy Teaching and Organizational Supports (*n* = 34 teachers)

<i>Measures</i>	M	SD
Average number of years of teaching in the career academy	4.66	2.04
Percentage who teach a core academy course (dichotomous)	67%	—
Use of the NAF curriculum as primary basis for course (dichotomous)	38%	—
Use 50% or more of the NAF curriculum in their courses	53%	—
Percentage of time teaching in academy courses (6 = 60-69%; 7 = 70-79%)	6.37	3.02
Average number of NAF conferences attended in the past 10 years	3.24	3.44
Average number of shared academy program responsibilities ^a	5.94	5.20

NOTE: NAF = National Academy Foundation.

a. These 21 items include student and staff recruitment and selection; teaching assignments and scheduling; curriculum and instructional strategies; projects; selection of books and materials; discipline; internship recruitment, matches, and supervision; professional development; special events; alumni relations; advisory board relations; student support; employer-based experiences; and program evaluation.

TABLE A-4
Independent Measures of Academy Teachers' Business Involvement and Affiliation With NAF (n = 34 teachers)

Measures	M	SD	Reliability ^a	Factor Loading	Factor Variance Explained
Forms of beneficial business involvement experience ^b	1.84	1.55	.866		61%
Visiting one or more companies	2.27	1.79		.860	
Job shadowing	1.94	1.82		.925	
Brief internship during the summer or school year	1.48	1.78		.714	
Having one or more employers consult for courses	1.60	1.85		.874	
Employer-sponsored professional development	1.04	1.57		.403	
Average extent affiliation with NAF makes teachers feel like part of a professional group ^c	1.16	1.65	.796	.806	
Connects me with a large network of teachers	2.66	0.48		.782	
Makes me feel like I am part of a professional community	2.52	0.51		.827	
Allows me to network with teachers from other districts	2.42	0.50		.614	
Gives me pride in my work as a teacher	2.67	0.48		.697	
Connects me to useful teaching innovations	2.50	0.51		.792	

NOTE: NAF = National Academy Foundation.

a. Cronbach's alpha.

b. Four-point Likert scale ranging from 0 = *did not have the experience* to 4 = *very beneficial*.

c. Three-point Likert scale ranging from 1 = *not at all* to 3 = *a lot*.

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