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What is This?

Constructing Coherence

Structural Predictors of Perceptions of Coherence in NYC Teacher Education Programs

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In this article, the authors focus on the concept of coherence, a relatively underexplored concept in teacher education. They investigate the relationship between students' perceptions of coherence and a number of structural features of teacher education programs to help develop a stronger definition of one important dimension of coherence—the relationship between field-work and coursework. The authors examine the relationship between specific program features and students' perceptions of the degree to which program vision, principles, and practices are aligned with those in the field and also explore the degree to which students have opportunities to practice what they are learning in the program and to enact program goals and visions of good teaching and learning in the classroom. In a field that is calling for larger-scale studies, this research attempts to identify promising features that are also amenable to large-scale studies of the impact of teacher education.

Keywords: *teacher education; student teaching; field experience; program coherence*

A Historical Perspective: Contradictions Between Field Experience and University Coursework

From Dewey on, scholars in teacher education have suggested the importance of linking fieldwork experiences to preparation at the university—of using the field as a laboratory for a richer understanding of teaching and learning (Darling-Hammond, Bransford, LePage, Hammerness, & Duffy, 2005; Dewey, 1938; Goodlad, 1990). In recent years, the role of field experience in learning to teach has received increased emphasis, with some scholars and policy makers arguing that classroom teaching experience is a critical ingredient in learning to teach, especially when such experiences are related thoughtfully and purposefully to principles of teaching

and learning (Darling-Hammond, Bransford, et al., 2005). Indeed, the National Academy of Education's Committee on Teacher Education argued that early and sustained fieldwork is particularly important but must be designed in ways that help frame later learning in teacher preparation programs (Darling-Hammond, Bransford, et al., 2005).[1]

The renewed emphasis on field experience has not gone unnoticed in the policy arena: policy makers as well as teacher educators have begun to call for increasing the amount of time candidates should spend in field experience programs (McIntyre, Byrd, & Foxx, 1996; New York State Education Department, 2001). For instance, as part of a recent revision of teacher education requirements, New York State increased the prestudent teaching field experience requirement to 100 hours and the number of student teaching days to 40 (New York

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State Education Department, 2001). Currently, nine other states require more than 40 hours of field experience prior to student teaching, and four of those require 100 hours (National Association of State Directors of Teacher Education and Certification [NASDTEC], 2004). In addition, 34 states require 40 or more days of student teaching, with an average of 55 days of student teaching required (NASDTEC, 2004).

Despite such an emphasis, researchers have historically considered field experiences to be among the weakest components of teacher education programs (Wideen, Mayer-Smith, & Moon, 1998). Field experiences are often devised without clear goals and can lack purposeful connections to university coursework (Guyton & McIntyre, 1990). Indeed, without careful links, new teachers can come to feel that their learning in the field does not reflect—or, worse, contradicts—their learning in their university courses. If unaddressed by the program, such contradictions can make it difficult for new teachers to learn new practices, try reforms, or move toward a professional understanding of teaching and learning (Britzman, 1990; Guyton & McIntyre, 1990; Zeichner & Liston, 1987; Zeichner & Tabachnik, 1981). For instance, even student teachers with prior experience, strong content knowledge, and a professional vision that is consonant with their program find it difficult to apply what they are learning in placements that are inconsistent with the program (LaBoskey & Richert, 2002; McDonald, 2005; Smagorinsky, Cook, Moore, Jackson, & Fry, 2004). Feiman-Nemser and Buchmann (1985) term the potential disconnect between school setting and university programs the "two-worlds pitfall." When visions of good teaching and learning in these two worlds are contradictory, student teachers often experience the socialization in placement schools as more immediate and powerful (Zeichner & Gore, 1990).

Over the past several decades, reformers have begun to emphasize the development of "coherent" programs (Buchmann & Floden, 1993; Howey & Zimpher, 1989; Russell, McPherson, & Martin, 2001; see also Darling-Hammond, Bransford, et al., 2005). To that end, some programs have made explicit efforts to link coursework and fieldwork, creating deliberate, thoughtful connections between clinical experiences and formal coursework (Darling-Hammond, 1999; for particular cases, see Darling-Hammond & Macdonald, 2000; Koppich, 2000; Merseth & Koppich, 2000; Miller & Silvernail, 2000; Snyder, 2000; Whitford, Ruscoe, & Fickel, 2000; Zeichner, 2000; also see Hammerness, 2006). Some research supports those efforts, suggesting that when student teaching placements are consistent with a program's vision of teaching and learning—and when a shared understanding

of the purposes and activities of student teaching exists between student teachers, cooperating teachers and university supervisors—more powerful learning takes place (Koerner, Rust, & Baumgartner, 2002; LaBoskey & Richert, 2002; also see Grossman, Smagorinsky, & Valencia, 1999).

Defining Coherence

Although coherence is often advocated as the solution to fragmentation or the theory–practice gap in teacher education, the term *coherence* itself is rarely systematically explored or methodologically defined in the literature. For instance, only a few scholars have offered elaborated definitions of coherence (Buchmann & Floden, 1993; Hammerness, 2006; Tatto, 1996). Tatto (1996) offered a useful definition of coherence as the degree to which central ideas regarding teaching and learning are shared by all the individuals involved in educating teachers and the degree to which learning opportunities are organized both conceptually and logistically toward those goals. Similarly, in her definition, Hammerness (2006) identified both "conceptual" coherence among the professional visions of those who work with teachers (in the university and in the field) and "structural" coherence—the alignment of key assignments, activities, and experiences across coursework and fieldwork. These definitions represent coherence according to concepts— *ideas* or *visions*, but also according to structures—*logistics* or *design* of learning opportunities. Although it is important not to reduce coherence to mere "consistency" (Buchmann & Floden, 1993), these definitions emphasize coherence as the alignment of ideas and learning opportunities.

Darling-Hammond (2006) provided a vision of what a coherent teacher preparation program might look like. Her description highlighted both conceptual and structural coherence as well as the mechanisms that might be important for faculty and students to develop shared visions of teaching and learning. From her perspective, a coherent program offers coursework that is

> carefully sequenced based upon a strong theory of learning to teach; courses are designed to intersect with each another, are aggregated into a well-understood landscape of learning, and are tightly interwoven with the advisement process and students' work in schools. Subject matter learning is brought together with content pedagogy through courses that treat them together; program sequences also create cross-course links. Faculty plan together and syllabi are shared across university divisions as well as within departments. Virtually all of

the closely interrelated courses involve applications in classrooms where observations or student teaching occur. These classrooms, in turn, are selected because they model the kind of practice that is discussed in courses and advisement. In such intensely coherent programs, core ideas are reiterated across courses and theoretical frameworks animating courses and assignments are consistent across the program. (p. 306)

Yet despite this increasing emphasis on developing coherent teacher preparation programs, the ingredients of coherence remain a relatively underexplored area by researchers in teacher education. Although a few researchers have examined the practices and learning of graduates in programs designed to cohere around a clear vision (e.g., Grossman et al., 1999; Hammerness, 2006; McDonald, 2005; Kroll et al., 2004; Tatto, 1996), such research is rare, and the specific factors that contribute to coherence remain unclear. In particular, although discussions of reform in teacher preparation often center on coherence as a means to bridge the gap between fieldwork and clinical work, research on coherence has not yet examined the particular characteristics of field placements and coursework that support coherence. For example, there is a shared assumption that placing students with cooperating teachers who have similar perspectives on teaching and learning will increase program coherence, but we have little evidence to support this claim.

In our research, we acknowledge that coherence has a number of features, from the degree to which central ideas regarding teaching and learning are shared by faculty and staff, the degree to which learning opportunities are organized both conceptually and logistically toward those goals, and the degree to which program structures (e.g., courses and clinical experiences) are designed to support, reinforce, and reflect those shared ideas. We also argue that one important measure of coherence is the degree to which student teachers in these programs perceive that they have coherent opportunities to learn, particularly in terms of the relationship between fieldwork and coursework. Do novice teachers feel that they have had opportunities to both experience and enact relatively consistent and complementary practices of teaching and learning across their fieldwork and coursework?[2]

To that end, in this article, we investigate the relationship between students' perceptions of coherence in their opportunities to learn and a number of structural features of teacher education programs. We ask specifically, what particular features of teacher education programs contribute to student teachers' perceptions of coherence between coursework and fieldwork?

To answer that question, we examine the relationship between specific program features and students' perceptions of the degree to which program vision, principles, and practices are aligned with their experiences in the field. We also explore the degree to which students report that they have opportunities to practice what they are learning in the program and to enact program goals and visions of good teaching and learning in the classroom.

In this way, we hope to help develop a stronger methodological definition of one important dimension of coherence—the relationship between fieldwork and coursework. Furthermore, given the need for larger-scale studies of teacher education, we are particularly interested in investigating features of teacher preparation that relate to student perceptions of field–program coherence and are amenable to large-scale, multiprogram research (Boyd, Grossman, Lankford, Loeb, & Wyckoff, 2006; Cochran-Smith & Zeichner, 2006; Wilson, Floden, & Ferrini-Mundy, 2001).

Method

This article focuses on a subset of data from a larger study of teacher preparation and pathways into teaching in New York City (Boyd et al., 2006). Using data gathered from programs on the nature of the field experiences prospective teachers engage in during their preservice teacher education, we examine how the specific characteristics of that field experience relate to survey measures of candidates' perceptions of coherence.

Our data come from 15 institutions that prepare K-6 teachers for New York City schools.[3] The 15 institutions include both public and private colleges and universities and offer undergraduate and graduate programs in teacher education. A number of these institutions provide not only traditional college recommending programs but also alternative, or "early entry," pathways into teaching, including the New York City Teaching Fellows Program and Teach for America. Although preservice field experiences are required as part of the early-entry programs, we found little variation in our program features of interest among these programs. As a result, our analysis focuses only on college-recommending childhood programs in these 15 participating institutions. At these 15 institutions, our analysis includes 22 programs: 14 graduate and 8 undergraduate. For a number of reasons, we were unable to collect data on all features for all programs. In some cases, programs had not collected data on some features. In other cases, different sources provided contradictory information. And in still other cases, we were unable to contact individuals who could provide us with the necessary data.

Survey Data

Our measures of student perception of coherence are based on their responses to a survey we conducted in spring and summer of 2004 of prospective teachers who were just completing their preservice preparation. Our overall response rate for the program completers survey was 71%. In this survey, we asked a number of questions about candidates' experiences in the field, including the relative consistency between fieldwork and coursework, the nature of supervision, and the quality of their cooperating teacher. For instance, we asked candidates about the extent to which they were able to practice what they were learning about teaching math and literacy in their field experiences, whether program faculty gave assignments that connected their fieldwork with coursework, and whether their cooperating teacher taught in ways that were different from what they learned in their university courses.

From these responses, we created a number of factors about field experience, including a factor on perceptions of field–program coherence. This factor included 11 items from our survey and had a Cronbach's alpha of .73 and an Eigenvalue of 2.42. (For a complete list of the items included in the factors, please see the appendix.) Though our factor may not be an exhaustive measure, we believe it is a worthwhile representation capturing a quality of coherence in student teachers' experiences that underlies our various survey items.

Respondents

The larger project from which this analysis is drawn follows the cohort of teachers who began teaching in New York City in fall 2004. Our data include results of the first survey we conducted with this cohort, in spring or summer 2004, just after they had completed their pre-service education. Because we were interested in linking survey data to program features, we focus this study on respondents for whom we both have survey data and program review data. This includes 248 students (147 graduate students, 101 undergraduate students) from 15 institutions, representing a total of 22 programs (14 graduate programs, 8 undergraduate programs). Thus, we had complete data sets for an average of 11 students per program, with a minimum value of 3 students in one program and a maximum value of 27 students in another.

Program Data: Measures of Field Experience

To document the field experiences offered at these 15 institutions, we reviewed multiple documents, including state documents, institutional bulletins, program descriptions, National Council for Accreditation of Teacher Education documents (when available), institutional "fact books," and institutional and program Web sites. We also interviewed program directors and field placement coordinators at each program. We entered this information from all these sources into a common template to facilitate analysis.

Because coherence is a somewhat abstract concept, we were curious about the specific characteristics of teacher education programs that may relate to candidates' perceptions of coherence. Given our available data on programs, we hypothesized that the following structural features might account for candidates' perceptions of coherence between the university and field experiences:[4]

> program oversight of the selection of the cooperating teacher
> requirements for cooperating teacher experience
> stability of cooperating teachers' participation
> amount of contact between program faculty and field supervisors
> number of required supervisory observations
> explicit links between coursework and field experience (e.g., assignments)
> number of courses that had required field experiences attached to them

Each of these characteristics might strengthen the connection between the university and the field, through greater oversight of field experiences, more systematic contact between those most directly responsible for field experience (cooperating teachers and supervisors) and university faculty and staff, or mechanisms, such as course assignments, that explicitly link the two.

We then systematically tested whether these program features predicted student perceptions of coherence by regressing our field–program coherence survey factor on each of these program features separately, clustering at the program level and controlling for whether programs are graduate or undergraduate.[5] Later, we combined these program features together into a "program composite" measure to test whether students in programs with more of these features reported higher levels of program coherence.

Findings

Perhaps it is not surprising that respondents varied significantly on the extent to which they perceived a sense of coherence between what they experienced in the field and at the university. Some of this variation was explained by the nature of the program. For example, those enrolled in undergraduate programs ranked the

"perceptions of field–program coherence" factor significantly higher than did those enrolled in graduate programs ($B = .52$, $p < .001$). In addition, about 23% of the variation in survey respondents' views of fieldwork–program coherence is between programs, suggesting programmatic and not just individual variation in perceptions of coherence.

Characteristics and Selection of Cooperating Teachers

Some teacher educators have argued that to maintain coherence, programs must control the selection of cooperating teachers. They argue that such control is necessary to ensure that cooperating teachers' visions of good teaching and learning and classroom practices are consistent with those advocated by the program (Hammerness, 2006; Hammerness & Darling-Hammond, 2002; Koerner et al., 2002; LaBoskey & Richert, 2002). Some research suggests that negative or conflicting examples—placements in which the students are encouraged *not* to adopt the practices of their cooperating teacher—are ineffective and may disrupt student teachers' learning (Knowles & Hoefler, 1989; LaBoskey & Richert, 2002).

We found that teacher education programs address the difficult task of locating and selecting cooperating teachers in many ways. Some programs rely on principals or administrators to nominate teachers, others expect students to find and organize their own placements, and still others work to maintain control over the selection themselves. Even though most programs included all parties in making the final decision, generally one party took primary responsibility for this decision. We categorized programs according to whether the program faculty or staff, school site administrators (e.g., principals), or students themselves were *primarily* responsible for choosing individual cooperating teachers.[6] We found considerable variation across programs, with 2 programs allowing students to select a cooperating teacher on their own, 8 programs identifying the school site administrator as primary decision maker, and 9 programs claiming primary responsibility ($n = 19$, missing data from 3 programs).

In addition, we examined whether programs require a minimum number of years of experience for cooperating teachers. Again, we see this as an indicator of programmatic control over the selection of the cooperating teacher. The majority of programs (15) did not have minimum requirements. However, 6 programs required a minimum of 2 or 3 years of teaching experience ($n = 21$, missing data from 1 program). Finally, we tried to collect program information on the average turnover rates for cooperating teachers because we thought it might be indicative of a program's dedication to identifying and keeping cooperating teachers who agree with its vision. Because few programs in our study collected systematic data on this item, we received estimates for only 13 programs (missing data from 9 programs). Of these, 4 programs reported high turnover rates for cooperating teachers (on average, staying less than 2 years with the program), 4 programs reported medium turnover (between 2 and 4 years), and 5 programs reported low turnover (more than 4 years).

Program Requirements for Supervision

Field supervision can provide a critical link between coursework and fieldwork. Teacher education programs have dealt with supervision in many ways, asking retired teachers, retired administrators, graduate students, adjunct faculty, and professors to serve in this role. Especially because many of those who serve in this role are not full-time faculty, supervisors can vary in terms of their familiarity with the key principles and practices that a given program promotes. As a result, programs often require meetings that bring together supervisors and program faculty and staff—for orientation and consultation—in an effort to increase coherence.

We felt that the degree to which programs created opportunities to connect field supervisors to the university through required meetings and orientations might serve as another potential indicator of the program's commitment to creating coherence between the field and university components of a program. Therefore, we collected information on how often programs require supervisors to interact with other faculty and staff in the form of orientation, education, and meetings. We found considerable variation in these requirements across programs. Two programs required no such interactions, one program required one meeting per year, three required one meeting per semester or quarter, six required meetings more than once per semester or quarter but less than monthly, and five required monthly meetings ($n = 17$, missing data for 5 programs).

Even if a field supervisor consistently provides feedback that helps a student align his or her field experiences with the program, if the supervisor meets only infrequently with student teachers, then this feedback will have limited impact on their perceptions of coherence. Thus, we thought how often a program requires supervisors to meet with candidates may also indicate a commitment to coherence. We found some variation on this measure, though the majority of programs required either three or four meetings. Ten programs required

Table 1
Programs With Coursework Attached to Fieldwork—by Subject Area

	ELA Methods	Math Methods	Learning and Development	Diversity	SPED	ELL	Management	Assessment
Number of programs with:								
Fieldwork attached to 3 required courses	2	0	0	0	0	0	0	0
Fieldwork attached to 2 required courses	13	1	3	1	0	0	0	0
Fieldwork attached to 1 required course	5	19	11	5	7	1	5	2
Fieldwork attached to 0 required courses	2	2	8	16	15	21	17	20
Any required courses	22	22	19	7	11	2	9	5

Note: ELA = English language arts; SPED = special education; ELL = English language learners.

Table 2
Mean Number of Field Hours Attached to Methods Courses

	All Programs		Undergraduate		Graduate	
	M	SD	M	SD	M	SD
Math methods field hours	18.27	17.29	26.00	24.47	13.86	10.12
English language arts methods field hours	34.36	33.16	51.75	44.1	24.43	20.9
Combined (English language arts + math)	52.63	47.45	77.75	66.25	38.29	25.76

three meetings, six required four meetings, and six required more than four meetings, ranging from 6 to 14 ($n = 22$, missing data for 0 programs).

Fieldwork Attached to Coursework

In addition to the nature of supervision and cooperating teachers, teacher educators argue that the tight, purposeful integration of clinical work and coursework is critical to a coherent teacher education program (Darling-Hammond, Hammerness, Grossman, Rust, & Shulman, 2005). Course assignments are one mechanism for linking fieldwork and coursework. At a minimum, courses may require a certain number of hours of field experience. However, the number of hours alone cannot predict the educative quality of the experience. To take advantage of the potential for learning in the field, faculty can design assignments that structure students' observations and work in field settings.

To get a better sense for how our sample of programs linked field experiences to coursework, we categorized courses into a number of categories (e.g., assessment, diversity, methods) and then documented whether or not the courses required fieldwork as part of a course requirement. Our analysis suggests that field experience requirements are most often connected to methods courses in English language arts (ELA), followed by math methods, and learning and development courses ($n = 22$ programs, missing data for 0 programs).

Programs required fieldwork attached to far fewer courses in the other subject areas; however, this is partly a function of there being fewer required courses in these other subjects generally (see Table 1).

We then looked at the number of field experience hours attached specifically to math and ELA methods classes within college-recommending programs. As shown in Table 2, programs have significantly more hours attached to ELA methods than to math methods, reflecting, in part, that students take more courses in ELA ($n = 22$ programs, missing data for 0 programs). Undergraduate programs also require more field experience hours attached to these courses than do graduate programs, in part because of more coursework in undergraduate programs generally.

Relationships Among Features of Teacher Preparation and Perceptions of Coherence

To test our hypotheses that the program attributes mentioned above would predict student perceptions of coherence, we first regressed our perceptions of program–field coherence factor on each attribute independently, clustering survey responses at the program level while controlling for whether programs were graduate or undergraduate (see Table 3). As seen in Table 3, our samples vary for each item because programs did not systematically collect information on that item, provided inconsistent information, or did not respond to our

inquiries. Ideally, we would have a consistent sample across analyses; we acknowledge that inconsistent samples may present biases. However, we were unable to identify any obvious patterns in the kind of programs that dropped from one analysis to another. For example, the ratios of graduate to undergraduate and private to public programs and participants stayed fairly consistent across analyses, and the programs with missing value vary from feature to feature.

We found that candidates from programs whose faculty took primary responsibility for choosing cooperating teachers reported significantly higher perceived levels of program–field coherence than did candidates from programs that allowed school sites (e.g., principals) or the candidates themselves to choose ($B = .52$, $p = .006$). We also found that in programs that specified minimum experience requirements for cooperating teachers, candidates reported moderately higher levels of perceived program–field coherence ($B = .169$, $p = .057$). Finally, candidates from programs with lower rates of cooperating teacher turnover reported significantly higher levels of perceived program–field coherence ($B = .214$, $p = .042$).

Next, we tested program attributes related to field supervision. We found that the more meetings that programs require between supervisors and program faculty or staff, the higher the level of perceived program–field coherence on the part of candidates ($B = .205$, $p = .041$). Although we hypothesized that more field observations required of supervisors would correspond with greater perceptions of program–field coherence, the number of required observations did not significantly predict perceived program–field coherence scores ($B = .023$, $p = .440$). We suspect there may not have been enough variation on this item to demonstrate programmatic differences—most programs (16 out of 22) required 3 or 4 observations, and it is unlikely that one more observation would afford significantly higher levels of perceived coherence. Thus, we wondered if the 6 programs that stood out on this program attribute—with between 6 and 14 required observations—might report higher levels of program–field coherence than those with either 3 or 4 required observations. We found that candidates from these programs did report significantly higher levels of program–field coherence ($B = .474$, $p = .044$).

We next looked at courses that were designed with explicitly attached fieldwork assignments. Again, we viewed this as a means of assessing the degree to which programs attempted to purposefully link field experiences and coursework and, hence, as a potential measure of a program's commitment to program–field coherence. For nonmethods courses we had only more general data

on the *number of courses* that had attached fieldwork. We hypothesized that the more courses requiring field experiences, the higher the reports of program–field coherence would be. We found this relationship to exist at only a marginally significant level ($B = .145$, $p = .117$). For methods courses, we had acquired more specific information than for nonmethods courses—the *number of hours* of fieldwork attached to each methods course. However, we found that more methods field hours did not significantly predict higher reports of program–field coherence ($B = .001$, $p = .452$). We then tried to combine these two items linking coursework to fieldwork directly into a single, more comprehensive measure. First, we needed to convert methods field hours to units that corresponded with the number of nonmethods courses with attached fieldwork. When we used a 20 hours per course conversion, our composite measure did not significantly predict perceived program–field coherence scores ($B = .052$, $p = .226$).[7] When we used a 40 hours per course conversion, our composite measure predicted field coherence scores at a marginally significant level ($B = .105$, $p = .114$).

This finding may reflect the fact that simply adding hours of fieldwork to courses does not necessarily promote program coherence. What may matter most is the degree to which candidates are asked to engage in thoughtful directed assignments in their coursework that relate directly to their fieldwork (no matter how many hours are required) rather than the number of hours of fieldwork they are required to complete—and our analysis unfortunately is not able to capture the quality of the fieldwork assignments or of that relationship. Future analyses will look more closely at the characteristics of these assignments and how they vary.

An Examination of Program–Fieldwork Coherence Across Multiple Features

Although the above analysis indicates many program attributes have predictive value when analyzed independently, we were unable to combine them into a single multivariate model. This seems to be a function of having a relatively small number of programs to work with ($n = 22$) and patterns in program requirements that result in high covariation between predictors. For example, programs whose faculty take primary responsibility for choosing the cooperating teacher are also more likely to require cooperating teachers to have more prior teaching experience, $\chi^2(1) = 3.545$, $p = .06$; to have lower cooperating teacher turnover rates, $\chi^2(2) = 9.0$, $p = .011$; and to require supervisors to meet more regularly with program faculty, $\chi^2(4) = 8.667$, $p = .07$.[8] Similarly, programs that

Table 3
Regressing Field Coherence Factor on Individual Program Features

Program Feature Item Description	Predictor Coefficient (B)	Predictor p Value	Respondents	Programs
Who is primarily responsible for choosing the cooperation teacher? (0 = *either the candidate or the placement school site*; 1 = *program faculty*)	.515	.006	214	19
How many minimum years of experience are required for cooperating teachers?	.169	.057	244	21
What is the average length of time that cooperating teachers stay with a program? (1 = *less than 2 years*, 2 = *2 to 4 years*, 3 = *more than 4 years*)	.214	.042	205	13
How often are supervisors required to interact with program staff (in the form of training, orientation, meetings, etc.)? (0 = *never*, 1 = *1 time per year*, 2 = *1 time per semester*, 3 = *more than 1 time per semester but less than monthly*, 4 = *monthly*)	.205	.041	206	17
What is the minimum number of times a supervisor is required to observe a teacher candidate?	.023	.440	248	22
What is the minimum number of times a supervisor is required to observe a teacher candidate? (0 = *4 or fewer times*, 1 = *more than 4 times*)[a]	.474	.044	248	22
How many required courses (other than methods courses) have attached field experience?	.145	.117	248	22
How many field experience hours are attached to methods courses (English language arts and math combined)?	.001	.452	248	22
Composite variable combining nonmethods courses that have fieldwork attached with fieldwork hours attached to methods courses (based on conversion of 20 methods field hours per course)[b]	.052	.226	248	22

(continued)

Table 3 (continued)

Program Feature Item Description	Predictor Coefficient (B)	Predictor p Value	Respondents	Programs
Composite variable combining nonmethods courses that have fieldwork attached with fieldwork hours attached to methods courses (based on conversion of 20 methods field hours per course)[b]	.052	.226	248	22
Composite variable combining nonmethods courses that have fieldwork attached with fieldwork hours attached to methods courses (based on conversion of 40 methods field hours per course)	.105	.114	248	22

Note: For all regressions, we clustered by program. Only one predictor was tested at a time. In all cases, we controlled for whether a program was graduate or undergraduate.
a. Most programs—16 out of the 22 that provided data—required either three or four observations. Thus, we decided to create a dummy variable so we could see if students in the programs that exceeded this norm actually perceived more program–fieldwork coherence.
b. Because we had more specific information for methods courses—exact field hours attached to coursework—we wanted to use this information rather than the more coarse data on number of methods courses with attached fieldwork.

require supervisors to meet more regularly with program faculty are also more likely to require cooperating teachers to have more prior teaching experience, $\chi^2(8) = 22.95$, $p = .003$; to have lower cooperating teacher turnover rates, $\chi^2(8) = 12.233$, $p = .141$; to require supervisors to observe candidates more often, $\chi^2(4) = 11.4$, $p = .022$;[9] and, as mentioned above, to choose cooperating teachers.

We suspect these patterns between attributes may demonstrate that some programs have indeed emphasized program–fieldwork coherence more than others and have designed a number of structural features to reflect this emphasis. Thus, we wanted some way to test if programs that emphasize field coherence *across* attributes—cooperating teacher selection, oversight of supervisors, and fieldwork attached to coursework—are more likely to have candidates who report higher program– field coherence levels. Because the correlations between program attributes prevent us from using multiple regression, we decided instead to create a rough composite measure of program emphasis on coherence by combining program attributes together.[10] Though we suspect ultimately that some attributes will be more predictive of perceived program–fieldwork coherence than others, at this stage of research we have no way of knowing which should be weighed more or by how much. Thus, we created a composite measure where each point essentially represented a single attribute supporting coherence. Programs with more

attributes supporting program coherence then would have higher composite scores.

Though any given attribute may itself fail to predict perceived program coherence on its own, it might still represent a wider programmatic effort to support program–fieldwork coherence. Thus, we included items that may not have been significant on their own. Given our composite sample reduced by the cumulative number of programs missing across items, our primary inclusion criteria for a given item was sample size. We decided to begin with five items in our composite measure; this dropped our sample to 18 programs (11 graduate programs, 7 undergraduate programs; 210 participants) because at least one program was missing data for each included item. We granted programs points based on the following criteria:[11]

+1 if the program faculty are primarily responsible for choosing the cooperating teacher rather than the school site or candidates themselves
+1 for programs with minimum experience requirements for cooperating teachers
+1 if the program requires supervisors to observe candidates more than four times
+0.25 (one fourth) for each required nonmethods course with attached fieldwork[12]
+0.01 (one one hundredth) for each required hour of fieldwork attached to methods courses[13]

We regressed our original survey factor on perceived program–fieldwork coherence on these "program composite" scores, clustering survey responses at the program level while controlling for whether programs are graduate or undergraduate. We found that candidates from programs with higher composite scores reported significantly more program–fieldwork coherence ($B = .197$, $p = .037$). In summary, candidates from programs with more of these attributes reported higher levels of program–fieldwork coherence.

Because this analysis was promising, we decided to try adding our item on supervisor-faculty contact to our composite measure as well:

> +1 if the program requires supervisors to meet monthly with program faculty
> +0.75 points if they met more than once per semester but less than monthly
> +0.5 if they met once per semester
> +0.25 if they met at least once

The addition of this item reduced our sample to 13 programs (8 graduate, 5 undergraduate) and 168 participants. Despite this reduction in programs, we still found that programs with greater composite scores significantly predicted greater perceived program–field coherence on the participant survey ($B = .207$, $p = .023$).

Conclusions and Implications

Our analyses have several implications for work on coherence in teacher education. First, this work helps us to move beyond advocacy of coherent programs to a more empirical basis for investigating the nature of coherence and its impact on candidates' experiences in programs. Second, it also helps us better understand how conceptions of coherence might translate into the actual design and practice of teacher education by illuminating some reasonable steps teacher educators could take that would not be overly burdensome. Third, in a field that is calling for larger-scale studies, this research attempts to identify promising features that are also amenable to large-scale studies of the impact of teacher education, making some important methodological contributions to research on program coherence, including avenues for future work.

Toward an Empirical Base for Coherence

Discussions of coherence have pervaded academic discourse about reform in teacher preparation, particularly in relationship to program descriptions and visions of what better preparation should look like (e.g., Darling-Hammond, 2006; Darling-Hammond, Bransford, et al., 2005; Russell et al., 2001) as well as potential drawbacks (Buchmann & Floden, 1993). However, with a few exceptions, the concept has not received corresponding emphasis in empirical studies on teacher education. As a result, most of the assertions about coherence remain unexamined—and, in turn, key decisions about reform in teacher preparation may be made without an empirical base. Through this research, we begin to build our knowledge base about coherence by helping develop an empirically based definition of the concept. Our developing understanding of coherence suggests that it has a number of features—a shared vision regarding teaching and learning, conceptual and logistical organization of coursework around those aims and goals, and courses and clinical experiences designed to support, reinforce, and reflect those shared ideas. In this research, we have focused in particular on the latter, thus illuminating some of the structural features of the relationship between the field and the program. We also recognize that the relationship between the features of teacher education we have identified and student perceptions of coherence is not a causal one. These features may reflect programs that have other attributes and that contribute to greater perceptions of coherence among their graduates. Future research could begin to unpack some of the other characteristics of programs that contribute to coherence, including shared vision or the organization of coursework (and the ideas behind it), so that the concept of coherence can be even more fully delineated and empirically based.

Implications for the Design and Practice of Teacher Education

In revising programs, the focus is often on redesigning curriculum sequences, adding or substantially revising courses, reworking syllabi, and changing assignments and assessments. This work suggests that the clinical piece of programs may deserve equal attention—and it also points to some reasonable shifts that could be made without too great a burden on teacher educators. Although the features we have identified are not sufficient for ensuring coherence, these various program policies may make the experience of coherence more likely among students. Placing more attention on the links between field faculty and program faculty, coursework and fieldwork, could have important payoffs in terms of increasing the perceived coherence of student teachers' learning experiences.

Indeed, in this study, we have begun to identify some specific structural features of teacher education that can

contribute to students' perception of coherence that could be reasonably addressed in teacher preparation programs. For instance, our findings suggest that features regarding the selection of cooperating teachers and their length of tenure with the institution are measurable predictors of student perceptions of field–program coherence. In addition, more frequent supervisor observations of fieldwork and contact with faculty seem to be important contributors to candidates' perceptions of coherence. Addressing these issues might not require a tremendous shift in resources but could contribute to teachers' increasing perceptions of alignment.

As another example, although requiring more supervisor contact with other faculty, for instance, may not necessarily lead to perceived coherence, it appears to make it more likely in the programs we studied. We appreciate that requiring a supervisor to meet more often with other program faculty will not necessarily lead to a shared understanding or an alignment of visions between the program and supervisor; for example, supervisors might find required meetings a burden that could negatively influence how they feel about the program vision. And even where such meetings do lead to a shared vision, they do not guarantee that the vision will necessarily be communicated to student teachers. Although such policies do not necessarily lead to a sense of coherence, our analysis suggests they may create conditions that increase its likelihood. Moreover, this analysis suggests that including more of these features together in the same program may increase the likelihood of perceived coherence.

This research also points to the importance of programmatic control over field experience. Understandably, programs find it difficult to maintain control over field experiences. A number of program and field directors, for example, described the difficulty of finding willing and able cooperating teachers in New York City, particularly ones with practices and principles that align with the program. Many program directors also shared the difficulties they faced in trying to pair student teachers with supervisors experienced in the same grade level and subject area. In part, the proliferation of programs in a relatively constrained geographic area means that many programs are vying for the same pool of experienced teachers to serve as cooperating teachers and supervisors.[14] Further complicating matters, programs also face pressure from students (and schools) to allow them to complete requirements as the teacher of record, often without a cooperating teacher or much program oversight. This work provides evidence, however, of the importance of programs maintaining control over the design of fieldwork, including the selection of the cooperating teacher, the establishment of requirements for cooperating teachers, and the connections between supervisors and program faculty.

On the other hand, the fact that the amount of coursework (hours or number of courses) attached to fieldwork is not a significant predictor of student perceptions of coherence reveals the potential shortcoming of this type of large-scale analysis—namely, that quantity alone cannot adequately represent the quality of the instructional assignments that link fieldwork to clinical work. What may matter most are not the number of hours but the extent to which those assignments that link coursework and fieldwork are thoughtful, purposeful, and well constructed. As Dewey (1904/1964) noted long ago, it is not the number of hours spent in the field but how that time is used that makes field experience educative. This limitation also holds true for policy changes such as increasing supervisory visits or requiring contact between supervisors and program faculty. Simply increasing contact among staff or requiring more supervisory visits to teachers' classrooms will not have an impact without well-articulated goals for those meetings and visits that are intended to continue to build understanding.

Developing Measures of Coherence

Finally, we believe that this work makes a methodological contribution to research on teacher education. Although most prior work on coherence has relied on case studies of one or two programs, our study attempts to identify specific program features that cut across multiple programs that may support student teachers' experience of coherence. This research still begs the question of whether or not prospective teachers who attend programs that they perceive to be more coherent ultimately are better prepared for their work with students. Our future research will investigate how both these features of teacher education that predict student perceptions of coherence, as well as the coherence factor itself, predict outcomes for both teachers and students.

With increasing calls for large-scale work in teacher education that look at outcomes, developing better measures of program features that may predict perceived coherence will be increasingly important. Given demand for more attention to the outcomes of teacher education, both for teachers and students, having some measurable indicators of program coherence paves the way for future research on this topic. In addition, the ability to examine coherence from the perspective of students—rather than that of administrators or faculty—enables researchers to come even closer to the learning experiences of new teachers.

Appendix
Fieldwork–Program Coherence Factor

	Strongly Disagree (%)	Disagree (%)	Neither Agree or Disagree (%)	Agree (%)	Strongly Agree (%)	Not Applicable (%)
C1f: My program lacks a sense of coherence among courses and between courses and field experiences. (N = 372)	17.5	36.8	21.2	18.6	5.9	—
C10e: My cooperating teacher taught in ways that were quite different from the methods I was learning in my university courses. (N = 298)	8.4	31.2	23.2	18.8	15.1	3.4
E5a: My cooperating teacher taught mathematics in ways that were quite different from the methods advocated by my course instructors. (N = 332)	12.7	30.7	22.0	15.1	6.6	13.0
E5b: My cooperating teacher taught literacy and language arts in ways that were quite different from the methods advocated by my course instructors. (N = 330)	17.0	31.5	19.1	13.6	8.2	10.6
C1k: What I learned in my methods courses reflects what I observe in my field experiences or in my own classroom. (N = 370)	4.9	10.8	20.5	47.3	16.5	—
C10j: My cooperating teacher and supervisor held similar ideas about teaching and learning. (N = 300)	9.0	12.7	20.0	28.0	26.3	4.0
C2e: Program faculty give assignments that connect my school experiences with coursework. (N = 371)	2.7	6.2	13.2	59.8	18.1	—
C10k: My student teaching experience allowed me to try out the strategies and techniques I was learning in my classes. (N = 292)	2.1	5.8	7.2	38.0	46.9	—

(continued)

Appendix (continued)

	Strongly Disagree (%)	Disagree (%)	Neither Agree or Disagree (%)	Agree (%)	Strongly Agree (%)	Not Applicable (%)
C10d: My cooperating teacher was knowledgeable about my teacher education program. (*N* = 299)	4.7	13.4	16.7	33.1	28.4	3.7

How much opportunity did you have to do each of the following during this program?	None (%)	Touched on It Briefly (%)	Spent Time Discussing or Doing (%)	Explored in Some Depth (%)	Extensive Opportunity (%)	
E1n: Practice what you learned about teaching math in your field experience. (*N* = 361)	9.7	13.9	22.7	28.3	25.5	
E3c: Practice what you learned about teaching writing in your field. (*N* = 353)	9.1	18.1	24.9	23.5	24.4	

Notes

1. In fact, some empirical work conducted in the 1980s does lend support to the suggestion that early fieldwork can provide a conceptual structure for novices to organize and understand the theories from their university coursework (Denton, 1982; Denton, Morris, & Tooke, 1982; Henry, 1983; Ross, Hughes, & Hill, 1981; Sunal, 1980).

2. We use the phrase *relatively consistent* with some caution, recognizing that absolute consistency may not be optimal. After all, researchers have pointed out that some "productive tension" between university and clinical experiences may be preferable (Hollingsworth, 1989; Smagorinsky, Cook, Moore, Jackson, & Fry, 2004).

3. This is drawn from a larger data set of 16 institutions, representing 26 college-recommending childhood programs. In this article, we examine 15 institutions and 22 programs because we included only programs for which we had both the requisite survey data and program review data to run our analysis.

4. Although other characteristics might also account for this factor, we were limited to the variables we had systematically collected across programs.

5. When running regressions, we used the "cluster" option in STATA so that our standard errors would take into account that the observations within a specific program are not independent. Thus, the sample size for tests of significance remained the number of teacher candidates rather than programs, but we accounted for within-program correlations.

6. At most programs we studied, student teachers and other faculty had influence over the selection of the cooperating teacher, but we examined who was primarily responsible, according to program directors and field placement coordinators. Though we did not systematically inquire as to why programs made the choices they did, one field placement coordinator explained that given the number of programs and teacher candidates he was responsible for, he needed to leave the identification of placement sites up to novice teachers. Another program director indicated that to maintain a relationship with some of the placement sites, she met with school administrators to make recommendations for where to place certain teachers but had to leave the final decision up to administrators.

7. Because the average number of field hours attached to each methods course was about 20, we first used this as our initial conversion. However, we were concerned that in some cases this might weight methods courses too heavily (e.g., there was one program with 225 methods field hours spread over 4 methods courses, which, when converted, was the equivalent to more than 11 nonmethods courses). Thus, we also tried using a conversion of 40 field hours per methods course because the median number of methods field hours for survey respondents was about 40.

8. All of these chi-square analyses were run at the program level (*n* = 22). Whenever a program is missing data for any predictor, it drops from the chi-square analysis. Because we have data on only 19 programs for who chooses the cooperating teacher, *n* = 19 is the ceiling for each chi-square analysis reported here. Our analysis with cooperating teacher turnover had the lowest program sample—we had data for both predictors for only 9 programs. For this reason, and because the chi-square analyses were secondary analyses to explain collinearity issues, we are reporting probabilities that are marginally and moderately significant. When we ran chi-square between whether programs choose the cooperating teachers and whether programs that have required courses with field experiences attached, the results were $\chi^2(7) = 10.643$, $p = .155$.

9. For the latter comparison, we used the dummy version of the measure for how many times supervisors are required to observe candidates (0 = *4 or fewer times*, 1 = *more than 4 times*). The continuous version of this variable was also related at the moderately significant level, $\chi^2(16) = 25.775$, $p = .057$.

10. Unfortunately, if a program is missing data for any single item included in the composite, that program will drop from the analysis. Thus, we could not include our measure for cooperating teacher turnover rates, for example, because we had data for only 13 programs.

11. Because we are uncertain which attributes may deserve more weight in determining program–field coherence, we decided to make each worth a possible maximum of +1 points.

12. We used +0.25 per course because we wanted the maximum value on this item to correspond with the maximum values on the other items in our composite (+1). Four courses was the maximum number of courses for our programs, adding a total of +1 points to the composite for these programs.

13. We used +0.01 because we wanted the maximum value on this item to correspond with the maximum values on other items in our composite (+1). The program with the highest number of total hours of field-work attached to methods courses required approximately 100 hours.

14. See Boyd et al. (in press) for a discussion of the landscape of teacher preparation in the New York City area.

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