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Teacher Efficacy, Supervision, and the Special Education Resource-Room Teacher

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ABSTRACT The Gibson and Dembo Teacher Efficacy Scale was modified for use in the special education resourceroom context. A factor analysis of the modified instrument resulted in a factor structure comparable to one based on regular-education teachers, as reported in prior research. The relation between instructional supervision and teacher efficacy among these teachers was also examined. With sex, age, resource-room tenure, and job satisfaction held constant, the perceived utility—but not frequency—of supervision was significantly related to teacher efficacy. The implications of these findings for both research and practice in the special education context are considered.

A lthough the construct of teacher efficacy has enjoyed a considerable amount of empirical scrutiny in the past 15 years, few researchers have explored the import of this construct for the special education context. We had two general objectives in conducting this study: (a) to establish the validity of the Gibson and Dembo (1984) teacher efficacy scale when revised for use with special education resource-room teachers and (b) to examine the association between teacher efficacy and the frequency and utility of instructional supervision that resource teachers reported receiving. We began with an overview of the teacher efficacy construct and associated research.

Research on Teacher Efficacy

The Teacher Efficacy Construct

The past 15 years have borne witness to a flurry of research activity devoted to the study of teacher efficacy, or, as Dembo and Gibson (1985) defined the construct, "the extent to which teachers believe they can affect student learning" (p. 173). Researchers generally credit Bandura (1977) for providing the theoretical framework for studying this construct. In his theory of self-efficacy, Bandura argued that human behavior is influenced by the individual's

beliefs regarding two classes of expectations: an outcome expectation, "a person's estimate that a given behavior will lead to certain outcomes," and an efficacy expectation, the "conviction that one can successfully execute the behavior required to produce the outcome" (Bandura, 1977, p. 193).

Within the context of teaching, an outcome expectation is illustrated by the teacher who believes, for example, that skillful instruction can offset the effects of an impoverished home environment. Here, efficacy is expressed not for one's self but, rather, for an abstract collective of teachers—the "normative teacher" (Denham & Michael, 1981, p. 41). An efficacy expectation, in contrast, would be reflected by the teacher's confidence that he or she personally is capable of such instruction—that one possesses personal agency with respect to the task of pedagogy.

Teacher efficacy researchers traditionally have labeled the two sets of beliefs *teaching efficacy* and *personal teaching efficacy*, respectively (Ashton & Webb, 1986; Gibson & Dembo, 1984). This language invites confusion, however, given the superordinate construct *teacher efficacy*. Although for somewhat different reasons, Hoy and Woolfolk (1990) labeled these constructs *general teaching efficacy* and *personal teaching efficacy*, a distinction we simplify further to *general efficacy* and *personal efficacy*.

However labeled, this distinction is critical "because individuals can believe that a particular course of action will produce certain outcomes, but if they entertain serious doubts about whether they can perform the necessary activities such information does not influence their behavior" (Bandura, 1977, p. 193). Thus, one may be confident in the abilities of the normative teacher, yet harbor considerable uncertainties about his or her own instructional prowess.

Research on teacher efficacy typically has employed either the two items from the seminal Rand study (Berman

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& McLaughlin, 1977) or some combination of the 30-item Teacher Efficacy Scale, later developed by Gibson and Dembo (1984). The popularity of these two approaches probably is related to the fact that both sets of measures bear some semblance to Bandura's distinction between outcome and efficacy expectations and, therefore, ostensibly permit the delineation of general and personal efficacy. For example, general efficacy presumably is indicated if a teacher disagrees with the first Rand item, "When it comes right down to it, a teacher really can't do much because most of a student's motivation and performance depends on his or her home environment," or with the Gibson and Dembo item, "The amount that a student can learn is primarily related to family background." In contrast, personal efficacy is suggested if one agrees with the second Rand item, "If I really try hard, I can get through to even the most difficult or unmotivated students," or with the Gibson and Dembo item, "When the grades of my students improve, it is usually because I found more effective teaching approaches."

Teacher efficacy researchers can choose from other instruments, such as the Responsibility for Student Achievement Questionnaire (Guskey, 1981, Guskey, 1987), the Teacher Locus of Control Scale (Rose & Medway, 1981), the Webb Efficacy Scale (Ashton & Webb, 1986), or the Efficacy Vignettes (Ashton & Webb, 1986). Or, following Midgley, Feldlaufer, and Eccles (1989), one can create a hybrid measure from existing instruments. These options notwithstanding, most researchers have used either the Rand items or the Teacher Efficacy Scale. (See Fink [1988] and Coladarci and Fink [1995] for an extended discussion of the extant teacher efficacy instruments, the research associated with each, and results regarding their convergent and discriminant validity.)

Antecedents of Teacher Efficacy

Several researchers have examined the effects of teacher education on the formation of prospective teachers' sense of efficacy. Spector (1990) found that personal efficacy among undergraduate students increased linearly during the 4-year undergraduate program, culminating in student teaching. Perhaps consistent with this finding, Hoy and Woolfolk (1993) observed that personal efficacy was higher among practicing teachers who had taken extra graduate courses in education. Spector also found a significant quadratic trend for general, but not personal, efficacy. That is, general efficacy increased linearly for the first 3 years of the undergraduate experience but, unlike personal efficacy, declined after student teaching. A similar decline in general efficacy was reported by Hoy and Woolfolk (1990); also see Dembo and Gibson (1985, p. 178).

Other researchers have examined the effects of school context variables on teacher efficacy. Using path analysis, Smylie (1988) reported that the proportion of low-achieving students in a teacher's classroom had a negative direct effect

on personal efficacy. Smylie also found that interactions with one's colleagues about instructional matters carried a positive indirect effect on personal efficacy through the intervening variable "certainty of practice." And in their study of teacher efficacy and school climate, Hoy and Woolfolk (1993) found that school-level measures of academic emphasis, institutional integrity, and principal's influence each correlated with either personal or general efficacy.

Both personal and general efficacy also have been found to be higher among elementary-level teachers when compared with high school teachers (Fink, 1988; Parkay, Olejnik, & Proller, 1986). However, it is not clear whether this difference can be attributed to a school effect or, rather, merely reflects existing differences between those who select elementary- versus secondary-level teaching. Evans and Tribble (1986), for example, found an analogous difference between elementary- and secondary-level *pre*service teachers.

Consequences of Teacher Efficacy

There is some evidence that teacher efficacy is related to academic achievement and teacher behaviors known to foster academic achievement (Ashton & Webb, 1986; Berman & McLaughlin, 1977; Gibson & Dembo, 1984; Greene, Anderson, & Loewen, 1988; Hoy & Woolfolk, 1993; Soar & Soar, 1982; also see Ashton, 1984, Dembo & Gibson, 1985), as well as with important student cognitions such as performance expectancies and appraisals (Midgley et al., 1989) and efficacy for achievement (Greene et al., 1988). More efficacious teachers, relative to their less-efficacious peers, also show a preference for collaborative work relationships (Morrison, Walker, Wakefield, & Solberg, 1994) and are more likely to adopt change proposals associated with formal innovations and staff development programs (Berman & McLaughlin; Fritz, Miller-Heyl, Kreutzer, MacPhee, 1995; Guskey, 1988; Poole, Okeafor, & Sloan, 1989; Rose & Medway, 1981; Smylie, 1988). Reporting a related finding, Coladarci (1992) found that teacher efficacy, when compared with such factors as income and school climate, was the strongest predictor of a teacher's commitment to the teaching profession.

Teacher efficacy has been linked to parent involvement in school activities. Hoover-Dempsey, Bassler, and Brissie (1987) found that teacher efficacy, aggregated at the school level, was the strongest or among the strongest predictors of five dimensions of parent involvement. Perhaps consistent with this is the finding that more-efficacious teachers, relative to their less-efficacious colleagues, are less likely to regard teacher-parent relations as a source of stress (Parkay et al., 1986).

The Special Education Context

What we know—and do not know—about teacher efficacy is limited largely to regular-education settings. Notwithstanding the unique pedagogical demands facing resource teachers and, further, the arguable importance of a strong sense of teacher efficacy within this instructional context (e.g., DiBella-McCarthy & McDaniel, 1989; Miller & McDaniel, 1989), there is a paucity of teacher efficacy research involving special education settings. The few studies that do exist, however, are provocative.

Allinder (1994), using the Teacher Efficacy Scale (Gibson & Dembo, 1984), found that resource teachers high in personal efficacy tended to exhibit greater organization, planfulness, fairness, enthusiasm, and clarity in instruction. These high-efficacy teachers also were more inclined toward instructional experimentation—that is, "willingness to try a variety of materials and approaches to teaching, desire to find better ways of teaching, and implementation of progressive and innovative techniques" (p. 89). As noted above, this latter result is consonant with research involving regular education teachers (e.g., Guskey, 1988; Smylie, 1988).

Although sparse, there also is evidence that teacher efficacy may be related to special education referrals, at least among regular-education teachers. Low-efficacy teachers perhaps are more likely to refer students with academic problems than are high-efficacy teachers (Podell & Soodak, 1993). Similarly, teachers low in personal efficacy, unlike their high-efficacy counterparts, may tend to question the appropriateness of a regular-education placement for students experiencing difficulties (Soodak & Podell, 1993). Like Allinder (1994), those researchers used the Teacher Efficacy Scale.

The Present Study

We had two general objectives in this study. First, we set out to establish the validity of the Teacher Efficacy Scale when revised for use with resource teachers. The validity of the modified scale was assessed by comparing its factor structure to that obtained when administered to regular-education teachers, as reported by Gibson and Dembo (1984) and Coladarci (1986). The former study was selected because it was the original factor analysis attending the publication of the Teacher Efficacy Scale; the latter study was chosen because, like the current investigation, it derived from a representative sample of a known population (and involving the same state).

Second, we pursued correlates of teacher efficacy among resource teachers. In particular, we examined the relation between teacher efficacy and the frequency and utility of supervision that resource teachers reported having received. A causal link between supervision and teacher efficacy is plausible and has been proposed by others (e.g., Glickman, 1990, p. 22). Instructional supervision, insofar as it comprises "assistance, monitoring, observing, and dialogue" (Glickman & Bey, 1990, p. 549), arguably entails verbal persuasion, which is an important determinant of self-efficacy for the task at hand (Bandura, 1977). And through its provision of constructive feedback, such supervision also

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provides for successive approximation of mastery, which, too, is an important determinant of self-efficacy (Bandura, 1977). It seems reasonable to conjecture, therefore, that instructional supervision would have a salutary effect on teacher efficacy.

Unfortunately, there is little direct empirical support for the posited relation between supervision and teacher efficacy. In their Handbook of Research on Teacher Education chapter on supervision, for example, Glickman and Bey (1990) adduced two dissertations and one study of a single teacher in support of this association. In none of these studies was it clear that teacher efficacy was equivalent to the prevailing view of teacher efficacy, where the focus is on the teacher's sense of personal agency for effecting change in one's students or classroom (e.g., Ashton & Webb, 1986; Dembo & Gibson, 1985). In contrast, the few studies described by Glickman and Bey (1990) examined teachers' sense of their competence or their influence on school practice and policy. In any case, no research on the relation between supervision and teacher efficacy-however conceptualized-can be found within the resourceroom context.

Method

Participants

We mailed the 865 Maine resource teachers a survey, along with a letter inviting them to participate in our study. Five days after the specified return date, we sent nonrespondents a follow-up letter and an additional copy of the survey. With the two mailings combined, 580 resource teachers (67%) agreed to participate. Among these respondents the modal teacher was a woman with a baccalaureate degree who had been teaching in the resource room for 6 to 10 years and was between 30 and 39 years of age.

We did not hear from *all* resource teachers in Maine. Nonetheless, an examination of state department documents indicated that these 580 teachers were virtually indistinguishable from the population of Maine resource teachers in teaching experience, educational attainment, age, and sex. In short, the 580 teachers who chose to participate in our study appeared to be equivalent to the known population of resource teachers in Maine on general teacher characteristics.

As will be seen below, however, this sample was reduced with the introduction of list-wise deletion of missing cases, particularly when applied to the multiple regression analyses (N = 378). The resulting sample for the latter analyses still constituted a large number of teachers (65% of the initial respondents, 44% of the population). Moreover, the restricted sample, like the initial sample, proved to be equivalent to the population of resource teachers, at least with respect to data available through the state department (i.e., teaching experience, educational attainment, age, and sex).

Instruments

Teacher efficacy. All items rested on a 6-point scale ranging from strongly disagree to strongly agree.¹ For most items, modifying the Gibson and Dembo instrument simply entailed changing the term teacher to resource-room teacher, or, similarly, classroom to resource room. We also corrected several semantic awkwardnesses (e.g., he/she), as well as substituted the two efficacy items from the Rand study (Berman & McLaughlin, 1977) for two items on the Gibson and Dembo instrument judged to be equivalent (their No. 15 and No. 16). The latter change allowed us to directly examine the resource teachers' responses to the seminal and often-used Rand items. Because the two sets of items were equivalent, this substitution seemingly did not attenuate the reliability or validity of the Gibson and Dembo instrument.

Supervision. Resource teachers also were asked to rate the frequency and utility of the supervision they received. Two domains of supervision were specified: (a) formal observation, in which classroom observations are scheduled at a predetermined time for identifying instructional strengths and weaknesses and (b) performance consultation, which represents informal, often spontaneous, exchanges between a resource teacher and a supervisor about instructional practices. We asked for separate ratings of each of the following possible supervisors: building principal, special education director, curriculum coordinator, superintendent, assistant superintendent, and any other supervisor.

For each domain and supervisor, supervision frequency was assessed through a Likert-type scale ranging from 1 (*never*) to 7 (*weekly*); the utility scale ranged from 1 (*not helpful at all*) to 5 (*extremely helpful*). We formed a supervision-frequency composite by taking the mean of a teacher's frequency ratings across domains and supervisors; a supervision-utility composite was formed in a parallel fashion. By considering the frequency and utility of both domains of supervision, we hoped to get at the "assistance, monitoring, observing, and dialogue" function of supervision (Glickman & Bey, 1990, p. 549).

Results

First, we report the results from the teacher efficacy analyses. We begin by considering descriptive analyses of the modified teacher efficacy scale and then proceed to the factor structure of the instrument. This is followed by the results bearing on the relation between resource teachers' sense of efficacy and the frequency and utility of the supervision they received.

Teacher Efficacy

Descriptive analyses. A simple examination of item distributions revealed considerable variability among these resource teachers in their efficacy beliefs. Consider the following personal-efficacy item, which is one of the two items from the Rand study:

• "If I really try hard, I can get through to even the most difficult or unmotivated students."

Here, 1 in every 4 (26%) resource teachers disagreed with this statement.² Even greater variability was found on the two items below:

- "The time spent in my resource room program has little influence on students compared to the influence of their home environment."
- "Even a resource-room teacher with good teaching abilities may not reach many students."

Maximum variability was observed for both items: Half of the teachers agreed; half disagreed.

Not all items demonstrated such variability, however. For example, 81% of teachers disagreed with the following general efficacy statement, which was derived from the second Rand item:

• "When it comes right down to it, a resource-room teacher really can't do much because most of a student's motivation and performance depends on the home environment."

Moving beyond these item-level observations, we reversed the scales of negatively worded items and then determined the teacher's mean response across all 30 items, yielding a summary indicator of teacher efficacy ranging from 1 to 6. A mean of 3.5 represented the demarcation between low and high efficacy. We obtained a mean of 4.25 (SD = .45) on this summary measure, with a range of 2.33 to 5.50. It is difficult to appraise this figure in the absence of an accepted standard, but the average resource teacher clearly was expressing an efficacy sentiment to more items than not.

Factor analysis. We conducted a principal-components factor analysis of the modified teacher efficacy scale and, consistent with the prevailing conceptualization of teacher efficacy, forced the solution to two orthogonal factors. We used list-wise deletion of missing cases for this analysis, resulting in N = 520 (89.7% of the initial sample). As noted above, we compared our results with those of the factor analyses reported in two studies involving regular-education teachers (Coladarci, 1986; Gibson & Dembo, 1984).

Roughly 28% of the total item variance was explained by these two factors, a finding comparable to the 29% and 27% obtained by Gibson and Dembo (1984) and Coladarci (1986), respectively. Accounting for 17% of item variance, the first factor represented a resource teacher's sense of personal efficacy (see Table 1). For example, the three items below carried the highest factor loadings:

- "When any of my students show improvement, it is because I found better ways of teaching them."
- "If my supervisor suggested that I change some of my class curriculum, I would feel confident that I have the necessary skills to implement the change."

tem	Facto loading			
Personal efficacy				
f one of my special education students couldn't do a class assignment, I would be able to accurately assess whether the assignment was at the correct level of difficulty.	.60			
When any of my students show improvement, it is because I found better ways of teaching them.	.58			
f my supervisor suggests that I change some of my class curriculum, I would feel confident that I have the necessary skills to implement the change.	.58			
f one of my students mastered a new concept quickly, it probably would be because I knew the necessary steps in teaching that concept.	.57			
When the grades of my students improve, it is usually because I found more effective teaching approaches.	.56			
When a resource-room student is having difficulty with an assignment, I am usually able to adjust it to the student's level.	.53			
Between my teacher-training program and my own teaching experience, I have obtained the necessary skills to be an effective resource-room teacher.	.52			
f one of my students did not remember information I gave in the previous lesson, I would know how to increase the student's retention in the next lesson.	.52			
f students in my class become disruptive and noisy, I feel assured that I know some techniques to redirect them quickly.	.50			
f I really try hard, I can get through to even the most difficult or unmotivated students.	.47			
have enough training to deal with most learning problems in my resource room.	.46			
f parents comment to me that their child behaves much better in my resource room program that at home, it would probably be because I have some specific techniques of managing the child's behavior which they may lack.	.45			
when one of my students does better than expected, many times it is because I exerted a little extra effort.				
General efficacy				
When it comes right down to it, a resource-room teacher really can't do much because most of a student's motivation and performance depends on the home environment.	.67			
The amount that a special education student will learn is primarily related to family background.	.61			
The time spent in my resource room has little influence on students compared to the influence of their home environment.	.53			
Because of lack of support from the community, I am frustrated in my attempts to help students.	.52			
If students aren't disciplined at home, they aren't likely to accept any discipline in my resource- room program.	.51			
When all factors are considered, resource-room teachers are not a very powerful influence on resource-room student achievement.	.49			
Parent conferences help a resource-room teacher judge how much to expect from a student by giving the teacher an idea of the parents' values toward education, discipline, and so on.	.49			
If parents would do more with their children, I could do more in my resource room.	.46			
If one of my new resource-room students cannot remain on task for a particular assignment, there is little that I can do to increase that student's attention.	.45			
Even a resource-room teacher with good teaching abilities may not reach many students.	.44			

• "If one of my special education students couldn't do a class assignment, I would be able to accurately assess whether the assignment was at the correct level of difficulty."

Twelve of the 13 items that loaded on this factor also loaded on the comparable factor in at least one of the two comparison studies; eight of these items loaded on both. The remaining item that loaded on this factor, although not common to either comparison study, nonetheless reflects the concept of personal efficacy:

• "If parents comment to me that their child behaves much better in my resource room program than at home, it would probably be because I have some specific tech-

niques of managing their child's behavior which they may lack."

Accounting for 11% of total item variance, the second factor comprised general efficacy items—although not uniformly so. The three highest loading items were as follows:

- "When it comes right down to it, a resource-room teacher really can't do much because most of a student's motivation and performance depends on the home environment."
- "The amount that a special education student will learn is primarily related to family background."
- "The time spent in my resource room program has little influence on students compared to the influence of their home environment."

For this factor, 9 of the 11 items also loaded on the general-efficacy factor in at least one of the two comparison studies; 5 of these items loaded in both. The two remaining items loading on this factor were not common to either comparison study. One of these items appears to represent personal efficacy (in this case, its absence):

• "If one of my new resource room students cannot remain on task for a particular assignment, there is little that I can do to increase that student's attention."

This errant item notwithstanding, our factor analysis of the modified teacher efficacy scale, when administered to resource teachers, produced a factor structure comparable to that reported by Gibson and Dembo (1984) and Coladarci (1986) in their studies of regular-education teachers. However, the errant item underscores an emerging question in the teacher efficacy literature: What does the general efficacy factor really represent? We return to this question in our final discussion. But because our data sustain the concern about the meaning of general efficacy (e.g., Coladarci, 1992; Guskey & Passaro, 1994; Woolfolk & Hoy, 1990), we did not include this factor in the analyses below.

Teacher Efficacy and Supervision

First, we briefly provided descriptive information bearing on the frequency and utility of supervision that the resource teachers reported to have received; Breton and Donaldson (1991) described these and related data in greater detail. Following these descriptive data are the results of the regression analyses, in which teacher efficacy served as the dependent variable.

Supervision frequency and utility. Forty-five percent of these teachers reported that either the principal or special education director conducted formal observations in their classroom; an additional 30% were observed by both supervisors. However, 17% of the resource teachers indicated that they were not observed by any supervisor. Observations, when they did occur, typically were conducted on an annual basis, although some teachers were observed semiannually or more. The modal teacher found observations to be "somewhat" helpful; special education directors received slightly higher ratings than principals did.

A similar picture emerged regarding the informal consultation that these resource teachers received on instructional issues. For example, 43% of the teachers reported that either the principal or special education director provided such consultation; 33% received consultation from both supervisors; and 18% received no such consultation. Ratings of the frequency and utility of informal consultations tended to be generally higher than those for formal classroom observations.

Regression analyses. We used ordinary least squares regression to examine the extent to which the frequency and utility of supervision predicted teacher efficacy. The dependent variable, teacher efficacy, was constructed in two ways: (a) total efficacy, obtained by summing a teacher's responses across all 30 items on the modified teacher efficacy scale (Cronbach's $\alpha = .77$) and (b) personal efficacy, the sum of 13 items loading on our first factor (Cronbach's $\alpha = .75$). The full 6-point scale of each item was used in creating these composites; negatively worded items were recoded.

We considered six independent variables. In addition to the two supervision composites—frequency and utility several teacher characteristics were included as control variables: sex, age, resource-room tenure, and job satisfaction (a composite derived from questions regarding the teacher's satisfaction with the current position and commitment to special education). Means, standard deviations, and intercorrelations appear in Table 2.

In separate equations, each of the teacher efficacy measures was regressed on the six independent variables. Because (a) not all teachers responded to all items on the survey and (b) we used list-wise deletion of missing cases, these analyses were based on 378 teachers. As indicated above, however, the 378 resource teachers' general characteristics were similar to both the initial sample and the population. Further, the results of the list-wise analyses did not differ appreciably from those based on pair-wise deletion of missing cases, which made use of the full sample.

The regression equations produced similar results, whether the dependent variable was total efficacy or personal efficacy (see Table 3). First, both multiple correlations were modest, if statistically significant ($\alpha = .05$): .36 for total efficacy and .31 for personal efficacy. Thus, between 10% and 13% of the variance in teacher efficacy was explained by the linear combination of the six independent variables, depending on the dependent variable.

Second, the same variables across both equations significantly, if modestly, predicted teacher efficacy. Arguably the most important finding from these regressions was that, between the two supervision composites, it was the perceived utility of supervision—not its frequency—that significantly related to a teacher's sense of efficacy. Also, higher teacher efficacy was observed among women and, further, those who expressed higher satisfaction with their resource-room position. Age was related to teacher efficacy;

Variable		1	2	3	4	5	6	7	8
1.	Total efficacy							<u> </u>	
2.	Personal efficacy	.85							
3.	Supervision frequency	.04	.06						
4.	Supervision utility	.17	.16	.17					
5.	Sex	.15	.16	09	.03				
6.	Age	.21	.17	02	03	01			
7.	Resource-room tenure	.13	.11	21	08	.01	.41		
8.	Job satisfaction	.24	.17	.02	.25	.11	.08	.02	
М		127.79	73.67	.22	.05	.86	34.24	5.61	.07
SD		12.64	7.75	.81	.89	.35	8.30	3.79	.73

Note: These statistics are based on the 378 resource teachers for whom complete data were available for the regression analyses.

resource-room tenure was not. Irrespective of resourceroom experience, older teachers demonstrated a slightly higher sense of efficacy.

Summary and Discussion

Our concluding remarks focus on the level of teacher efficacy among resource teachers in our sample; the factor structure of the teacher efficacy instrument, modified for the resource-room context; and the relation between supervision and teacher efficacy.

Teacher Efficacy Among Resource Teachers

Our sample of resource teachers varied considerably in their reported sense of teacher efficacy; the average teacher's mean was 4.25 on a 6-point scale. The number of studies on teacher efficacy notwithstanding, there is not yet any standard by which to judge the level of teacher efficacy in any one sample. Although 4.25 indicates that the average resource teacher in our sample expressed an efficacy sentiment to more statements than not, the extant literature does not allow us to appraise the relative value of this figure. As a normative question, whether 4.25 is *good* or *high* cannot be answered. Clearly, we need additional studies—involving similar analyses on similar samples—before we can approach this question with any confidence. And this is particularly true with respect to studies of teacher efficacy in the special education context.

As a point of reference, our data can be compared with those obtained by Coladarci (1986), who administered the Gibson and Dembo instrument to a representative sample of regular-education teachers in Maine. Within that sample, a mean of 4.11 (SD = .45) was obtained across the 30 items. The difference between these two sample means (i.e., 4.25 vs. 4.11) corresponds to a statistically significant effect size³ of .31, t(830) = 4.67, p < .01. That is, the sense of efficacy among resource teachers in Maine is, on average, roughly one third of a standard deviation higher than that of

Variable	b	SE(b)	β	t
Dependent	variable: To	tal efficacy	,	
Supervision frequency	.69	.79	.04	.87
Supervision utility	1.80	.72	.13	2.49*
Sex	4.69	1.76	.13	2.66*
Age	.27	.08	.18	3.30*
Resource-room tenure	.22	.18	.07	1.22
Job satisfaction	3.04	.88	.18	3.47*
Dependent va	uriable: Pers	onal effica	су	
Supervision frequency	.65	.49	.07	1.33
Supervision utility	1.10	.45	.13	2.44*
Sex	3.26	1.10	.15	2.96*
Age	.13	.05	.14	2.57*
Resource-room tenure	.15	.11	.07	1.32
Job satisfaction	1.18	.55	.11	2.16*

sonal efficacy, R = .31, F(6, 371) = 6.80, $p < \alpha$. For both equations, *b* is the unstandardized partial slope; β is the standardized equivalent. These statistics are based on the 378 resource teachers for whom complete data were available for the regression analyses. * $p < \alpha$ (one-tailed).

their regular-education colleagues. Perhaps this preliminary finding reflects, in part, the differences between these two educational contexts in how instruction is planned, delivered, and evaluated. On the other hand, this finding also might be revealing the entering characteristics of those who elect to become special education teachers. Either conjecture, of course, must be explored more systematically in subsequent studies.

Factor Structure of Teacher Efficacy

When the Gibson and Dembo (1984) teacher efficacy scale is modified for use in the resource-room context, a

factor structure emerges that is comparable to that found in studies of regular-education teachers (Coladarci, 1986; Gibson & Dembo, 1984).

Personal efficacy. A personal efficacy factor clearly surfaced in the present study. As in both comparison studies, this factor is characterized by items that capture the teacher's sense of personal agency (e.g., "When any of my students show improvement, it is because I found better ways of teaching them"). The presence of a personal efficacy factor among resource teachers suggests the fruitfulness of pursuing lines of teacher efficacy research similar to those being conducted in the regular-education context, as we described above.

General efficacy. The second factor, general efficacy, does not enjoy the same clarity of definition. Some of the items loading on this factor, like the one below, reflect one's view of the "normative teacher" (Denham & Michael, 1981, p. 41):

• "When it comes right down to it, *a resource-room teacher* [italics added] really can't do much because most of a student's motivation and performance depends on the home environment."

However, consider the following item, which loaded on the general efficacy factor in the present study and, in an equivalent form, in both comparison studies:

• "The time spent in *my* [italics added] resource room program has little influence on students compared to the influence of their home environment."

Does this clearly reflect one's sense of the normative teacher? The use of the possessive *my* seems to complicate such an interpretation. Our general efficacy factor is further confounded by an additional item involving self-referent language:

• "If one of *my* [italics added] new resource room students cannot remain on task for a particular assignment, there is little that I can do to increase that student's attention."

In short, this factor analysis suggests that a measure of the resource teacher's sense of efficacy presents the same problem facing those who study teacher efficacy in the regular-education context. Specifically, the meaning of general efficacy remains to be clarified.

What is "general efficacy" a measure of? Some researchers have argued that general efficacy, rather than reflecting outcome expectations (Bandura, 1977) or the normative teacher (Denham & Michael, 1981), is more indicative of a teacher's pupil-control ideology, bureaucratic orientation, and fundamental attitude toward education (Woolfolk & Hoy, 1990; Woolfolk, Rosoff, & Hoy, 1991). Others have suggested that teacher efficacy is analogous to the locus-of-control construct, with general efficacy and personal efficacy reflecting an external orientation and internal orientation, respectively (Guskey & Passaro, 1994). Clearly, more quantitative research is needed that examines the conver-

gent and discriminant validity of teacher efficacy scales (e.g., Fink, 1988; Woolfolk et al., 1991), as well as research that investigates the properties of modified instruments (e.g., Guskey & Passaro, 1994).

But this area of research also would profit from more studies with a decidedly qualitative orientation. For example, Coladarci (1992) has called for research employing a "think aloud" methodology in which teachers' thoughts are probed as they respond to teacher efficacy items. Thinkaloud studies would throw needed light on the kinds of factors, considerations, standards, and so forth, that teachers invoke as they consider statements on a teacher efficacy instrument. Just as think-aloud protocols and interviews with test takers have clarified the meaning of derived factors regarding students' knowledge of science (Hamilton, Nussbaum, & Snow, 1995), we believe that eliciting teachers' thoughts to nominally personal and nominally general efficacy statements will add considerably to our understanding of the meaning and import of the two efficacy constructs.

Supervision and Teacher Efficacy

The perceived utility of supervision—not its frequency significantly predicted teacher efficacy among these resource teachers. That is, teachers who felt their supervision was helpful tended to report a higher sense of teacher efficacy than those who reported less-positive views of the supervision they received. And this held regardless of sex, age, or job satisfaction, each of which significantly (and positively) predicted teacher efficacy in its own right.

But these are weak effects. For example, only 13% of the variance in total efficacy and 10% in personal efficacy were accounted for by the six independent variables. And in each equation, the regression weight for supervision utility was a modest +.13. That is, with each standard deviation increase in supervision utility, teacher efficacy increased only 13% of a standard deviation (other independent variables held constant). Although this statistic is within the range of effects that characterize the teacher efficacy literature to date (Coladarci, 1992), its magnitude nonetheless raises questions about the import of direct supervision for the development of a teacher's sense of efficacy.

However, one also must address at least two methodological factors that arguably constrained the relation between supervision utility and teacher efficacy in the present study. First, as is well known, measures of association are affected by variance: Where variance is limited, coefficients are attenuated. This doubtless is a problem in studying instructional supervision among resource teachers, a population that in Maine (Breton & Donaldson, 1991; Rydell, Gage, & Colnes, 1986) and elsewhere (e.g., Moya & Glenda, 1982) tends to see supervision as both insufficiently frequent and insufficiently useful. Thus, insofar as the modal resource teacher in our sample was observed only once each year, the nonsignificant effects of supervision frequency could be, in part, a statistical artifact. And the same statistical principle may have influenced the effects associated with supervision utility, albeit less so because the problem of variance was not as pronounced for this variable. Additional studies would be helpful for appraising this possibility.

A second methodological factor to consider here reflects a limitation of the present study. Specifically, in focusing on the frequency and utility of supervision, we overlooked the important interpersonal milieu within which any supervisory practice exists and, therefore, within which any supervisory practice should be appraised. As Glickman and Bey (1990) argued, one should not study supervision independently of such considerations as "shared understandings, clear purpose, and sensitivity to individual needs of teachers" (p. 554). By incorporating essential aspects of the interpersonal milieu into a study of this kind, subsequent researchers will move toward a better understanding of the relation between supervision and teachers' efficacy in the resource room.

In conclusion, we believe our results point to the promise of pursuing teacher efficacy research within the specialeducation context. Some of this promise is in the form of born fruit—such as the emergence of a clear personal efficacy factor—whereas some of this promise represents a challenge—exploring additional correlates of teacher efficacy and tackling the meaning of general efficacy.

NOTES

1. The modified 30-item teacher efficacy scale, with item-level statistics, is available from the authors.

2. To more vividly convey the variability of these perceptions, we reduced each item to a disagree/agree dichotomy by collapsing responses across the gradations of the perception (i.e., slightly, moderately, or strongly) and reporting the percentage for each of the two resulting categories.

3. Effect size, a standardized mean difference, is computed by dividing the mean difference by the pooled within-group standard deviation (Hedges & Olkin, 1985, p. 79).

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