

The Co-Teacher Relationship Scale: Applications for Professional Development

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Abstract: Co-teaching is a service delivery model to support inclusion of young children with disabilities in early childhood programs. Despite widespread agreement that the co-teacher relationship is critical to success of this model, there has been little attention to quantifying variables inherent in this relationship. This study explored reliability of a self-rating scale (the Co-Teacher Rating Scale [CRS]) completed by 10 co-teacher teams. Findings are compared to reliability of the instrument when completed by two external raters (the program supervisors). Results suggest that the CRS, when completed by external raters, can provide useful data for summative evaluation. Co-teacher self-ratings would be appropriately used for formative evaluation purposes. Future research should focus on field-testing formative and summative evaluation applications of the instrument and investigating the cultural component of the co-teaching relationship.

Co-Teaching continues to receive commendations as a service delivery model for inclusion (Lipsky & Gartner, 1977; Reinhiller, 1996). The strength of this model comes from the fact that two teachers with complementary skills and abilities (a special education teacher and a general education teacher) pool their respective talents to meet instructional and social needs of *all* students in a shared classroom. They are partners, sharing responsibility for planning, daily instruction, and decision making (Friend & Cook, 1992a, b, 1996). Co-teaching is coming to be as popular at the preschool level as in elementary and secondary classrooms (Odom et al., 1997).

Most arguments for benefits of co-teaching derive from logic rather than data. Certainly it is reasonable to assume that a classroom with two teachers is superior to a classroom with only one teacher. In fact, this may not be the

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case at all if the teachers are not able to relate to one another in a positive and constructive manner. What is needed is a reliable picture of what contributes to successful co-teaching. At present there is only one study that considered a possible association between how teachers relate to one another and what occurs in social and instructional environments (McCormick, Noonan, Ogata, & Heck, 2001). That study found a significant relationship between co-teacher relationship and program quality measures. Co-teacher relationship was defined as extent of perceived similarities in beliefs, personal characteristics and traits, and professional style.

Interrelationships among co-teacher relationship variables and teacher behavior and practice are certainly complicated and elusive. However, there is a growing body of qualitative and anecdotal data suggesting that how co-teachers relate to one another influences what they do in the classroom and, in fact, whether the collaboration survives (Lieber et al., 1997; McCormick et al., 2001; Minke, Bear, Deemer, & Griffin, 1996; Peck, Furman, & Helmstetter, 1993). If termination of co-teaching is associated with relationship difficulties, then this factor should be thoroughly investigated.

Lack of data concerning the co-teaching relationship undoubtedly has to do with diffi-

culties quantifying relationship variables. A scale described by Gately and Gately (2001) seems to operationalize and measure qualities of the co-teaching relationship but there are no data concerning its technical adequacy. Without technical information, we know nothing about the ability of an instrument to generate dependable information (an accuracy standard in personnel evaluation) so its use is limited and not defensible (Joint Committee on Standards for Educational Evaluation, 1988; Stufflebeam & Nevo, 1993).

This study evaluated the reliability of a questionnaire designed to rate how co-teachers relate to one another. Specifically, reliability of the co-teachers' self-ratings on the Co-Teaching Relationship Scale (CRS) is compared to the reliability of external CRS ratings (by the co-teachers' supervisors). In addition to providing reliability and validity information on the scale, this information has implications for its uses (Glasman & Heck, 1996).

Method

Participants

Co-teachers. Twenty co-teachers in one culturally diverse school district completed the CRS. These teachers represented the 10 combined early childhood-early childhood special education classrooms in the district. Table 1 summarizes teacher demographics. As shown in Table 1, ten teachers were public school early childhood special education (ECSE) teachers, eight were Head Start teachers, and two were private preschool teachers. Most teachers were females. Age distributions of early childhood education (ECE) and ECSE teachers were similar; overall, about half were 36-45 years of age, seven were 25-35 years of age, and three were 46-55 years of age. Typical of the population in the area, teachers were diverse in their ethnic backgrounds. There was also considerable diversity in educational backgrounds. Most of the ECSE teachers held master's degrees, while the ECE teachers had bachelor's or associate/CDA (Child Development Associate) level training. In nine of the 10 teams, the ECSE teacher had a higher degree than their co-teacher. Both teachers held bachelor's degrees in one team. All but five of the teachers had more than five years teaching

TABLE 1
Teacher Demographics

	Number of Teachers		
	ECE	ECSE	Total
Gender			
Male	0	4	4
Female	10	6	16
Age			
25-35	4	3	7
36-45	4	6	10
46-55	2	1	3
Ethnicity			
Japanese	1	3	4
Hawaiian	2		2
Euro-American	3	4	7
Chinese	1		1
Filipino	1		1
Mixed	2	3	5
Formal Training			
Associate's/CDA	5		5
Bachelor's	5	2	7
Master's		8	8
Experience Teaching			
0-5	2	3	5
6-10	4	2	6
11-20	4	4	8
21+		1	1
Years with Co-Teacher			
<1	2	2	4
1-2	3	3	6
3-5	5	5	10

experience. Experience with co-teaching also varied. Half of the co-teaching partners had taught together for 3-5 years, six had worked together for 1-2 years, and four were in their first year of co-teaching.

Supervisors. The two program supervisors were a public school ECSE coordinator and a Head Start coordinator. They completed the supervisor's version of the questionnaire for each team independently. Two of the programs involved private rather than Head Start co-teachers, but the Head Start supervisor indicated that she was well-acquainted with the team members because of their participation in on-going staff development meetings with co-teachers from the other programs. The ECSE coordinator is a licensed special education teacher holding a master's degree in special education. She is of mixed Asian ancestry,

46 years old, with 16 years experience teaching preschool special education. She had been in a supervisory position for 8 years. The Head Start coordinator is also female. She is 50 years old and of Japanese-American ancestry, with a bachelor's degree and professional diploma in elementary education. She has had 9 years of early childhood teaching experience, and she had been in her current supervisory position for 15 years.

Questionnaire Development

The CRS was designed to explore co-teachers' perceptions of how similar they are to their co-teacher partners on personal/professional qualities that an extensive review of the literature indicated were associated with teaming and co-teaching (McCormick et al., 2001). A lengthy list of characteristics and traits associated with successful collaboration was compiled. Extensive review and elimination of duplicates resulted in a shorter list of those traits and characteristics considered particularly important for collaboration in inclusive settings. Then, questionnaire statements were written to reflect these variables.

Initially, the questionnaire included 39 items in 3 categories: (1) personality traits (20 items such as listener, problem-solver, leader, etc.); (2) beliefs and approaches to teaching (10 items; e.g., physical arrangement of the classroom, beliefs about how children learn, how to manage inappropriate behavior); and (3) personal/professional characteristics (9 items, such as confidence as an educator, approaches to educational planning, ability to be supportive to colleagues and other staff). A factor analysis was conducted in an early pilot study. The first factor included 19 items, with all factor loadings above .31 (14 of the 19 items were above .50). No other substantial factors were identified, and none of the items from Part I of the scale (personality traits) was included in factor 1. The scale was revised to include only the 19 items associated with factor 1. Table 2 lists these items. The internal consistency (alpha) for the 19-item scale was .90.

A "supervisor's version" of the scale was developed so that the supervisor's could rate the "sameness" of the co-teacher pairs. Wording of individual items was the same as on the

TABLE 2

Co-Teacher Questionnaire Items

Indicate the extent to which you believe you and your co-teacher are the same or different in your beliefs and approaches to teaching, and personal/professional characteristics and style.

1. Views regarding the physical arrangement of the classroom.
 2. Views regarding classroom scheduling.
 3. Views regarding how to structure children's activities.
 4. Beliefs about what the curriculum for young children should be.
 5. Beliefs about how children learn.
 6. Beliefs about inclusion.
 7. Views about how to adapt and individualize activities.
 8. Views about how to manage inappropriate behavior.
 9. Beliefs about teacher roles and responsibilities.
 10. Views regarding parent involvement.
 11. Desire to try new things.
 12. Confidence as an educator.
 13. Ways of dealing with colleagues, supervisors, parents, and other professionals.
 14. Approaches to educational planning.
 15. Flexibility in dealing with unforeseen events.
 16. Sense of humor.
 17. Ability to be supportive to colleagues and other staff.
 18. Interest in learning new things.
 19. Dedication to teaching.
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original scale. Wording in the instructions was modified. For example, instructions on the co-teacher rating scale said, "Please indicate (by circling a number on the scale) the extent to which you believe that you and your co-teacher are the same or different. . ." and directions on the supervisor's version of the scale said, "Please indicate (by circling a number on the scale) the extent to which you believe the co-teachers listed above are the same or different. . ."

Procedure

The CRS was administered to 20 co-teachers attending a regularly scheduled preschool inclusion meeting sponsored by the school district. Teachers were told that their participation was voluntary. All 20 co-teachers inde-

pendently completed the questionnaire. The two supervisors independently completed the supervisor's version of the CRS for each team within one week following the workshop.

Results

Table 3 summarizes the descriptive statistics associated with questionnaires completed by the 20 co-teachers and the two supervisors. These data were calculated using the total score (sum of the ratings for the 19 items) on each questionnaire; the highest score possible was 95. As seen in Table 3, the means of the co-teachers' ratings (86 and 78) were higher than the supervisors' means (76.7 and 69.6). The ECE co-teachers had higher CRS scores than the ECSE teachers (mean score of 86 compared to 78.7); and similarly, the Head Start supervisor's ratings of the co-teacher pairs were higher than the special education supervisor's ratings (76.7 and 69.6, respectively). Standard deviations were similar across the teachers and the supervisors (9.05 to 10.95).

Sources of expected variability among the individuals (called the person effect) who were being rated (the co-teachers) were separated from possible confounding sources, such as the instrument itself, number of administrations, persons assigning the ratings, and interactions among the sources of variability by conducting two G studies (Marcoulides & Heck, 1992). Generalizability theory is a psychometric model for assessing performance or effectiveness (Cronbach, Glesser, Nanda, & Rajaratnam, 1972; Marcoulides, 1996; 1998). G studies are conducted to identify sources of errors in the measurement of performance, so that these sources can be

reduced if necessary during subsequent parts of the evaluation process. The analysis of various error sources can help evaluators make appropriate decisions about validity and reliability of data.

Table 4 presents the findings of a G study of the team ratings by external raters (supervisors) and Table 5 summarizes a G study using the self-report (co-teachers) team ratings. With external raters (see Table 4), there was more "true" variability in responses across the teams (i.e., 35.5% compared to 18.5%). This suggests the external raters' views were less confounded by other types of measurement error (e.g., errors due to raters, items and interactions between those sources of error). Items were a relatively small source of error (i.e., 10% and 6%). It also suggests the instrument is generally reliable. There was not much interaction between items and raters on either instrument. On the external raters study (Table 4), raters were a relatively small source of error (i.e., amounting to 11% as a source alone, and generally smaller amounts in combination). In contrast, on the self-report study, rater errors were substantial alone (22%) and also made up a considerable part of the other interactions plus error variance component (49.6%).

The different variance components may be used to calculate a generalizability coefficient, which indicates the extent to which one can generalize about the domain covered by the instrument (i.e., the larger universe of possible team-rating items) from the sample data. The overall generalizability coefficient (which is 1.0 if the data are without errors of any kind) was $\rho^2_{\Delta} = .80$ in the external G study (Table 4) and $\rho^2_{\Delta} = .60$ in the self-rater G study (Table 5).

TABLE 3
Descriptive Statistics of CRS by Raters

<i>Raters</i>	<i>Mean</i>	<i>Standard Deviation</i>	<i>Minimum</i>	<i>Maximum</i>
ECE Co-Teachers	86.0	9.13	67	95
ECSE Co-Teachers	78.7	10.95	57	95
Head Start Supervisor	76.7	10.11	56	88
Special Education Supervisor	69.6	9.05	51	80

TABLE 4

Sources of Variability in a G Study of 10 Teacher Teams Using Two External Raters

<i>Source of Variation</i>		<i>Variance Component</i>	<i>Percent</i>
σ_t^2	Team	.214	35.5%
σ_i^2	Items	.061	10.1%
σ_r^2	Raters	.067	11.1%
σ_{ti}^2	Team * Items	.006	1.0%
σ_{tr}^2	Team * Raters	.030	5.0%
σ_{ri}^2	Raters * Items	.015	2.5%
$\sigma_{tri,e}^2$	Interaction plus error	.210	34.8%
Total observed-score variation		.603	100.0%

$\rho_{\Delta}^2 = .80$

Discussion

Technical Characteristics and Adequacy

Only a small percentage of the variance in the two generalizability studies was accounted for by the items directly (i.e., 10% and 6%). This is consistent with an earlier pilot study showing an internal consistency coefficient (alpha) of .90 for the CRS. The overall generalizability coefficient (which is 1.0 if the data are without errors) tells us how much we can generalize about the domain covered by the instrument from the sample data. This coefficient was much higher for the external raters ($\rho_{\Delta}^2 = .80$) than for the co-teachers ($\rho_{\Delta}^2 = .60$). Of the total variability in the set of co-teaching scores, almost 36% was due to true differences between the co-teaching teams; therefore the supervisors' ratings are less confounded by error. One explanation for this difference

could be that supervisors had years of experience with many co-teacher teams. This experience gave them a broader perspective and a basis against which to compare and judge the co-teacher behavior: thus, the higher generalizability coefficient. In contrast, co-teacher teams worked in relative isolation (typically only one preschool co-teacher team to a school) so their perspective on what the co-teaching relationship is or should be was limited. After separating out various sources of error, only about 19% of total variation in the teams' self-report ratings represent true differences among the individual teams.

A study by Kilgo et al. (1999) calls into question the assumption that professionals from ECE and ECSE have significant theoretical differences. The ECE and ECSE professionals they surveyed held very similar views as to practices that are important when working

TABLE 5

Sources of Variability in a G Study of 10 Teams Using Self-Report Team Ratings

<i>Source of Variation</i>		<i>Variance Component</i>	<i>Percent</i>
σ_t^2	Team	.125	18.5%
σ_i^2	Items	.039	6.0%
σ_{it}^2	Team * Items	.027	4.1%
$\sigma_{r,tr}^2$	Raters (Teams)	.145	21.8%
$\sigma_{ri,tri,e}^2$	Other Interactions plus error	.210	49.6%
Total observed-score variation		.667	100.0%

$\rho_{\Delta}^2 = .60$

with young children and their families. They concluded that professionals from the two fields have greater concurrence in what they believe to be recommended practices than they do divergence. This leads us to ask why there was not stronger agreement in the present study in the co-teacher partners' assessment of their similarities and differences. Perhaps the answer has to do with their different levels of formal training (most of the ECE teachers have associate degrees or CDA certificates while the ECSE teachers have master's degrees). Or, can the differences in the G-coefficients be accounted for by the fact that the scale was conceptually different for the two groups of raters? Even though the items on the scale were identical, the co-teachers' version of the scale asked for self-rating. It asked teachers to consider themselves in relation to their co-teaching partner. In contrast, the supervisors rated the relationship between co-teachers in 10 teams. Though this difference may seem inconsequential, it is consequential. The abilities and cognitions involved in judging oneself are quite different than those involved in judging others.

The type of evaluation decision being made should help determine the minimum level of generalizability that would be required within the evaluation system. This has implications for how the instrument is used. The generalizability coefficient for the supervisors is high enough to suggest that the scale could be used for summative evaluation. One possible use of supervisors' CRS scores would be as a component of an annual teacher and program evaluation process. They provide one piece of the picture of the success of the co-teaching partnership.

The CRS could be used in a different way with co-teachers. Ratings could be shared with co-teacher dyads in a workshop context to promote discussion and dialogue about importance of creating and maintaining positive relationships with one another. Focus should be on constructing the type of "common ground" that is implied by perceived similarities. A problem in application of the co-teaching model has been the assumption that the teachers came to the co-teaching setting with well-developed teaming and communication skills.

Limitations

Because sample sizes were small (10 co-teacher dyads and 2 supervisors), this is best viewed as a pilot study. Such studies are important in identifying possible sources of measurement error so that the evaluation process can be improved subsequently. Furthermore, cultural diversity in the community where the study was conducted may not be representative. The most serious limitation is that the CRS has not yet been field tested in formative or summative evaluation activities. The utility of the scale will ultimately be judged by its effectiveness in practice.

Another limitation is lack of information about role of culture in the co-teaching relationship. Cultural differences within co-teacher teams may have played some role in the lower reliability of the teachers' self-ratings. It is plausible that cultural differences had an effect on ease of communication within teams and team-member's perceptions of their similarities and differences.

Directions for Future Research

Next is to use the CRS for formative and summative decision-making. As a formative measure, it would be interesting to evaluate the CRS as an "intervention" for building the co-teaching relationship. The need for staff development focused on co-teaching skills is noted repeatedly in the literature (e.g., Walther-Thomas, 1997). In a staff development context, co-teacher partners would complete the CRS independently and then review and compare their ratings of each item. Similarities and differences both in practices and philosophical issues could be discussed. Studies of collaboration in inclusive environments have indicated that open dialogue and shared philosophies are essential to effective collaborative relationships (Baker & Zigmond, 1995; Giangreco, Dennis, Cloninger, Edelman, & Schattman, 1993; Lieber et al., 1997).

In the case of newly formed co-teacher teams, discussing their independently-rated CRS items could assist the teams to learn about one another's perspectives. Walther-Thomas, Bryant, and Land (1996) argue that the first step in the co-planning process (an essential element of co-teaching) is for co-

teacher partners to get to know each other. Certainly, responses to the CRS items could serve to guide the discussion. Co-teacher partners could learn to see commonalities in their approaches and concerns for children.

Formative use of the instrument by program supervisors could help them understand the co-teacher teams for which they are responsible. A low rating would suggest the need to guide and facilitate the co-teachers' explorations of one another's communication strengths and training needs. Alternatively, professional development activities to develop teaming and communication skills could be evaluated with pre- post-testing using the CRS.

Future research might also address the relationship between cultural variables and the CRS. While there is no dispute that culture plays a significant role in adult communication and relationships (Asante & Gudykunst, 1989; Hall, 1976, 1984), the question is which cultural variables are the most significant influences on the relationship and perceptions of co-teaching partners. In much the same manner that cultural differences get addressed in preparing teachers and early childhood interventionists to work with children and families of diverse cultures (Harry, Kalyanpur, & Day, 1999; Lynch & Hanson, 1998), preparation for co-teaching may need to address attitudes and skills to facilitate communication in co-teaching partnerships where the teachers are from different cultures.

References

- Asante, M. K., & Gudykunst, W. B. (1989). *Handbook of international and intercultural communication*. Beverly Hills, CA: Sage.
- Baker, J. M., & Zigmond, N. (1995). Are regular education classes equipped to accommodate students with learning disabilities? *Exceptional Children, 56*, 515-526.
- Cronbach, L. J., Glesser, G. C., Nanda, H., & Rajaratnam, N. (1972). *The dependability of behavioral measurements: Theory of generalizability for scores and profiles*. New York: Wiley.
- Friend, M., & Cook, L. (1992a). *Interactions: Collaboration skills for school professionals*. New York: Longman.
- Friend, M., & Cook, L. (1992b). The new mainstreaming: How it really works. *Instructor, 10*(7), 30-36.
- Friend, M., & Cook, L. (1996). *Interactions: Collaboration skills for school professionals* (2nd ed.). New York: Longman.
- Gately, S. E., & Gately, F. J. (2001). Understanding co-teaching components. *Teaching Exceptional Children, 33*(4), 40-47.
- Giangureco, M. F., Dennis, R. E., Cloninger, C., Edelman, S., & Schattman, R. (1993). "I've counted Jon": Transformational experiences of teachers educating students with disabilities. *Exceptional Children, 59*, 359-372.
- Glasman, N., & Heck, R. H. (1996). Role-based evaluation of principals: Developing an appraisal system. In K. Leithwood, J. Chapman, & D. Corson (Eds.), *International handbook of educational leadership and administration* (pp. 369-394). Boston: Kluwer Academic.
- Hall, E. T. (1976). *Beyond culture*. Garden City, NY: Anchor Books.
- Hall, E. T. (1984). *The dance of life: The other dimension of time*. Garden City, NY: Anchor Books.
- Harry, B., Kalyanpur, M., & Day, M. (1999). *Building cultural reciprocity with families: Case studies in special education*. Baltimore: Brookes.
- Joint Committee on Standards for Educational Evaluation. (1988). *The personnel evaluation standards*. Newbury Park, CA: Sage.
- Kilgo, J., Johnson, L., LaMontagne, M., Stayton, V., Cook, M., & Cooper, C. (1999). Importance of practices: A national study of general and special early childhood educators. *Journal of Early Intervention, 22*, 294-305.
- Lieber, J., Beckman, P. J., Hanson, M. J., Janko, S., Marquart, J. M., Horn, E., & Odom, S. L. (1997). The impact of changing roles on relationships between professionals in inclusive programs for young children. *Early Education and Development, 8*, 67-82.
- Lipsky, D. K., & Gartner, A. (1977). *Inclusion and school reform*. Baltimore: Brookes.
- Lynch, E. W., & Hanson, M. J. (1998). *Developing cross-cultural competence: A guide for working with children and their families* (2nd ed.). Baltimore: Brookes.
- Marcoulides, G. A. (1996). Estimating variance components in generalizability theory: The covariance structure analysis approach. *Structural Equation Modeling, 3*, 290-299.
- Marcoulides, G. A. (1998). Applied generalizability theory models. In G. A. Marcoulides (Ed.), *Modern methods for business research* (pp. 1-22). Mahwah, NJ: Lawrence Erlbaum Associates.
- Marcoulides, G. A., & Heck, R. H. (1992). Assessing instructional leadership effectiveness with "G" theory. *International Journal of Educational Management, 6*(3), 4-13.
- McCormick, L., Noonan, M. J., Ogata, V., & Heck, R. (2001). Co-teacher relationship and program quality: Implications for preparing teachers for

- inclusive preschool settings. *Education and Training in Mental Retardation and Developmental Disabilities*, 36, 119–132.
- Minke, K. M., Bear, G. G., Deemer, S. A., & Griffin, S. M. (1996). Teachers' experiences with inclusive classrooms: Implications for special education reform. *The Journal of Special Education*, 30, 152–186.
- Odom, S. L., Peck, C. A., Hanson, M., Beckman, P. J., Kaiser, A. P., Lieber, J., Brown, W. H., Horn, E. M., & Schwartz, I. S. (1997). *Inclusion at the preschool level: An ecological systems analysis* (pp. 18–30). Social Policy Report, Society for Research in Child Development.
- Peck, C. A., Furman, G. C., & Helmstetter, E. (1993). Integrated early childhood programs: Research on implementation of change in organizational contexts. In C. Peck, S. Odom, & D. Bricker (Eds.), *Integrating young children with disabilities into community programs: From research to implementation* (pp. 187–206). Baltimore: Brookes.
- Reinhiller, N. (1996). Coteaching: New variations on a not-so-new practice. *Teacher Education and Special Education*, 19, 34–48.
- Stufflebeam, D., & Nevo, D. (1993). Principal evaluation: New directions for improvement. *Peabody Journal of Education*, 68(2), 24–46.
- Walther-Thomas, C. S. (1997). Co-teaching experiences: The benefits and problems that teachers and principals report over time. *Journal of Learning Disabilities*, 30, 395–407.
- Walther-Thomas, C. S., Bryant, M., & Land, S. (1996). Planning for effective co-teaching: The key to successful inclusion. *Remedial and Special Education*, 17, 255–265.
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