

## Measuring the Behavioral Indicators of Instructional Consultation: A Preliminary Validity Study

Sonja A. McKenna, Sylvia Rosenfield, and Todd A. Gravois  
*University of Maryland, College Park*

*Abstract.* Instructional Consultation is a school-based consultation model designed to enhance student and staff performance. An interview-based, self-report instrument, the Level of Implementation Scale was developed to measure the presence of behavioral indicators of the seven critical dimensions of Instructional Consultation. The current article evaluates the accuracy of measuring these behavioral indicators, comparing the Level of Implementation Scale interview responses from consultants and teachers to analyses of the actual recorded consultation sessions, to verify whether the interview responses captured the consultation behaviors. Participants were 20 newly trained consultants and their teacher consultees. Audiotape recordings of the consultation sessions were rated to determine the presence of the behavioral indicators, and resulting scores compared to those reported in the Level of Implementation Scale interviews. The current study found that self-report Level of Implementation Scale interview results were significantly related to actual consultation behaviors. No significant discrepancies were found on any of the seven critical dimensions.

As schools attempt reforms to provide effective instruction to students who have difficulties learning, consultation and problem-solving processes have been implemented with increased frequency (Erchul & Sheridan, 2008). Research evidence has accumulated that such services provide benefits to students and staff alike (see, e.g., Erchul & Sheridan, 2008). One example of a consultation problem-solving model is Instructional Consultation (IC; Rosenfield, 1987, 2008), delivered school-wide through IC Teams (Rosenfield & Gravois, 1996). IC Teams, a school-level model of problem solving, focus on improving

and enhancing staff competence as a route to both systems improvement and positive individual student outcomes. Within the team model, the IC process, a consultee-centered approach to problem solving (Knotek, Kaniuka, & Ellingsen, 2008; Knotek, Rosenfield, Gravois, & Babinski, 2003), is used to support teachers in addressing concerns about students who have challenges meeting academic or behavioral expectations in school.

A challenge confronting the use of any problem-solving or consultation model is evidence of treatment integrity or fidelity of the process itself. Although some evidence exists

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Correspondence regarding this article should be addressed to Sylvia Rosenfield, 3214 Benjamin Building, University of Maryland, College Park, MD 20742; E-mail: srosenf@umd.edu

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for the effect of IC Teams on teacher and student outcomes (see, e.g., Rosenfield, Silva, & Gravois, 2008; Vu et al., 2009), a program cannot be judged as successful in achieving outcomes unless there is assurance that the components of the program are being implemented as intended (Fullan, 1983; Hall & Hord, 2006). Measures of treatment integrity and fidelity strengthen the causal relationship between the program and assessed outcomes (Gresham & Kendell, 1987; Gutkin, 1993).

There are multiple definitions of intervention fidelity, including “treatment integrity, adherence, compliance, dose, exposure, quality of delivery, and treatment differentiation” (Hulleman & Cordray, 2009, p. 89). For consultation, the concept is further complicated because there are embedded levels of critical components within the consultation process itself. For example, Noell (2008) notes that treatment integrity in consultation can refer to three different processes: (a) the “degree to which the consultant adheres to an established consultation model”; (b) “the degree to which one or more specific procedures embedded within an established consultation model are implemented as designed by the consultant”; and (c) “the degree to which the consultee delivers the treatment to the client” (pp. 323–324). Much of the literature on treatment integrity of consultation (see, e.g., Noell et al., 2005; Sterling-Turner, Watson, & Moore, 2002; Telzrow & Beebe, 2002; Upah & Tilly, 2002) has focused on the effectiveness of consultation in “causing others to implement effective treatments” (Noell, 2008, p. 323).

Much less attention has been paid to “*consultation procedural integrity*” (CPI) (Noell, 2008, p. 324; italics in original), the label Noell gives to the “degree to which consultation procedures were implemented as designed in both practice and research contexts” (p. 324). Some researchers, such as Wickstrom, Jones, LaFleur, and Witt (1998), compared different components of consultation on outcomes, and did measure the integrity of those components in the study. In addition, some research has been conducted on treatment integrity of newly trained behavioral consultants (e.g., Kratochwill, Sheridan,

Rotto, & Salmon, 1991). But little research has been done on implementation of models of consultation other than behavioral. The focus of this study is examining the procedure for assessing the CPI of the IC process.

### Components of IC Teams

IC Teams (Rosenfield & Gravois, 1996) represent a complex program in which individual team members work one-on-one with classroom teachers, rather than in a group problem-solving format, to deliver consultation services. The IC Team is comprised of members representing the school-building stakeholders: general and special education teachers, pupil personnel staff, specialists, and a building administrator. The use of case management (e.g., one-on-one consultation by team members) requires a structured delivery system to organize the members of the interdisciplinary team and assurance that each team member uniformly employs the collaborative IC process (Rosenfield, 1987). Rosenfield and Gravois (1996) have described the delivery system, the evaluation design, and the training and implementation procedures in detail.

A third component of the IC Teams model is the incorporation of an evaluation design to ensure that the program has been implemented with integrity as well as to assess student and staff outcomes. Schools implementing IC Teams conduct an annual evaluation of overall implementation (Rosenfield & Gravois, 1996) as a component of measuring program implementation integrity. This feedback, along with data collected from teachers, team members, and review of records, enables team members to monitor their progress in implementing the model with integrity and to design training relative to components that are less well implemented.

### IC as a Consultation Process

As noted earlier, a unique feature of the IC Teams model is that individual team members conduct the consultation process, rather than teachers meeting with the full team, to problem solve about their concerns. The team receives referrals from teachers on classroom

and student concerns. After the team receives a teacher referral, a team member is assigned as a consultant, termed a case manager, to guide the IC process with the consultee, the teacher; thus, the consultation process occurs within a dyadic relationship. To do this effectively, case managers receive training in the IC process (Rosenfield, 1987, 2008). If there is not integrity of the IC process used by individual team members, the effectiveness of the entire IC Team delivery system is reduced.

### **Critical Components of IC**

Before the treatment integrity of any process can be assessed, it is imperative to be clear about the components. Any assessment of fidelity requires specification of a “gold standard” (Hulleman & Cordray, 2009, p. 90), the elements of the process or program, and the level of implementation required. Hall and Hord (2006) stress the importance of defining the configuration of any new innovation as a first step in assessing implementation fidelity. The process must include the various “operational forms of the change that can be observed” (Hall & Hord, p. 112) in the context in which the innovation is designed to be implemented. As Hall and Hord warn,

A major reason that widespread change often occurs only modestly across a school is that the implementers, change facilitators, and policymakers do not fully understand what the change is or what it will look like when it is implemented in the envisioned way. (p. 111)

Typically, the program developers do the work of defining the innovation configuration—that is, the essential elements of a new program or process.

Early in the development of IC Teams as an innovative model, Rosenfield and Gravois (Rosenfield, 2008; Rosenfield & Gravois, 1996) defined the critical elements. IC requires skills in communication, collaborative relationship development, instructional and behavioral assessment and intervention, and a carefully delineated set of problem-solving stages. The IC problem solving stages are as follows: (a) contracting, (b) problem identification, (c) intervention planning and design,

(d) implementation, and (e) evaluation and follow-up. Gravois and Gickling (2008) describe the critical dimension of Instructional Assessment, formerly termed curriculum-based assessment, which focuses upon assessing and creating appropriate instructional conditions for students.

### **Measuring IC Integrity**

To assess the process integrity of IC Teams, a Level of Implementation Scale (LOI; Fudell, 1992) was designed and later revised (Fudell, Gravois, & Rosenfield, 1996). One section of the LOI (Fudell et al., 1996) measures the core dimensions for individual case managers consulting with classroom teachers (Fudell, 1992; Rosenfield & Gravois, 1996; Vail, 1996). This study focuses on these dimensions designed to assess the CPI of the IC process.

The original LOI (Fudell, 1992) was developed in collaboration with the second author (SR) and program implementers as part of an early intervention project in Pennsylvania in the early 1990s (Rosenfield, 1992). Vail (1996) further evaluated the LOI’s use during the implementation of IC Teams in a group of schools across 3 years of implementation. Participants in her study were 133 case managers and 142 referring teachers from 13 schools in one suburban school district. Her results indicated different measured rates of implementation across years. For example, first-year teams were most involved with intervention development and establishing the delivery system for the team in the school. In the second year, measures of collaborative communication and problem identification increased. Measures of accuracy in data collection and Instructional Assessment were not found to increase in the first 2 years, leading to recommendations for the developers to modify training in those areas. Vail’s findings also indicated variability by school, suggesting that implementation was affected by site-specific factors. She concluded that dimensions of complex innovations such as IC Teams develop at different rates during the implementation process. However, although the LOI

**Table 1**  
**Collaborative Consultation Dimension Names and Behavioral Indicators**

Dimension	Behavioral Indicators
1. Contracting	Case manager and consultee discuss four elements of collaborative relationship (consultation process, meaning of collaboration, time involved, and confidentiality). Case manager and consultee agree to work together.
2. Problem Identification	Case manager and consultee both identify discrepancy between demonstrated and desired behaviors as the identified problem. Case manager and/or consultee complete activities for analyzing academic problem (IA, analysis of targeted skill) or behavioral problem (analysis of antecedents and consequences). Case manager and consultee specify academic or behavioral goal in behavioral terms.
3. Intervention Planning and Design	Case manager and consultee discuss interventions based on effective teaching practices. Case manager and consultee agree on intervention selected. Case manager and consultee specify responsibilities for implementation of intervention. Case manager and consultee develop a plan for intervention monitoring.
4. Implementation	Case manager and consultee indicate agreement about whether intervention is implemented as planned. Case manager and consultee discuss if monitoring occurs as specified. Case documentation shows evidence of frequent graphing and monitoring of data.
5. Evaluation and Follow-up	Case manager and consultee indicate using data to determine progress. Case manager and consultee use data to base decisions of continuing, modifying, or terminating intervention.
6. Collaborative Communication	Case manager's and consultee's interview responses indicate agreement regarding the process and outcomes of the case.
7. Curriculum-Based Assessment/IA	Case documentation reflects an evaluation of behavior in the natural environment focusing on the individual child and based in the curriculum. Case documentation reflects assessment for monitoring ongoing student progress.

*Note.* IA = Instructional Assessment.

appeared useful as a measure of implementation, the Vail study did not address the psychometric properties of the measure.

### **Development of the LOI for the IC Process**

Developing measures of treatment or program integrity requires (a) identification of critical components or dimensions; (b) identification of behavioral indicators of these components; and ultimately (c) assessment of each indicator (Leithwood & Montgomery 1980). The developers of IC have identified the dimensions and behavioral indicators of the crit-

ical components. The LOI interview is part of the assessment process to determine the implementation of each indicator. Only the assessment of the IC core of the IC Team model is considered here.

### **IC Dimensions**

The developers identified seven process dimensions considered essential if IC is to be considered operational (see Table 1). As depicted, the dimensions articulate the requirement that IC consultants adhere to critical stages of consultation problem solving, collaborate with the classroom teacher, and use a

specific process of assessment as part of the consultation process.

### **Behavioral Indicators of Dimensions**

For each dimension, several behaviors are required of the consultant case manager and consultee, who is usually a referring teacher. These behavioral components, examples of which are found in Table 1, are measured by interview items, agreement between interview item responses, and/or document review. For example, for the Contracting Dimension, the case manager and teacher must indicate that the case manager discussed four aspects, including (a) the consultation process, (b) meaning of collaboration within the IC model, (c) the time involved for the IC process, and (d) confidentiality limits within the specific school culture. The case manager and teacher must also agree to work together within the IC process for the Contracting Dimension to be considered implemented with integrity.

### **Assessment of Behavioral Indicators**

A self-report, semistructured interview format is used to assess the presence or absence of the behavioral indicators for each dimension. The case managers and teachers are interviewed separately using the LOI Case Manager Interview and Teacher Interview. A majority of the questions are asked of both the teacher and case manager and are later cross-referenced in the scoring process for agreement. The presence of an IC dimension is scored positively if (a) both the case manager and teacher indicate accurate use of the skill or behavior, and (b) there is agreement during separate interviews that the behavioral indicator occurred. The goal or purpose of this scoring procedure is not only to assess process integrity of the IC, but also to evaluate whether there is ongoing collaboration between the case manager and teacher (Fudell et al., 1996). This requirement that case managers and teachers agree, during separate interviews, in order to receive a positive score, represents a behavioral indicator of IC's critical dimension of Collaborative Communication.

### **Establishing Implementation Standards**

Assessment of implementation provides a measure of how closely actual practice aligns with expected performance. There is a need for developers to establish the degree of implementation required to reasonably anticipate desired outcomes will result and to set the levels prior to implementation (see Hulleman & Cordray, 2009, for a discussion of these issues). Further, the importance of investigating the degree of implementation of the intervention in comparison to the counterfactual in the control group has been discussed in detail by Hulleman and Cordray (2009). Related to this issue, Wang, Nojan, Strom, and Walberg (1984) recommended setting high, average, and low levels of implementation standards.

In the case of the LOI, the developers set levels of 80%–100% for high implementation to ensure that the process was sufficiently in place for outcomes to be attained (Rosenfield & Gravois, 1996). An 80% criterion level for each dimension was also set as the standard for adequate process integrity at the individual level (Fudell, 1992; Vail 1996). Implementation of 75%–79.9% is considered “approaching criterion level of implementation.” Implementation of 65%–74.9% is considered “below criterion level of implementation.” Implementation below 65% is considered to be “far below criterion level of implementation.” There are additional criteria for adequate school-level implementation of the LOI, which are not relevant to the study here.

### **Challenges with Self-Reports and Interviews**

The LOI uses a set of interviews to generate information about the behaviors of the case manager and consultee. However, many challenges in using interview methods have been identified (Jobe, 2003; Jobe, Tourangeau, & Smith, 1993). For a number of reasons, individuals do not always accurately report on their own behaviors (Jobe, 2003), including behaviors within consultation interactions (Gutkin, 1993; Witt, 1997). During the LOI interviews, participants may unwittingly report inaccurately what occurred in consulta-

tion sessions. Without validation information in the form of observations of the actual consultation sessions, the accuracy of the responses from the LOI interviews cannot be assessed to determine whether the interviews reflect what transpired during the problem-solving process.

Cognitive psychology researchers (e.g., Jobe, 2003) recommend the use of validation techniques to increase the accuracy of self-report methods. A validation technique entails obtaining information about actual behaviors in the form of participant behavioral diaries, record review, or actual observation of the behaviors under investigation. Validation techniques are used as a criterion measure of actual behaviors against which the self-report information can be compared. Observing the behaviors within the consultation sessions to determine whether they match the behaviors reported during the LOI interviews is an acceptable way in which to strengthen the validity of the scale for assessing the IC process.

### **Purpose of Study**

The purpose of this study was to investigate the agreement between the LOI interview measure and the actual behavior during consultation sessions. Following Jobe's (2003) recommendation that self-report measures be validated by observation, the current study assessed the match between the actual behaviors during the consultation process (Recorded) compared to the self-reported responses by teachers and case managers interviewed (Interview). The study focused on one application of the LOI, that is, the evaluation of the process integrity of new IC Team case manager consultants.

### **Method**

#### **Participants**

The participants in this study were 20 case manager–teacher consultation dyads. The case managers were school-based practitioners who had previously attended a 20-hr IC Team workshop, designed to train them in the basic IC process. Practitioners who completed the

on-site workshop received individual coaching (Gravois, Rosenfield, & Vail, 1999; Vail, 2003) as they completed a case in their home school. These case managers worked with classroom teachers whom they selected from their home schools; consultation sessions with the teachers were recorded. The case managers mailed the tapes and supporting documentation to assigned coaches, who in turn provided feedback via e-mail communication. Case managers met weekly with their teacher and received feedback from their coach prior to the next consultation session. This format allowed case managers to incorporate the feedback into subsequent sessions.

All participants (teachers and case managers) gave written consent for the case sessions to be audiotaped and archived at the University of Maryland Lab for IC Teams. Subsequent to giving permission for tapes to be archived, these teachers and case managers gave a second written informed consent for their archived recorded consultation sessions and previously completed LOI interviews to be used in this study; they received a consent form detailing the purpose of the study. All permission forms and archiving of data procedures were reviewed and approved by the University of Maryland Institutional Review Board.

The cases analyzed for this study were ones in which all data were available and consent could be obtained from both the case managers and teachers. During the 2001–2002, 2002–2003, and 2003–2004 school years, 59 practitioners participated in IC Teams workshops for which online coaching was also offered. All 59 practitioners were solicited by mail for participation in this study. The post office returned one mailed packet and there was no response from 19 solicitations. Responses to the solicitation efforts revealed that 7 cases did not have adequate data (missing LOI interviews or audiotaped sessions), 4 practitioners chose not to participate in the online coaching, and for 8 cases, consent was not obtained from the case manager, teacher, or both. There were no differences in demographics between participants who agreed to be included in the study and participants who were not located or did not agree to participate.

**Table 2**  
**Participant Characteristics**

	Case	
	Manager	Teacher
Gender		
Female	17	17
Male	3	3
Race		
Black	0	1
Caucasian	18	18
Unspecified	2	1
Position		
Teacher (general education or not specified)	4	18
Teacher (special education)	5	1
ICT/IST facilitator	7	0
School psychologist	5	0
School counselor	2	0
Teacher/reading consultant	2	1
Years experience		
Range	1–35	1–29
Mean	10.3	9.6

*Note.* ICT/IST = Instructional Consultation Team/Instructional Support Team.

The majority of teacher participants were female and Caucasian (see Table 2). The primary role of participants was general education or unspecified specialty teachers with a mean of over 9 years of experience. For case managers, the positions and years experience reported may not have been an accurate indicator of the amount of career experience. Of the case managers who indicated that their positions in the school were IC Team facilitators, several indicated that they had more than 20 years of experience in a non-IC Team facilitator role. This information leads to the supposition that the 3 case managers who only reported their roles as IC Team facilitators may have had prior experience in other roles.

### Instruments

**LOI Interview Scale (LOI-Interview).** The LOI (Fudell et al., 1996) is composed of two domains—namely, collaborative consultation and the delivery system. There

are 14 dimensions, 7 in each domain. This investigation focuses on the 7 dimensions of the collaborative consultation process. The collaborative consultation process is measured through a series of interviews with teachers and case managers. The presence or absence of each dimension is assessed to determine the level of implementation. Dimension implementation is calculated as a percentage of the indicators completed or in place. Implementation criterion level has been discussed earlier.

Interrater reliability and test–retest reliability were originally assessed by Fudell (1992). Interrater reliability was calculated by dividing agreements by the sum of agreements and disagreements. Reliability on four interviews ranged from .79 to 1.00; on the four interviews, interrater reliability was .88. Interrater reliability was rechecked at a second data collection. Reliability ranged from .85 to 1.00. Total interrater reliability was .92. Test–retest reliability was also assessed by Fudell (1992) during the initial data collection period. Interviews were readministered by phone to two available teachers and one case manager within 1 week of the initial interview. Reliability ranged from .69 to .85. Total test–retest reliability was .78. During the second data collection, interviews were readministered to two teachers and a principal. Reliability ranged from .85 to 1.00. Total test–retest reliability was .88.

There are 18 case manager interview items and 17 teacher interview items used to assess the behavioral indicators of the dimensions. Through the interviews, the presence or absence of each behavioral indicator of the process is assessed. A positive score occurs when the indicators are implemented correctly and the case manager and teacher responses agree. If the case manager's or teacher's or both responses indicate that an indicator was implemented incorrectly, or if the case manager's and teacher's responses do not match, the item is scored 0. Several behavioral indicators are assessed for each dimension (examples of items can be found in the Appendix). Dimension implementation is calculated as the percentage of the items earning a score of 1.

**LOI Scale—Recorded (LOI-Recorded).** The LOI-Recorded was created to assess the audiotapes of the consultation sessions of the case manager and teacher, using the same IC dimensions. A protocol for scoring IC session tapes was developed to closely mirror the item wording of the LOI Interviews (see Appendix for examples), but stated appropriately to account for listening to the case sessions rather than scoring interview responses.

### Procedure

As indicated previously, participants were solicited from case manager–teacher dyads who had audiotaped their case sessions for the online coaching requirement and given permission for the tapes to be used for research purposes. Of the 20 participant case managers, 2 case managers obtained cases from referrals to the existing early intervention teams within their schools. Other case managers solicited the participating teachers to engage in consultation for the case managers' practice cases, a typical practice for new case managers in schools without functioning IC Teams.

After case manager–teacher dyads completed their cases, the LOI Case Manager Interview and the LOI Teacher Interview were administered and scored by the staff of the University of Maryland's Lab for IC Teams; none of the current authors were involved in the administration of the LOI interviews or the scoring. The interviews were conducted either face-to-face or by phone by graduate students or Lab for IC Teams staff members, who undergo extensive training on the LOI interview process. There is a manual for administering and scoring the LOI interviews, and training is conducted prior to administering and scoring. All of the LOI interviews in this study were administered and scored by trained personnel prior to these archived LOIs being incorporated into this study. With the permission of the case manager and teacher, the LOI interviews were audiotaped for research purposes, as per standard administration procedures.

For this study, the first author scored a random sample of 4 of the LOI interviews,

which had been previously recorded and scored by staff members, to determine interrater reliability. Percent of agreement divided by the sum of agreements and disagreements was calculated, and ranged from 90.0% to 96.8%. Kappa was not calculated because the distribution was heavily skewed towards one category, with several empty cells. It should be noted that none of the LOI-Interview recordings nor the scores of the interviews had been examined by any of the authors prior to the completion of the LOI-Recorded scoring.

The audiotapes created for coaching purposes were scored using the LOI-Recorded. The first author listened to each of the session tapes while noting the presence or absence of the critical dimensions and scoring the items as 1 or 0. In addition, qualitative notes were taken regarding subjective judgments of IC process implementation. The first author and a graduate student conducted interrater reliability scoring of the LOI-Recorded for 3 cases.

Interrater reliability of the LOI-Recorded was calculated on two pilot cases (recorded cases not related to the participants in this study) and one actual case. A graduate student, experienced in IC program evaluation activities, was trained to rate the LOI-Recorded. To account for agreement occurring by chance, Cohen's kappa (2004) rather than simple percentage agreement calculation was used. Using Cohen's kappa, interrater agreement was calculated as .96 for the first pilot case. When comparing protocol scoring for the second pilot case, there were no differences on the scoring of the items. Interrater reliability was reassessed on one additional case. Interrater reliability was calculated at .92.

### Data Analysis

To compare the LOI-Interview (Interview method) responses to the actual behaviors as evaluated by the LOI-Recorded (Recorded method), item comparisons were assessed using the McNemar test (Siegel, 1956). The McNemar test is a nonparametric calcu-

**Table 3**  
**Frequencies and Exact Significance for LOI-I Item and LOI-R Item Pairs**

Item Pairs		Frequencies				Exact Significance (two-tailed)
LOI-I	LOI-R	YY	NN	YN	NY	
C1; T1	C1/T1	16	0	1	1	1.00 (NS)
C2; T2	C2/T2	16	0	3	0	.25 (NS)
C3; T3	C3/T3	16	0	1	3	.63 (NS)
T4	T4	17	0	0	1	1.00 (NS)
C5	C5	18	0	0	1	1.00 (NS)
T5	T5	18	0	0	1	1.00 (NS)
C6	C6	14	1	4	0	.13 (NS)
C11; T9	C11/T9	17	0	0	3	.25 (NS)
C12; T10	C12/T10	17	0	0	3	.25 (NS)
C13; T11	C13/T11	17	0	0	2	.50 (NS)
C14	C14/T12	16	0	0	1	1.00 (NS)
T13	T13	11	1	2	0	.50 (NS)
T15	T15	11	0	2	2	1.00 (NS)
C16; T16	C16/T16	12	0	2	2	1.00 (NS)
C17	C17	7	0	0	1	1.00 (NS)

*Note.* LOI-I = Level of Implementation Interview Scale; LOI-R = LOI Scale—Recorded. YY = presence of item (score of 1) on both LOI-I and on LOI-R; NN = absence of item (score of 0) on both LOI-I and on LOI-R; YN = presence of item (score of 1) on LOI-I, and absence of item (score of 0) on LOI-R; NY = absence of item (score of 0) on LOI-I, and presence of item (score of 1) on LOI-R; C = consultant; T = teacher; NS = nonsignificant.

lation used on data that are categorical variables with dichotomous traits (i.e., yes/no data points;  $\pm$  data points) for matched pairs (i.e., item scores). The test determines whether the frequency counts of the data points are significantly different than would be expected by chance. McNemar tests were conducted for all Interview and Recorded item pairs for which there were variability in ratings and in more than 1 case. McNemar tests were not completed for items with all “Yes” ratings.

## Results

### Item Comparisons

For the 26-item comparisons using scores from all 20 cases, there were no significant differences between the proportion of agreements of the presence or absence of the items as assessed by the Interview and Recorded method items (see Table 3). Using the McNemar test, the proportion of agreement of

presence behaviors indicating a “Yes” response for a particular item was not different between the two measures.

For 10 of the 26 comparisons, the McNemar test calculations were not necessary, because of the perfect agreement between the proportion of agreement between the two methods. In these cases, the comparison of “Yes” responses indicated that there was no difference between the proportion of agreement between the two methods of assessing implementation of the items. One of the items, related solely to behavioral concerns, generated only 1 case (with agreement between the Interview and the Recorded items); because of that limitation, it is not included in Table 3.

### Dimension Comparisons

The mean percentage of dimension implementation for each of the seven dimensions

**Table 4**  
**Summary of Mean Percentages of Level of Implementation for the Dimensions**

Dimension	LOI-Recorded	LOI-Interview
1. Collaborative Communication	96.3	89.2
2. Contracting	89.5	97.5
3. Problem Identification	94.3	93.3
4. Intervention Development	100.0	85.0
5. Intervention Implementation	100.0	95.0
6. Evaluation and Follow-Up	82.4	78.8
7. Curriculum-Based Assessment (IA)	100.0	96.3

*Note.* LOI-Recorded = Level of Implementation Scale—Recorded; LOI-Interview = LOI Interview Scale; IA = Instructional Assessment.

was calculated with the scores from the Interview and Recorded methods (see Table 4). The results indicated that dimension implementation was high, as assessed by either measure. Results of the Recorded method resulted in a mean level of implementation of each of the dimensions within the acceptable range. No dimension was found below the criterion level of 80%, and three dimensions were implemented at 100%. As assessed by the Interview method, all but one of the dimensions were implemented at the 80% criterion level or higher. Implementation was above 90% for four of the seven dimensions.

In addition, there was a high level of overall agreement between the mean percentages of implementation on each of the seven dimensions for the Interview and Recorded methods. Although there was not perfect agreement between methods, there were commonalities. Cases scored the lowest percentage of implementation on Dimension 6 (Evaluation and Follow-Up) as assessed by both the Interview and Recorded methods. Two of the most highly implemented dimensions found with the Recorded method, Dimension 5 (Intervention Implementation) and Dimension 7 (Instructional Assessment), were also two of the three most highly implemented dimensions as assessed by the Interview method.

## Discussion

This study examined the match between the participants' self-report behaviors and the actual consultation behaviors coded when listening to the recorded sessions. The results indicated that the interview scores reflected the consultation behaviors in which these novice case managers and their teacher consultees engaged, providing preliminary evidence to support the validity of the measure for assessing the CPI of IC. Comparisons indicated that there were no items for which there was a significant difference between the proportion of indications of presence and indications of absence. Further, results of this study indicated that, overall, the consultation dyads implemented the instructional consultation process with high integrity, whichever method was used. Although previous researchers caution that consultants may inaccurately self-report engaging in behaviors that they did not complete (Gutkin, 1993; Witt, 1997), the participants' reported engagement was verified by review of actual consultation sessions.

Given that the interviews are semistructured, the interviewer is allowed to probe the respondent for more information to address the presence of key behavioral indicators. Such a semistructured format could potentially guide interviewees to inaccurately indicate be-

haviors that did not actually occur. However, in the current study, participants were accurate in reporting behaviors accomplished during the consultation. Such findings offer support for the continued use of the semistructured interview format.

Another finding was the high level of implementation for all dimensions. It is possible that the online coaching provided for these consultants positively influenced the accuracy with which they used the IC process. Further, the taping process itself may have positively influenced the accuracy of these consultants' performance, a strategy recommended for supervision of new skills (Bernard & Goodyear, 2009). Indeed, high CPI would be highly desired considering the level of support provided for these cases. The current study would need to be extended to consultants not receiving such intense coaching or taping to strengthen the value and use of the LOI Interviews across cases with more variation in consultant skill.

### **Implications**

The results of this preliminary study indicated that the LOI-Interview measure captures many of the behavioral indicators established for the process dimensions of IC and can be used to assess the level of CPI of the process, at least with novice consultants receiving coaching. For those training new consultants in the IC process, the interviews appear to capture the critical dimensions. Although the scores from the interviews and from coding the recorded sessions were not a perfect match, the high degree of overlap was reassuring.

However, there were differences as assessed by the interviews compared with the recorded versions. At times these differences occurred when a participant reported engaging in behaviors not observed on the session audiotapes. At other times these differences occurred when the participants engaged in the behaviors but did not report completing the indicators of the process. There were other cases in which the consultation dyads completed the consultation behaviors and one participant would accurately report engaging in

the behaviors, although the other participant would not report engaging in them.

When the teacher and case manager report discrepant information during the interviews, the behavior is considered not implemented. Thus, lower implementation scores from the Interview method in comparison to the Recorded method highlight the possibility that the Interview method is a more conservative estimate of consultation behavior. However, collaboration defined by the developers is behaviorally indicated by an agreement between teacher and case manager. Thus, although a behavior may have occurred, the developers demand that both teacher and case manager agree to that experience. The implication is that the interviews may capture both behavior and perceptions of behaviors by all parties involved. Interpretation and use of the scale should take this into account, recognizing the developers' emphasis on the collaborative nature of IC.

### **Limitations**

Several limitations should be recognized. One limitation of this study was the participant selection process, which was limited because of cases lacking consent forms or data. All participants from a 3-year period with complete data and participant consent were included in this study. Although the participants are reflective of those who are newly trained to be instructional consultants, the sample of participants was not necessarily representative of the population of participants and schools implementing IC. Additional research using a random and larger sample of consultant dyads would be beneficial to assess the match between the self-reported consultation behaviors and the actual consultation behaviors to assess whether the LOI-Interview is valid with others using the IC process.

Measures of interrater reliability of the Recorded method are limited. The correlations on the two pilot tests and the one set of tapes used in the study had high levels of reliability. However, calculation of reliability on additional sets of tapes would have added to confidence in the scoring of the tapes.

Another limitation for research purposes, although a strength for the implementation of IC within schools, was that the level of implementation of the consultation process on both measures was high. It is not known whether the match between the Interview and Recorded methods would be as high in assessing cases in which there were more variation of consultation behavior or with case managers who were not receiving coaching or recording their sessions.

An additional limitation common to most consultation research is that the consultants who participated in this study were novice consultants, although they were experienced professionals in their own areas of expertise. Experienced case managers may have increased variance in their implementation of IC.

### Conclusions

This study presents an initial attempt to validate a measure of the behavioral indicators of the IC collaborative consultation process. The development of this scale may serve as a model for other consultation models to address the measurement of process integrity. In addition, the LOI (Fudell et al., 1996) is available for those interested in using it to determine the CPI of IC. Continuing to examine the process integrity of consultation should be considered a priority in both training of consultants and as a critical variable in the evaluation of consultation outcomes.

### References

- Bernard, J. M., & Goodyear, R. K. (2009). *Fundamentals of clinical supervision* (4th ed.). Upper Saddle River, NJ: Pearson.
- Cohen's kappa, index of inter-rater reliability. (n.d.). Retrieved December 30, 2004, from <http://www-class.unl.edu/psycrs/handcomp/hckappa.PDF>
- Erchul, W. P., & Sheridan, S.M. (Eds.). (2008). *Handbook of research in school consultation: Empirical foundations for the field*. New York: Taylor & Francis.
- Fudell, R. (1992). *Level of implementation of Teacher Support Teams and teachers' attitudes toward special needs students*. Unpublished doctoral dissertation, Temple University, Philadelphia.
- Fudell, R., Gravois, T. A., & Rosenfield, S. A. (1996). Appendix A: IC-Team LOI- Revised. In S. A. Rosenfield & T. A. Gravois, *Instructional consultation teams: Collaborating for change* (pp. 171–191). New York: Guilford Press.
- Fullan, M. (1983). Evaluating program implementation: What can be learned from Follow Through. *Curriculum Inquiry*, 13, 215–227.
- Gravois, T. A., & Gickling, E. E. (2008). Best practices in instructional assessment. In A. Thomas & J. Grimes (Eds.), *Best practices in school psychology V* (pp. 503–519). Bethesda, MD: NASP Publications.
- Gravois, T. A., Rosenfield, S., & Vail, P. L. (1999). Achieving effective and inclusive school settings: A guide for professional development. *Special Services in the Schools*, 15, 145–170.
- Gresham, F. M., & Kendell, G. K. (1987). School consultation research: Methodological critique and further research directions. *School Psychology Review*, 16, 306–316.
- Gutkin, T. B. (1993). Conducting consultation research. In J. E. Zins, T. R. Kratochwill, & S. N. Elliott (Eds.), *Handbook of consultation services for children* (pp. 227–248). San Francisco: Jossey-Bass.
- Hall, G. E., & Hord, S. M. (2006). *Implementing change: Patterns, principles and potholes* (2nd ed.). Boston: Allyn & Bacon.
- Hulleman, C. S., & Cordray, D. S. (2009). Moving from the lab to the field: The role of fidelity and achieved relative intervention strength. *Journal of Research on Educational Effectiveness*, 2, 88–110.
- Jobe, J. B. (2003). Cognitive psychology and self-reports: Models and methods. *Quality of Life Research*, 12, 219–227.
- Jobe, J. B., Tourangeau, R., & Smith, A. F. (1993). Contributions of survey research to the understanding of memory. *Applied Cognitive Psychology*, 7, 567–584.
- Knotek, S. E., Kaniuka, M., & Ellingsen, K. (2008). Mental health consultation and consultee-centered approaches. In W. Erchul & S. Sheridan (Eds.), *Handbook of research in school consultation* (pp. 127–145). New York: Taylor & Francis.
- Knotek, S. E., Rosenfield, S. A., Gravois, T. A., & Babinski, L. M. (2003). The process of fostering consultee development during instructional consultation. *Journal of Educational and Psychological Consultation*, 14, 303–328.
- Kratochwill, T. R., Sheridan, S. M., Rotto, P. C., & Salmon, D. (1991). Preparation of school psychologists to serve as consultants for teachers of emotionally disturbed children. *School Psychology Review*, 4, 530–550.
- Leithwood, K., & Montgomery, B. (1980). Evaluating program implementation. *Evaluation Review*, 4, 193–214.
- Noell, G. H. (2008). Research examining the relationships among consultation process, treatment integrity, and outcomes. In W. P. Erchul & S. M. Sheridan (Eds.), *Handbook of research in school consultation: Empirical foundations for the field* (pp. 323–341). New York: Taylor & Francis.
- Noell, G. H., Witt, C., Slider, N. J., Connell, J. E., Gatti, S. L., Williams, K. L., et al. (2005). Treatment implementation following behavioral consultation in schools: A comparison of three follow-up strategies. *School Psychology Review*, 34, 87–106.
- Rosenfield, S. (1987). *Instructional consultation*. Hillsdale, NJ: Lawrence Erlbaum Associates.

- Rosenfield, S. (1992). Developing school-based consultation teams: A design for organizational change. *School Psychology Quarterly*, 7, 27–46.
- Rosenfield, S. (2008). Best practices in instructional consultation and instructional consultation teams. In A. Thomas & J. Grimes (Eds.), *Best practices in school psychology V* (pp. 1645–1659). Bethesda, MD: NASP Publications.
- Rosenfield, S. A., & Gravois, T. A. (1996). *Instructional consultation teams: Collaborating for change*. New York: Guilford Press.
- Rosenfield, S., Silva, A., & Gravois, T. (2008). Bringing instructional consultation to scale: Research and development of IC and IC Teams. In W. P. Erchul & S. M. Sheridan (Eds.), *Handbook of research in school consultation: Empirical foundations for the field* (203–223). New York: Taylor & Francis.
- Siegel, S. (1956). *Nonparametric statistics for the behavioral sciences*. New York: McGraw-Hill.
- Sterling-Turner, H. E., Watson, T. S., & Moore, J. W. (2002). The effects of direct training and treatment integrity on treatment outcomes in school consultation. *School Psychology Quarterly*, 17, 47–77.
- Telzrow, C. F., & Beebe, J. J. (2002). Best practices in facilitating intervention adherence and integrity. In A. Thomas & J. Grimes (Eds.), *Best practices in school psychology IV* (pp. 503–516). Bethesda, MD: National Association of School Psychologists.
- Upah, K. R., & Tilly, W. D., III. (2002). Best practices in designing, implementing, and evaluating quality interventions. In A. Thomas & J. Grimes (Eds.), *Best practices in school psychology IV* (pp. 483–501). Bethesda, MD: National Association of School Psychologists.
- Vail, P. L. (1996). *Instructional consultation teams: Analysis of level of implementation over two years and its relationship with team collaboration*. Unpublished master's thesis, University of Maryland, College Park.
- Vail, P. L. (2003). *On-line coaching of consultation skills: Through the eyes of coaches and consultants*. Unpublished doctoral dissertation, University of Maryland.
- Vu, P., Bruckman, K., Koehler, J., Kaiser, L., Rosenfield, S., Nelson, D., et al. (2009). *The effects of instructional consultation teams on teacher beliefs and instructional practices after two years of implementation*. Manuscript submitted for publication.
- Wang, M., Nojan, M., Strom, C., & Walberg, H. (1984). The utility of degree of implementation measures in program implementation and evaluation research. *Curriculum Inquiry*, 14, 249–286.
- Wickstrom, K. F., Jones, K. J., LaFleur, L. H., & Witt, J. C. (1998). An analysis of treatment integrity in school-based behavioral consultation. *School Psychology Quarterly*, 13, 141–154.
- Witt, J. C. (1997). Talk is not cheap. *School Psychology Review*, 12, 281–292.

## Appendix

### Examples of Items on the LOI-Interview and LOI-Recorded Methods

LOI-Interview Item	LOI-Recorded Item
Contracting	
(C2) Did [teacher] agree to willingly work with IC Team?	Did the teacher agree willingly to work on the student's problem with the case manager?
(T2) Did you agree to work on [student's] problems with the case manager and the team?	
Intervention Development	
(C13; T11) How was the effectiveness of the strategy/intervention to be monitored?	How was the effectiveness of the strategy/intervention monitored?
Intervention Implementation	
(T14) Did you have scheduled meetings with the case manager to discuss the student's progress?	Did the teacher and case manager have scheduled meetings to discuss the student's progress?

*Note.* LOI-Interview = Level of Implementation Interview Scale; LOI-Recorded = LOI Scale—Recorded; C = Case Manager Interview item; T = Consultee interview item.

Sonja A. McKenna, PhD, is a school psychologist at Andover Regional Schools in Newton, New Jersey. She currently serves as the Child Study Team school psychologist for the preschool to eighth-grade public school system. She regularly consults with teachers and parents regarding student academic and behavioral concerns to address needs within the school setting.

Sylvia Rosenfield, PhD, is a professor in the school psychology program at the University of Maryland. She has published widely on consultation, most recently as coeditor of *Implementing Evidence-Based Academic Interventions in School Settings*. Her current interests continue to be on consultation research and training.

Todd A. Gravois, PhD, is codirector of the University of Maryland Lab for IC Teams and president/CEO of ICAT Resources, Inc. His primary research interests concern development, implementation, and evaluation of early intervention services to support teacher and student performance.

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