Investigating Secondary Special Educator's Perception of Interagency Collaboration

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Abstract

This paper addresses the development and validation of the Interagency Collaboration Scale (ICS), a 17-item self-report measure that investigates secondary special educators' perceptions of interagency collaboration. An exploratory factor analysis was conducted on data from a sample (N = 260) of secondary special educators who are members of the Council for Exceptional Children. The results revealed a 4-factor solution as the most interpretable factor pattern. These four factors were: Importance of Interdisciplinary Collaboration, Collective Ownership of Goals, Newly Created Professional Activities, and Evaluation on Collaborative Process. The reliability estimates were acceptable from .76 to .83. The factor structure was recovered in a confirmatory factor analysis conducted on a second, independent sample (N = 343). Limitations and Implication were discussed.

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During the past two decades, the field of special education has adopted the term "transition" to specifically facilitate students with disabilities a successful life change into adult world. The transition outcomes defined and mandated under the Individuals with Disabilities Act (IDEA) of 1990 and the authorizations in following years include community and independent living, further education, employment and instruction, and mandatory linkages with vocational rehabilitation and other adult service agencies. The ultimate goal of transition services is to insure successful community integration for students with disabilities. The community integration philosophy incorporates such concepts as civil liberty, least restrictive environment, right to treatment and to refuse treatment, quality of life, engaging natural helpers, and coordination among the system of services (Greene & Kochhar-Bryant, 2003, p. 52).

To allow the successful postsecondary outcomes to become a reality, secondary special educators play an influential role in this transition process (Benz, 1995; Benz, Lindstrom, & Yovanoff, 2000; Wandry, Pruitt, Fox & Anderson, 1998). However, a special educator alone cannot accomplish the requisite desired transition outcomes for students with disabilities without collaborating with others (Eber,

Nelson, & Millers, 1997). Therefore, interagency collaborations have been formed to provide outreach and support to students with disabilities. Many partnerships exist modeling interagency collaboration between schools and local private and non-profit social services agencies (Lawson & Barkdull, 2001; Tourse & Sulick, 1999).

Since the 1980s, there has been a remarkable increase in collaboration among human service agencies, government, and community organizations (Abramson & Rosenthal, 1995; Mattessich & Monsey, 1992). A major impetus for collaboration in the modern time is from the supporters of service integration for children and families (Anderson-Butcher & Ashton, 2004; Bronstein, 2002). Service integration derives from the need of systematic efforts to solve problems of service fragmentation and fracture, in which services are usually developed and delivered in a disjointed and uneven way.

However, current practices and policies, including differences between youth and adult service delivery systems and the lack of interagency collaboration, complicate service coordination. As students with disabilities move from secondary education to postsecondary education and/or employment, the first challenge students and transition professionals face is the use of different terminology across various settings. The resulting confusion may prevent students and professionals from recognizing service gaps (Hart, Zimbrich, & Whelley, 2002). The lack of common terms across service systems therefore contributes to a lack of understanding among service coordinators and poses a barrier to collaboration (Johnson, Zorn, Tam, LaMontagne, & Johnson, 2003; Stodden & Dowrick, 1999).

Collaboration is a generic concept referring to the notion that organizations, professional disciplines, and/or individuals work together toward a common goal. The concept of collaboration is consensually valued as an effective way to work in the fields of health, social science, education, public affairs, and business. Researchers have pointed out the different levels of working relationship and various degree of involvement in the collaborative efforts (Bruner, 1991; Dryfoos, 1994; Kagan, 1992; Swan & Morgan, 1993). However, the concept of collaboration is perceived and defined discrepantly across diverse professions. These discrepancies may be due to the nature of different service systems, such as differences regarding eligibility requirements in each field (Miller, 1990; Rush, Kohler, & Hughes, 1992; Szymanski, King, & Parker, & Jenkins, 1989), differences in roles and responsibilities of key service personnel (Johnson & Atkins, 1987; Miller, 1990), differences in preservice training requirements (Szymanski, Hanely-Maxwell, & Asselin, 1990; Trach, 1998), and differences in basic policy philosophy and values that drive service provision within each system (DeStephano & Snauwaert, 1989).

There is growing recognition that the complexity of service systems is an impediment to developing comprehensive, state and local service coordination for individuals with disabilities once they leave high school (Stodden & Dowrick, 1999). While the collaborative role of special educators in secondary school has been further expanded with the development of comprehensive systems of care and the advent of new laws (Asselin, Todd-Allen, & deFur, 1998; Conderman & Katsiyannis, 2002; Kontt & Asselin, 1999; Simpson, Whelan, & Zabel, 1993; Zhang, Ivester, Chen & Katsiyannis, 2005), few empirical research has been conducted directly to define these roles in collaboration with other professionals. The primary focus of past research has been on the skills and competencies that contribute to effectively coordinating and facilitating transition services. There is little attention to the interplay of special educators with other professionals in collaborative work.

Foley and Mundschenk (1997) conducted a national survey to investigate collaboration activities and competencies of secondary special educators. The findings revealed that self-perceived professional weakness in interagency collaboration explained the dysfunction of interagency collaboration at school.

Special educators were lacking of opportunities to develop such a collaborative role from their limited interaction with community service providers. Again, the self-perceived professional weakness can be due to the structural differences, lack of joint training, and scarcity of human and material resources (Farmakopoulou, 2002).

The other discouraging issue is that the psychometric evaluation and validation evidence for instruments measuring interagency collaboration are weak among extant empirical studies. Related studies embraced interagency collaboration as part of their instruments. For example, deFur and Taymans (1995) and Knott and Asselin (1999) developed survey scales of transition involvement including interagency collaboration. Whilst the psychometric evaluation was not reported in these two studies, its lack of evidence of reliability and validity limits proper use of the scales for further investigation on these important issues.

Welch and Tulbert's (2000) investigation designed to socially validate the characterization and operational definitions of collaboration and quantitatively identify salient features of collaboration. They employed the Delphi methodology in the phase asking practitioners to define and describe the collaborative process. Thirty-five thematic units were identify and were used to create a second instrument with their definitions into a Likert-type response format. Participants were asked to rate the importance of each of the 35 items in relation to collaboration using Likert scale ranging from 1 (no relation to collaboration) to 6 (always a relation to collaboration). A factor analysis with an oblique rotation was computed on 374 returned questionnaires. The factor analysis identified four factors with eigenvalues greater than 1.0. All 35 thematic units loaded on Factor 1 with a correlation greater than .40. This factor has been categorized as Collaboration in General. The other three factors included 2 or 3 items each from the same 35 items with loadings at .40 or higher in that particular factor, named separately as Management, Resources, and Collaborative Ethic.

Although Welch and Tulbert (2000) provided evidence of validation for their survey instrument, its results of the exploratory factor analysis may obscure the real relationship among the four factors as far as the construct of collaboration is concerned. They articulated that respondents in the survey appeared to address the issue of collaboration from a pragmatic perspective rather than a policy or philosophical viewpoint. It is suggested that future research must continue to explore the pragmatic dimensions of cultural, systemic, and philosophical aspects related to collaboration from the perspective of practitioners (p. 370).

An extended review of literature found an instrument designed to measure interdisciplinary collaboration in the field of social work. Bronstein (1999) developed the Index of Interdisciplinary Collaboration (IIC), which was used to assess differences in social workers' perception of interagency collaboration. The IIC was norm-referenced on 1,000 members of the National Association of Social Workers. Bronstein discovered a 5-factor measurement model including, Interdependence, Newly Created Professional Activities, Flexibility, Collective Ownership of Goals, and Reflection on Process.

Bronstein provided evidence to show that the IIC was reliable for her sample by test-retest reliability ($r = .82$) and internal consistency reliability ($\alpha = .92$). However, validity evidence was limited to results of an exploratory factor analysis and correlations among five factors. Therefore, the 5-factor structure model needs to be further confirmed by using the confirmatory factor analysis on a new sample of special educators. Moreover, given the different nature of populations (social workers and special educators), it is needed to provide evidence of reliability and validity specifically for the population of special educators.

The review of literature suggests the need for a validated instrument that can measure the perceptions of secondary special educators on interagency collaboration in providing transition services for students with disabilities. The current study attempts to fill that void that may help explain different levels of success among transition service interventions. Thus, the purpose of present research was to develop and provide some initial validation evidence for the instrument that could measure the perceptions of secondary special educators on interagency collaboration.

Overview of Method

Three stages of studies were conducted for the creation, refinement, and validation of the Interagency Collaboration Scale (ICS) to assess the perceptions of secondary special educators on interagency collaboration. The initial study was conducted to generate and assess items that seemed to adequately capture the primary domains of collaboration. The second stage consisted of scale refinement and involved exploratory factor analysis to revise the preliminary questionnaire. The third stage contained 343 valid responses on the final instrument to confirm scale dimensionality by using confirmatory factor analysis (CFA). Special educators' responses on the instrument were discussed to explore their perception on the interagency collaboration of transition services for students with disabilities.

The target population of this study was confined to secondary special educators in the United States. The participants of this study were chosen from members of the Council for Exceptional Children (CEC), which is a national organization whose members include parents, counselors, other professionals and scholars. The CEC member list was purchased as the sampling frame. According to Morningstar and Clark (2003), two types of secondary special educators are usually involved with transition education and services, including: (a) secondary special education teachers engaged in IEP transition planning and/or actual instruction in transition competency areas for students, and (b) transition education and services coordinators or specialists who are expected to assure "a coordinated set of activities" as required under IDEA. In this study, both special education teachers and transition coordinators who reported on their demographic profiles were extracted from the CEC member list. Six hundred members were randomly sampled for stage 2 investigation, and another additional 1000 members for final stage of this study.

Stage 1: Item Generation and Content Validation

The purpose of this phase of the study was to define and then adequately capture the content domains that would best reflect the perceptions of secondary special educators on interagency collaboration. An examination of extensive literature across diverse professional fields, the 5-factor model of Bronstein (1999) measuring perceptions of interagency collaboration was adapted to the development of items in the current study. Items were selected and generated from empirical studies such as Bronstein (1999), and Knott and Asselin (1999). The preliminary instrument constructed with 31 items in a 5-point Likert-typed scale ranging from 1 (strongly disagree) to 5 (strongly agree) with the statement. Items were written such that higher scores indicated more positive perceptions toward collaboration, with 5 items being reversed scored.

The preliminary instrument was given to a panel of experts, which was comprised of a former transition coordinator, doctoral students with teaching experiences and professors in special education. They were selected based on their experiences of transition practices, teaching students with disabilities, and well-grounded knowledge about transition. Both theoretical knowledge and practical experiences in special

education and transition practices were taken into account for experts' qualifications in order to help examine the items.

The instrument was also field tested to a convenience sample of 15 Master's students in a special education class to further assess the appropriateness of content. A dollar and a tea bag were included with each as incentives and appreciation. Another 10 additional copies were provided to participants to take back to their service schools for additional feedback from their colleagues. A total of 24 copies of the questionnaire were returned. Opinions and suggestions were collected to revise and edit the statement; some items were deleted or reworded as a result of comments made by reviewers regarding the meaning of particular items. The questionnaire ICS was then reduced to 25 items.

Stage 2: Scale Refinement

Participants
The sample for the second stage of study consisted of 600 secondary special educators, randomly selected from the member list of the CEC through the SPSS 10.0 software program and divided into four groups with 150 people in each group. Different incentives for encouraging responses to the survey were applied to these four groups: 50 cents, a dollar, a tea bag, and raffle ticket for 50 dollars. The total response rate was 50% and $\chi 2$ tests were conducted between groups. According to the test results, the four groups did not differ in their response rate, $\chi 2= 6.22$ (3, n = 260), $p > .05$. With other things being equal, the raffle ticket was determined as the most cost effective incentive for the third stage of the study.

A total of 326 surveys were returned, including 26 undeliverable surveys. Off the 300 valid respondents, 263 reported completed usable data (the incomplete surveys and respondents who are in elementary schools or colleges are excluded). Most of respondents were female (82%) and older than 40 years old (75%) with a four-year college degree plus background (98%). The roles of participants included special educators (51%), transition coordinators (27%), both special educators and transition coordinators (16%), and others (unidentified, 6%). They had been involved in providing transition services on an average of 9.6 years (SD = 7.1, ranging from 0 year to 32 years).

Statistical Analyses

Data were submitted to a principal axis factoring analysis with oblique rotation to generate the factor matrix using the SPSS 10.0 software program. Because multivariate normality and the absence of multicollinearity were two major assumptions when running a SEM based analysis (Boomsma & Hoogland, 2001; Kline, 1998) in stage 3, items with absolute skewness values greater than 3 were considered extremely skewed and absolute value of kurtosis greater than 10 may suggest a more obvious problem (Byrne, 1998; Kline, 1998). Exploratory factor analysis in SPSS software, communalities or squared multiple correlation were selected, measure of sampling adequacy (MSA) in anti-image was set to be greater than .60 (Tabachink and Fidel, 2001, p.589), and factors with eigenvalues greater than 1 were extracted. Promax rotations were used to determine the best fit (Pedhazur & Schmelkin, 1991; Tabachnick & Fidell, 2001).

Exploratory Factor Analysis and Further Revision

Most items of the ICS were correlated from weakly to less than moderately ($r < .65$) and showed a normal distribution, indicating that the assumptions of normality and free of multicollinearity appeared to be generally met (See Table 1). Therefore, data were submitted to a principal axis factoring analysis to generate the factor matrix.

Table 1

Descriptive Analysis of Interagency Collaboration Scale Items

Items	Mean	SD	Skewness	Kurtosis
1. I value other professionals from different disciplines for their particular expertise.	4.57	0.61	-1.94	7.30
2. Feedback from other professionals is very important to me.	4.49	0.60	-1.18	3.10
3. Teamwork with professionals from other disciplines is not important in my ability to help students.	4.27	1.11	-1.83	2.68
4. Professionals from other disciplines with whom I work have a good understanding of the distinction between my roles and their roles.	3.43	.97	-0.92	0.30
5. Cooperative work with other disciplines is not a part of my job description.	4.23	1.03	-1.50	1.81
6. Incorporating views of treatment held by professionals from other disciplines will help meet students' needs.	4.15	0.78	-1.14	2.64
7. Distinct new programs emerge from the collective work of professionals from different disciplines.	3.94	0.93	-0.82	0.58
8. Organizational protocols (e.g., written documents such as policy agreements, memoranda of understanding, etc.) reflect the existence of cooperation between professionals from different disciplines.	3.53	0.96	-0.40	-0.14
9. Working with professionals from other disciplines l leads to outcomes that we could not achieve alone.	4.31	0.78	-1.72	4.80
10.Creative outcomes emerge from my work with professionals from other disciplines that I could not have predicted.	3.99	0.85	-0.82	0.71
11.I am willing to take on tasks outside of my job description when that seems important.	4.45	0.61	-1.24	3.86
12.It is helpful utilizing both formal and informal procedures for problem solving with professionals from other disciplines.	4.38	0.68	-1.44	4.36
13.Professionals from other disciplines stick rigidly to their job descriptions.	3.17	0.88	-0.31	-0.19
14.I am not willing to sacrifice a degree of autonomy to support cooperative problem solving.	3.97	0.95	-1.07	1.10
15.It is important for me to work with professionals from other disciplines in many different ways.	4.31	0.76	-1.37	2.87
16.Decisions about approaches to treatment for students are unilaterally made by professionals from other disciplines.	2.66	1.04	0.23	-0.72
17.Professionals from other disciplines are not committed to working together.	3.79	0.90	-0.45	-0.36
18.When professionals from different disciplines make decisions together, they go through a process of examining alternatives.	3.85	0.73	-0.68	1.06

19.Interactions with professionals from other disciplines occur in a climate where there is freedom to be different and to disagree.	3.66	0.86	-0.63	0.26
20.Professionals from other disciplines take responsibility with me for developing IEPs/ITPs.	3.00	1.26	-0.31	-1.16
21.It is necessary for professionals from other disciplines and me to discuss different strategies to improve our working relationships.	4.03	0.80	-1.07	1.97
22.I am optimistic about the ability of professionals from other disciplines to work with me to resolve problems.	3.95	0.84	-0.83	0.97
23.Professionals from other disciplines are as likely as I am to address obstacles to our successful collaboration.	3.60	0.90	-0.61	0.06
24.It is important for professionals from other disciplines and me to talk together about our professional similarities and differences including role, competencies and stereotypes.	3.90	0.86	-0.86	1.05
25.It is necessary for professionals from other disciplines and me to evaluate our work together.	4.08	0.74	-1.02	2.27

When checking the anti-image and initial solution of communities from the results of exploratory factor analysis, the MSA of item 16 was less than .60. The square multiple correlations of items 3, 8, 13, 14, and 16 were all less than .30. The scree plot revealed the numbers of factors were around four to five. After several runs of exploratory factor analysis, the four-factor solution was determined most appropriate. Item 13 was remained as the description presents one of the important indicators to the success of interagency collaboration among literature and suggestion from special educators. Items 3, 8, 14, and 16 were removed. Table 2 presents the pattern and structure coefficients from this exploratory factor analysis with 21 items.

Table 2

Exploratory Factor Analysis Pattern and Structure Coefficients

Item	Pattern Coefficients				Structure Coefficients			
#	I	II	III	IV	I	II	III	IV
1	**.834**	.060	-.070	-.088	**.791**	.391	.298	.252
2	**.823**	-.011	-.042	-.067	**.771**	.327	.308	.263
12	**.668**	-.083	.074	.102	**.708**	.250	.384	.386
15	**.618**	-.004	.074	.006	**.652**	.288	.354	.285
6	**.462**	.037	.108	.122	**.579**	.292	.362	.354
11	**.436**	.115	-.032	.089	**.541**	.195	.284	.472
7	**.434**	-.059	.018	.297	**.510**	.316	.221	.285
17r	-.060	**.673**	-.078	.012	.362	**.669**	.312	.107
23	.054	**.622**	.152	-.080	.206	**.629**	.071	.097
19	-.063	**.600**	.021	.072	.528	**.607**	.439	.283
20	.034	**.517**	.012	-.107	.241	**.592**	.166	.169
4	.017	**.500**	-.026	.068	.351	**.557**	.187	.249
18	.089	**.498**	-.015	.118	.222	**.514**	.130	.012
22	.214	**.449**	.215	.044	.253	**.514**	.129	.165
13r	-.018	**.399**	-.031	.021	.152	**.387**	.069	.083
5r	.220	.245	.123	-.098	.343	.354	.257	.077

24	-.047	.037	**.842**	-.094	.336	.184	**.805**	.300
25	-.067	-.014	**.811**	.100	.311	.214	**.804**	.134
21	.105	-.060	**.558**	.083	.365	.145	**.613**	.273
9	.047	.113	.119	**.703**	.444	.302	.369	**.779**
10	.211	.172	.097	**.476**	.530	.383	.372	**.625**

Note. Primary factor coefficients are in bold; r = reverse-scored item.

The results of exploratory factor analysis and internal consistency test (Cronbach's α) revealed a 4-factor model instead of a 5-factor model, including: Importance of interdisciplinary collaboration, Collective ownership of goals, Evaluation on collaboration process, and Newly created professional activities. These four factors explained 54.26% of the variance in the data. These four factors were elaborated as follows:

1. **Importance of interdisciplinary collaboration.** Refers to the degree or level of importance of collaboration among professionals to accomplish their goals and tasks. Seven items were used to measure the perceptions of secondary special educators for this factor (items 1, 2, 6,7,11,12, and15). For example, "I value other professionals from different disciplines for their particular expertise." The internal consistency reliability was good for this subscale (Cronbach'sα= .83).

2. **Collective ownership of goals.** Refers to shared responsibility in the entire process of reaching goals, including joint design, definition, development, and achievement of goals. Eight items were used to measure special educators' perceptions for this factor (items 4, 13, 17, 18, 19, 20, 22, and 23). For example, "Professionals from other disciplines are not committed to working together." The internal consistency reliability was acceptable for this subscale (Cronbach'sα= .79).

3. **Newly created professional activities.** Refers to collaborative acts, programs, and structures that amount to more than what is created when the same professionals act independently. Two items were used to measure special educators' perceptions for this factor (items 9 and10). For example, "Working with professionals from other disciplines leads to outcomes that we could not achieve alone." The internal consistency reliability was acceptable for this subscale (Cronbach'sα= .76).

4. **Evaluation on collaborative process.** Refers to collaborators' attention to the process of working together. Three items were used to measure special educators' perceptions for this factor (items 21, 24, and 25). For example, "It is necessary for professionals from other disciplines and me to evaluate our work together." The internal consistency reliability was acceptable for this subscale (Cronbach'sα= .78).

After the statistical analyses, the items of ICS were also revised based on recommendations and feedback of researchers, scholars, and practitioners in the field of transition at the international conference of Division on Career Development and Transition. Item 5 was not included in any of the four factors previously due to its low loading value, but researchers and practitioners strongly recommended keeping this item, therefore the wording was changed based on the feedback from "cooperative work with other disciplines is not a part of my job description" to "my job description includes a part of cooperative work with other disciplines." Item 1 was removed because of failing to solicit relevant responses from participants due to the possibility of social desirability. Item 3 was resumed under suggestion from colleagues, by modifying its wording from "teamwork with

professionals from other disciplines is not important in my ability to help students" to "the ability to teamwork with other professionals from other disciplines is not important to help students." Therefore, the ICS for secondary special educators' perceptions of interagency collaboration consisted of 21 items and its factor structure was hypothesized as four factors.

Stage 3: Scale Validation

Participants

One thousand survey questionnaires were distributed to the randomly selected potential participants from the CEC list, with the raffle ticket for $ 100 cash award as incentive. Five hundred and fifty-one, including 53 undeliverable surveys, were returned for the validation study.

Off the 498 respondents (53% of response rate), 443 reported valid data (47%), and 343 responses (34%) were either secondary special education teachers or transition coordinators/specialists. The 343 responses were included in the data analysis of this final stage study. Eighty-three percent of respondents were female and 17% of respondents were male. Most of respondents were older than 40 years old (76%) and held a bachelor's degree (99%). The roles of respondents included special educators (70%), transition coordinators (17%), and both special educators and transition coordinators (13%). The majority of respondents had been involved in providing transition services more than 13 years (34%). Most respondents also reported devoting less than 10 hours (49%) per week to transition-related responsibilities. For the years of experience with interagency collaboration (i.e., vocational rehabilitation counselor, community college, mental health), the majority of respondents had more than 13 years of experience with interagency collaboration (30 %).

Statistical Analyses

The ICS contained 21 items after revision. In terms of factor structure, exploratory factor analysis (EFA) was first performed to assess the factor structure of this new measurement model for perceptions of interagency collaboration and Cronbach's α was also provided for each factor. Data were submitted to a principal axis factoring analysis to generate the factor matrix. Factors with eigenvalues greater than 1 were extracted. Both varimax and promax rotations were used to determine the best fit. In order to maximize simple structure, a factor loading with an absolute value of .30 or greater was set to identify significance of contribution to define a variable (Pedhazur & Schmelkin, 1991; Tabachnick & Fidell, 2001).

The software package SPSS 10.0 was used to conduct internal consistency reliability analysis (Cronbach's alpha) of scores from scales to provide related reliability evidence. Based on such evidence of reliability, participants' responses to the sets of items, which comprise a measure of an attribute or a construct, are regarded as internally consistent (Pedhazur & Schmelkin, 1991). Generally, Cronbach's alpha equal to and above .70 suggests sufficient reliability (John & Benet-Martinec, 2000). Therefore, an alpha of .70 was set as the minimum standard for all scales in this study.

Four major steps were performed in conducting the Confirmatory Factor Analysis (Byrne, 1998). First, the model including the number of factors, the connection between the observed variables (items) and their underlying factors, and the correlations between factors was specified based on the established theory. Second, PRELIS 2.52 (Jöreskog & Sörbom, 2002) was used to inspect any potential problems with items such as lack of variance and normality and to create a covariance matrix. Third, the LISREL commands were specified. Fourth, the model fit was evaluated by a combination of fit indices, and a

good fit suggested evidence of validity. Hu and Bentler (1999) recommended a mix of different fit indices as follows: root mean square error of approximation (RMSEA); standardized root mean square residual (SRMR); non normed fit index (NNFI); normed fit index (NFI); and comparative fit index (CFI). The RMSEA indicated a reasonable fit with values between .05 and under .08 (Browne & Cudeck, 1993; MacCallum, Browne, & Sugawara, 1996). The values of NNFI, and CFI indicate an acceptable fit with a value .95 and a good fit with a value above .95 (Hu & Bentler, 1999).

Instrument Validation

In the SPSS output of exploratory factor analysis, communalities and measure of sampling adequacy (MSA) in anti-image for each item were examined. Item 11 was deleted (MSA <. 60) and item 4 was deleted because the squared multiple correlation was found to be less than .20. Item 1 was deleted to increase reliability based on the results of item-total statistics. Lastly, Item 14 was deleted (λ<.30). A final four-factor ICS with 17 items was obtained with the deletion of items 1, 4, 11, and 14.

Subsequently, a confirmatory factor analysis was conducted to assess the model specification. The respondents' responses were used to establish a covariance matrix for the items, and then the confirmatory factor analyses examined how well the inter-item covariance matrix fit the single factor model for each scale. Much attention was given to the results of confirmatory factor analysis, such as the t-values, parameter specification, squared multiple correlations, and completely standardized factor loadings. The t-values for observed variables were all significant. The values of the squared multiple correlations ranged from .27 to .69, while the completely standardized loadings ranged from .52 to .83. The first factor of importance of interdisciplinary collaboration was comprised of 4 items and generated a Cronbach coefficient's alpha of .72. The second factor of collective ownership of goals was comprised of 6 items and generated a Cronbach coefficient's alpha of .76. The third factor of newly created professional activities was comprised of 4 items and generated a Cronbach's coefficient alpha of .74. The fourth factor of evaluation on collaborative process was comprised of 3 items and generated a Cronbach's coefficient alpha of .74. These four factors explained 54.67% of the variance in the data. The overall fit of this measurement model was $\chi 2$ (113, n = 338) = 213.59, p < .05; RMSEA = .051; NNFI = .96; NFI = .93; CFI = .97; SRMR = .054, indicating a good fit of the model to the data. The summary tables and factor structure are presented in Table 3.

Table 3

Confirmatory Factor Analysis and Internal Consistency for ICS

Factor and Item			λ	α
Importance of Interdisciplinary Collaboration				.72
2.	2	Feedback from other professionals is very important to my work.	.54*	
9.	11	I am willing to take on tasks outside of my job description when it is necessary.	.60*	
10.	12	It is helpful utilizing both formal and informal procedures for problem solving with professionals from other disciplines.	.77*	
12.	15	It is important for me to work with professionals from other disciplines in many different ways.	.63*	
Collective Ownership of Goals				.76
3.	4	Professionals from other disciplines with whom I work have a good understanding of the distinction between my roles and their roles.	.52*	

13.	17	Professionals from other disciplines are not committed to working together.	.52*	
15.	19	Interactions with professionals from other disciplines occur in a climate where there is freedom to be different and to disagree.	.67*	
16.	20	Professionals from other disciplines take responsibility with me for developing IEPs/ITPs.	.57*	
18.	22	I am optimistic about the ability of professionals from other disciplines to work with me to resolve problems.	.75*	
19.	23	Professionals from other disciplines are as likely as I am to address obstacles to our successful collaboration.	.57*	
Newly Created Professional Activities				.74
5.	6	Incorporating views of treatment held by professionals from other disciplines will help meet students' needs.	.52*	
6.	7	Distinct new programs emerge from the collective work of professionals from different disciplines.	.67*	
7.	9	Working with professionals from other disciplines leads to outcomes that we could not achieve alone.	.79*	
8.	10	Creative outcomes emerge from my work with professionals from other disciplines that I could not have predicted.	.66*	
Evaluation on Collaborative Process				.74
17.	21	It is necessary for professionals from other disciplines and me to discuss different strategies to improve our working relationships.	.59*	
20.	24	It is important for professionals form other disciplines and me to talk together about our professional similarities and differences including role, competencies and stereotypes.	.69*	
21.	25	It is necessary for professionals from other disciplines and me to evaluate our work together.	.83*	
Percent of Total Variance (4 factors)			54.67%	

Note. Number in the first column indicated the new order of the scale, the second column the original number.

Descriptive analyses of participants' response on the four factors in the final instrument of ICS were presented in Table 4 for further discussion.

Table 4

Descriptive Analysis for Indicators of Interagency Collaboration Scale (n =343)

Indicators	ATS	SD	Skewness	Kurtosis	Mean	SD
Importance of interdisciplinary collaboration (4)	17.42	1.85	-0.18	-0.56	4.35	.49
Collective ownership of goals (6)	21.36	3.88	-0.61	0.65	3.56	.65
Newly creative professional activities (4)	16.43	2.23	-0.30	0.09	4.11	.57
Evaluation on collaborative process (3)	11.89	1.92	-0.43	0.41	3.96	.64

Note. ATS= average total score; Mean= total score divided by item number; The number in the parentheses is the numbers of item used for parceling.

Discussions

Several important features of the Interagency Collaboration Scale emerge from the results reported above. Instead of a "Collaboration in General" factor as reported in Welch and Tulbert (2000), the exploratory factor analysis of this study revealed a four-factor measurement structure and confirmed by the confirmatory factor analysis. These four factors overall reflected special educators' perceptions of interagency collaboration in this study.

Although the collaboration model was developed based on Bronstein's five-factor model (1999), which was generated with social workers as sample population, the factor analysis revealed that a 4-factor solution produced the most interpretable pattern of factor scores, accounting for 54% of the common variance in the data set. The scale scores yielded reliability estimates that ranged from .72 to .76. Among the four factors revealed in this study, three of them are the same as the defined factors in Bronstein's (1999) study, which are collective ownership of goals, newly creative professional activities, and evaluation on collaborative process. This finding is worthy of further confirmation across different professional populations to investigate whether or not these three factors can be deemed as stable factors for the construct of interagency collaboration.

Besides these three factors, Bronstein (1999) suggested two other factors as Interdependence and Flexibility, which in current study are presented as a single factor. Interdependence was defined by Bronstein (1999) as professionals with a clear understanding of distinguished roles between professions and strong identification of collaborative roles. Both formal and informal procedures are involved. The factor of Flexibility was defined as the ability to reach productive compromises in the face of disagreement and the alteration of role. These two constructs discernibly integrated into the current emergent factor of Importance of Interdisciplinary Collaboration with 4 items (item 2, 9, 10, 12), which meets the principle of parsimony.

For the factor of Importance of Interdisciplinary Collaboration, the mean response (4.35, SD = .49) indicated educators' high agreement on the importance of interdisciplinary collaboration. This factor of ICS integrated two factors of Interdependence and Flexibility from Bronstein's (1999) study, reflecting special educators' recognition on certain contextual factors shape the development of collaboration (Abramson & Rosenthal, 1995; Mattessich & Monsey, 1992; Swan & Morgan, 1993) and further influence educators' perceptions of interdisciplinary collaboration. Political climate changes, such as the requirement of transition services mandated by IDEA, and emphasis on transition outcomes for students exiting schools, led to greater interdependence among professions. The scarcity of resources, economic insecurity, and competition for funding may be additional incentives to work together and increase willingness of being flexible.

However, even if political and economic incentives exist, collaborations will form only if different stakeholders share collective ownership of goals (Abramson & Rosenthal, 1995; Swan & Morgan, 1992). The mean response for the second factor of collective ownership of goals was 3.56 (SD = .65), indicating their moderate agreement on this factor. Special educators surveyed in this study reported a congruent view with previous studies. It is important to note that among the four factors, this factor was identified with the lowest mean score among educators. Collective ownership of goals involved educators' sharing responsibility with professionals from other disciplines in the entire process of reaching goals, including joint design, definition, development, and achievement of goals. While special educators may share responsibility with other professionals to some extent in the transition planning process, barriers such as different legislative mandates, rules, policies, and timing in providing

service between different agencies or systems still pose barriers to such relationships. It is possible that special educators did not feel strongly enough to have such collective ownership of goals with professionals from other disciplines.

The third factor of ICS requires educators' further participation in newly created professional activities to achieve the goals they shared with interdisciplinary partners. The mean response for this factor was 4.12 (SD = .57), which indicated evidence that collaborative activities existed between educators and other interdisciplinary professionals. This finding demonstrated a positive improvement in collaborative professional activities compared with a previous study, in which slightly more than half (50.9%) of the educators surveyed indicated that they had no interactions with other non-school transition professionals (Foley & Mundschenk, 1997).

The last factor of ICS reflects the construct of evaluation of the collaborative process. Educators surveyed in this study also had a high agreement on this factor (M = 3.96; SD = .64). Since the 1997 IDEA changes in transition language focused on the new roles for secondary special educators (Asselin, Todd-Allen, & deFur, 1998; Conderman & Katsiyannis, 2002), educators have been being challenged with the task of facilitating the transition of students with disabilities from school to post-school lives. Special educators shift their roles from direct service providers to facilitators working with professionals from multi-disciplines to helping students obtain positive transition outcomes. Such positive transition outcomes depend on a good collaborative process, which reflects the importance of evaluation on collaborative process between educators and other professionals.

Conderman and Katsiyannis (2002) examined secondary special education teachers' knowledge of transition practice and found that approximately 50 percent of teachers were not aware of any post-secondary data collected on their students. The results revealed in the present study showed an inconsistency finding. Although educators showed a high agreement on the factor of evaluation of the collaborative process, they were not asked about the level of involvement in the evaluation for the collaborative process. This information would have been useful in interpreting their high level of agreement about evaluation of the collaborative process. How educators perceive transition outcomes for students may be an indicator of the level of involvement in the evaluation of the collaborative process and further provide an understanding of educators' interagency collaboration.

As with all scientific studies, there are several limitations exist in this study. The first limitation of the study is that the sample consisted of members of the Council for Exceptional Children (CEC). Although the geographical distribution of the sample was found in a variety of different states, the CEC is a professional organization, of which membership of special educator is voluntary in the United States. Therefore, the representativeness of the sample to the nationwide population is dubious. Generalization of the findings to secondary special educators who are not members of CEC should be made with caution.

The second limitation of the study involves the nature of self-reported data. Educators were asked about their perceptions, opinions, beliefs, and expectations on interagency collaboration of transition services. Some degree of common-method variance may have inflated the observed correlations in the present study. It is possible that the responses of participants may not adequately reflect their true beliefs and attitudes.

In sum, past research and commonly held views that the role of interagency collaboration has an influential impact on successful outcomes of transition programs. The current study offers a preliminary tool for use in understanding special educators' perception on this important issue. The ICS

attempts to fill a gap in the literature examining the perceptions of special educators by examining the multidimensionality of interagency collaboration revealed in present study. Measurement instruments like the ICS should pave the way for future research relating to the unique challenges faced by members on this growing issue of transition intervention. This current study results show the ICS as a promising assessment tool, but it should undergo to further explore its psychometric properties. For example, additional research should evaluate what roles that educators' personal and professional characteristics, including their transition professional background and special education commitment, play in their perceptions of interagency collaboration and their involvement in the transition programs. Thus, measures such as the ICS are needed and seem worthy of future investigation.

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