The Teacher Attitudes Toward Inclusion Scale (TATIS)

Technical Report

Joseph P. Cullen
Appalachian State University

Jess L. Gregory and Lori A. Noto
University of Bridgeport

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Educating students with disabilities in general education classrooms, a practice known as inclusion, is controversial. While opinions on the subject range from mostly positive to largely negative, evidence supporting the benefits of inclusion has continued to mount (Sailor, Gee, & Karasoff, 2000; Stainback & Stainback, 1990; Thousand, Villa, & Nevin, 2002). This evidence has resulted in the designation of inclusion as the service delivery model of choice among federal and state education officials (Angelides, 2008). In particular, the placement of children with disabilities in general education settings is now mandated in the most recent reauthorization of the Individuals with Disabilities Education Act (IDEA, 2004).

School reform initiatives such as No Child Left Behind (NCLB) have added momentum to the inclusion movement. Specifically, NCLB has, for the first time, forced public schools to disaggregate achievement data and take responsibility for the progress of special education students as a discrete subgroup of learners. This development has made it essential for special needs students to have greater exposure to the general education curriculum. At the same time, it has encouraged the standardization of outcomes and measurements, thus removing some of the flexibility needed to provide students with disabilities with successful inclusive experiences.

Nonetheless, educational policies and reform initiatives cannot guarantee the successful inclusion of students with disabilities in general education classrooms (Coulter, 2007; Peters, Johnstone & Ferguson, 2005). On the contrary, successful efforts to create more inclusive learning communities depend upon multiple factors. These factors include effective leadership and administrative support, sufficient funding, effective implementation systems, availability of evidence-based supportive services, stakeholder involvement, adequate professional development opportunities for teachers and other support personnel, and effective

communication and problem solving systems (Kupper, 1995; McClean, 2007; Powell, 2006; Roach & Salisbury, 2006). In addition, teacher attitudes and beliefs toward inclusion have been found to be powerful predictors of successful efforts to create inclusive learning communities (Gelheiser & Meyers, 1996; Van Laarhoven, et. al., 2007). Specifically, research has shown that when teachers have positive mindsets toward inclusion, they more readily adapt and change the ways they teach to meet a variety of student learning needs (Shanma, Forlin, & Loveman, 2008).

Nonetheless, many general education teachers continue to have reservations about the feasibility and desirability of inclusion despite the growing evidence base that supports it. These reservations appear to be based on two prevalent perceptions. The first is that the inclusion of students with disabilities requires too much of a teacher's time (Moen, 2008). The second is that teaching students with disabilities requires specialized skills that general educators do not possess. Mock and Kauffman (2002) described this perception with a medical analogy in which special educators are compared to surgeons and general educators are compared to general practitioners. This perception leads many educators to feel that they are unprepared to meet the different learning needs of students with exceptionalities (Connor & Ferri, 2007; Loreman, Earle, Sharma & Forlin, 2007).

Changing teacher attitudes toward inclusion

The need to change teacher perceptions and shape attitudes and beliefs that are favorable to inclusion has prompted leaders in teacher preparation and professional development to emphasize the concepts and principles of inclusive teaching (Angelides, 2008; Avramidis et al., 2000; Center and Ward, 1987; Clough and Lindsay, 1991; Dickens-Smith, 1995). This effort has encompassed all of the stages on the continuum of professional development from teacher preparation coursework and field experiences to student teaching, initial employment, and

continuing education. However, in order to provide a focus for efforts to achieve attitudinal change, it is necessary to identify the specific attitudes and beliefs that are critical to the success of inclusive education. Cullen and Noto (2007), in an extensive review of the literature, described these critical attitudes and beliefs as: a) Attitudes toward students with disabilities in inclusive settings, b) Beliefs about professional roles and responsibilities, and c) Beliefs about the efficacy of inclusion.

With regard to attitudes toward students with disabilities in inclusive settings, Olson, Chalmers and Hoover (1997), found that positive teacher responses to students with disabilities were strong predictors of the success of inclusion. In addition, Stanovich and Jordan (2002) found that teachers who subscribed to a disease model of disability made consistent attempts to reduce diversity in their classrooms. On the other hand, teachers who viewed disabilities as developmental challenges that could be improved through effective teaching tended to be more accepting of the diversity. They were also more persistent in their teaching efforts and more likely to employ evidence-based teaching behavior.

With regard to educators' beliefs about their professional roles and responsibilities, Villa, Thousand, Meyers and Nevin (1996) found that teachers who departed from their traditional roles by accepting team teaching assignments exhibited greater assurance in their ability to teach special needs students and more confidence in the feasibility of inclusion. Similarly, Olson, Chalmers and Hoover (1997) found that the ability to transcend traditional roles and functions was a common characteristic of teachers who were highly successful at inclusion. These teachers were also found to possess high levels of tolerance, reflection, and flexibility.

With regard to beliefs about the efficacy of inclusion, Scruggs and Mastropieri (1996), in a review of 28 studies conducted between 1958 through 1995, concluded that while the majority

(65%) of general education teachers supported the idea of inclusion, less than 30% believed that they had received adequate training to implement inclusive services. In addition, their level of confidence in their ability to implement inclusion was strongly associated with their views on the feasibility of inclusive education. Similarly, Buell, Hallam and Gamel-McCormick (1999) examined the relationship between general education teachers' beliefs regarding their ability to succeed in an inclusive classroom and their in-service training experiences. Their results indicated that teachers who achieved an advanced understanding of the rationale for inclusion and the systems and processes that can be implemented to support it were far more likely to see inclusion as achievable and to have confidence in their ability to effectively instruct all students and counteract unproductive motivational factors.

Given the importance of positive teacher attitudes and beliefs to the success of efforts to create inclusive learning communities, inquiry into effective methods for engendering positive attitudes and beliefs toward inclusion is a justifiable research objective. However, this objective requires an assessment tool that can measure change with regard to the critical attitudes and beliefs described above. This project addresses this requirement.

Rationale for the Teacher Attitudes Toward Inclusion Scale (TATIS)

The TATIS was developed in response to the following two observations: 1) The success of efforts to create inclusive learning communities depends heavily upon the effectiveness of methods for engendering positive teacher attitudes and beliefs toward inclusion and 2) Due to shifts in educational policy, there have been dramatic changes in special education concepts, terminology, and teaching pedagogy in the past 8 years. The former observation indicated that there is a need for research on how best to assist teachers in the formation of positive attitudes and beliefs toward inclusion. Such research would require instrumentation. Specifically, a tool

would be needed that could validly and reliably measure change in attitudes and beliefs that are critical to the inclusion of children with disabilities. The latter observation indicated that scales measuring attitudes toward inclusion that were created in the 80s, 90s and early 2000s would not be adequate. These observations along with the authors' interest in implementing effective practices for preparing American teachers for their roles as inclusive educators, led to the conclusion that an adequate assessment tool would need to be:

(a) sufficiently broad to encompass the three key dimensions of teacher attitudes toward inclusion described in the literature review;

(b) developed on both in-service and pre-service teachers to assure maximum utility in all phases of professional development;

(c) developed in this country since attitudes on any subject tend to vary significantly by culture;

(d) developed in the last 8 years to reflect the significant shifts in education that have occurred during this time frame; and

(e) technically adequate in terms of validity and reliability.

In light of these observations, the authors reviewed all of the available instruments for evaluating teacher attitudes toward the inclusion of children with disabilities. These instruments included Antonak and Larrivee (1995); Getting (1991); Loneman et al. (2007); Malfo, Harris and Dedrick (2002); McLesky, Waldron and So (2001); Sharma and Desai (2002); Sideridis and Chandler (1995); and Wilczenski (1992). Table 1 summarizes the results of this review with regard to the five criteria listed above.

Table 1.

Comparison of Instruments for Evaluating Teacher Attitudes Toward the Inclusion of Children with Disabilities

Scale	Name	Sample includes in-service & pre-service teachers?	In the U.S.?	In the last 8 years?	Covers all 3 key dimensions?	Technically adequate?
Antonak & Larrivee (1995)	CRI	Yes	Yes	No	No POS & PRF only	Yes
Getting (1991)	IDPS	No	No	No	No POS only	Yes
Loneman et al. (2007)	SACIE	No	No	Yes	No POS & PRF only	Yes
Malfo, Harris & Dedrick (2002)	BAIES	No	Yes	Yes	No POS & PRF only	No
McLesky, Waldron & So (2001)	ISPS	No	Yes	No	No PRF only	No
Sharma & Desai (2002)	CIES	No	No	No	No POS & PRF only	No
Sideridis & Chandler (1995)	TIAQ	No (Music & PE teachers only)	Yes	No	No POS & PRF only	No
Wilczenski (1992)	ATIE	Yes (cross-validated)	Yes	No	No POS only	Yes

In light of this discussion, it was determined that an instrument that met all of the above criteria did not exist. Hence, the authors embarked upon the task of creating the TATIS.

Development of the Teacher Attitudes Toward Inclusion Scale (TATIS)

The first stage of the project was the development of the Attitudes of Pre-Service Teachers Toward Inclusion Scale (APTAIS, Cullen & Noto, 2007). The APTAIS consisted of a 14-item questionnaire that was designed to measure the three discrete attitudinal factors described in the review of the literature (i.e., attitudes toward students with disabilities in inclusive settings, beliefs about professional roles and responsibilities, and beliefs about the efficacy of inclusion). This instrument was administered to a sample of 217 pre-service teachers and their responses were submitted to Principal Components Analysis. This procedure revealed three primary factors that accounted for 62.68% of the total variance. These factors exhibited

primary component loadings ranging from 0.61 and 0.81 with a mean of 0.74. Communality scores for the 14 items ranged from 0.51 to 0.71 with a mean of 0.62. These results provide strong support for the construct validity of the instrument. In addition, the internal consistency reliability of the APTAIS was confirmed with alpha correlation coefficients of 0.84, 0.82, and 0.82 for the three components and 0.88 for the total scale. For a complete discussion of the development of the APTAIS, the reader is referred to Cullen and Noto (2007).

Following the development and publication of the APTAIS, the authors engaged upon phase II of the project; i.e., the refinement of the APTAIS into an instrument that would be useful in measuring the attitudes of all teachers, including in-service and pre-service educators. To achieve this goal, a sample of 35 in-service teachers was surveyed and the differences in their responses were tested against those of respondents in our pre-service sample using paired t-tests. These procedures revealed no item, factor, or total scale significant differences between groups. Because of these results, the authors concluded that the in-service and pre-service teacher samples were essentially the same. Bolstering this conclusion was the fact that the vast majority of pre-service teachers sampled were students in an internship-based masters degree program in Education. This program required them to work in public schools 30 hours per week while they completed their coursework. The authors believe that this factor was significant in accounting for the similarities in responses between the in-service and pre-service educators in the sample. As a result, it the authors concluded that a combined sample would provide a sound basis for the standardization and technical adequacy of what would now be called the Teacher Attitudes Toward Inclusion Scale (TATIS). The following discussion provides an overview of the technical properties and directions for administration and scoring of the TATIS.

Technical properties

Sample

The sample for the TATIS consists of 252 respondents with a gender composition of 64% female and 36% male. In terms of educational status, 77% or respondents held bachelor degrees, 14% held masters degrees, and 9% held degrees beyond the masters level. With regard to teaching background, 82% reported having 0-3 years teaching experience, while 18% reported working in the field for four years or more. The respondents' experiences were varied by grade level with 37% reporting that they were employed at the elementary level, 19% at the middle/intermediate level, and 30% at the high school level. Geographically, the sample was 48% Suburban, 25% Urban, and 12% Rural. With respect to experience with individuals with disabilities, 43% reported having minimal contact, 27% some contact, and 30% considerable/extensive contact.

Validity

Like its forerunner, the APTAIS, the TATIS was subjected to a principal components analysis to confirm its construct validity. This procedure revealed three factors that accounted for just over 58% of the variance. Communalities for the 14 items ranged from 0.40 to 0.80 with a mean of 0.58 (Table 2). When the items were rotated using the Equamax method with Kaiser Normalization, the component loadings ranged from 0.584 to 0.88 with a mean of 0.72. The items were found to load on the expected factors and the communalities are similar to those of the APTAIS from which the TATIS was developed. These results confirm that the TATIS is aligned with the three factors identified from the literature and was designed to measure.

Table 2

Principal Component Analysis with Equamax Rotation and Kaiser Normalization

Communalities			Total Variance Explained Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
Item	Initial	Extraction	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	1	.569	4.315	30.818	30.818	4.315	30.818	30.818	2.925	20.890	20.890
2	1	.552	2.259	16.135	46.953	2.259	16.135	46.953	2.898	20.701	41.592
3	1	.605	1.561	11.152	58.105	1.561	11.152	58.105	2.312	16.513	58.105
4	1	.421	.865	6.178	64.283						
5	1	.627	.834	5.959	70.242						
6	1	.445	.742	5.297	75.539						
7	1	.712	.602	4.297	79.836						
8	1	.787	.566	4.041	83.877						
9	1	.799	.510	3.645	87.522						
10	1	.571	.469	3.348	90.870						
11	1	.495	.431	3.082	93.952						
12	1	.403	.351	2.506	96.458						
13	1	.503	.308	2.197	98.655						
14	1	.646	.188	1.345	100.00						

Component Matrix			
	1	2	3
1	**.594**	.233	.402
2	**.711**	.191	.098
3	**.774**	.050	-.049
4	**.537**	.126	.343
5	**.766**	.099	.174
6	**.657**	.029	.111
7	.085	**.840**	.005
8	.241	**.852**	.056
9	.161	**.879**	.023
10	-.017	**.749**	.098
11	.073	-.005	**.700**
12	.221	.115	**.584**
13	.17	.009	**.700**
14	.032	.037	**.802**

Component Transformation Matrix			
Component	1	2	3
1	.686	.572	.450
2	.314	-.790	.527
3	-.657	.220	.721

Reliability

The reliability of the TATIS was confirmed through Chronbach' alpha correlation procedure. The results revealed that along with the strong factor loadings indicating good content validity, the reliability of the instrument was assessed and found to have an overall

correlation coefficient of 0.821. The alphas for each of the factors were also computed (Table 3). The reliability coefficients confirm that the TATIS is a reliable instrument for measuring teacher attitudes towards inclusion of students with mild to moderate disabilities.

Table 3

TATIS Factors and Alpha Reliability Statistics

Component	Alpha Reliability
1. Teacher perceptions of students with mild to moderate disabilities (POS)	.803
2. Beliefs about the efficacy of inclusion (BEI)	.863
3. Perceptions of professional roles and functions (PRF)	.680
Total Scale	.821

Descriptive Statistics

Table 4 provides a profile of descriptive statistics for the items and factors of the TATIS. Do note that items 7-10 are reverse scored and so their means are higher than those of the other items.

Table 4

Descriptive Statistics for the Items, Factors and Overall Scale

Item/ Factor	Mean	Standard Deviation	Item/ Factor	Mean	Standard Deviation
Item 1	2.48	1.20	Item 10	4.63	1.23
Item 2	3.70	1.30	Item 11	2.53	1.07
Item 3	4.47	1.31	Item 12	2.94	1.20
Item 4	2.76	1.03	Item 13	2.34	1.01
Item 5	3.53	1.17	Item 14	2.22	0.97
Item 6	3.49	1.17	**Factor 1**	**20.43**	**5.02**
Item 7	5.13	1.13	**Factor 2**	**12.46**	**3.68**
Item 8	4.83	1.19	**Factor 3**	**10.02**	**3.07**
Item 9	4.95	1.19	**Full Scale**	**50.00**	**5.79**

Administration and Scoring Procedures

Upon completion of the survey (Appendix A), respondents may use the scoring sheet (Appendix B) to tally their responses. Once tallied, the factor and total scale scores may be compared to the normative standards listed in tables to obtain t-scores and percentile ranks. T-scores have a mean of 50 and a standard deviation of 10. High scores on the TATIS mean that the respondent's attitudes and beliefs are highly supportive of inclusion. Low scores suggest that the respondent's attitudes and beliefs are more supportive of traditional service delivery models.

Table 5

Standard Score Conversion Chart - TATIS Full Scale

Raw Score	T-Score	% Rank	Raw Score	T-Score	% Rank	Raw Score	T-Score	% Rank
32 & Under	80	99.9						
33	78	99.7	45	58	79	57	38	12
34	77	99.6	46	57	76	58	37	10
35	75	99.4	47	55	69	59	35	7
36	73	98.9	48	53	62	60	33	4
37	72	98.6	49	52	54	61	32	3
38	70	98	50	50	50	62	30	2
39	68	97	51	48	46	63	28	1.4
40	67	96	52	47	38	64	27	1.1
41	65	93	53	45	31	65	25	.6
42	63	90	54	43	24	66	23	.4
43	62	88	55	42	21	67	22	.3
44	60	84	56	40	16	68 & over	20	.1

Table 6

Standard Score Conversion Chart - TATIS Factor 1: Attitudes toward students with disabilities in inclusive settings (POS)

Raw Score	T-Score	% Rank	Raw Score	T-Score	% Rank	Raw Score	T-Score	% Rank
35 & over	80	99.9	25	60	84	15	40	16
34	78	99.7	24	58	79	14	38	12
33	76	99.5	23	56	73	13	36	8
32	74	99.2	22	54	66	12	34	6
31	73	98.6	21	52	58	11	32	3
30	70	98	20	50	50	10	30	2
29	68	97	19	48	42	9	28	1.4
28	66	94	18	46	34	8	26	.8
27	64	92	17	44	27	7	24	.5
26	62	88	16	42	21	6 & Under	22	.3

Table 7

Standard Score Conversion Chart TATIS Factor 2: Beliefs about the efficacy of inclusion (BEI)

Raw Score	T-Score	% Rank	Raw Score	T-Score	% Rank
24 & over	80	99.9	13	52	58
23	78	99.7	12	50	50
22	75	99.4	11	48	42
21	72	98.6	10	45	31
20	70	98	9	42	21
19	68	96	8	40	16
18	65	93	7	38	12
17	62	88	6	35	7
16	60	84	5	32	4
15	58	79	4 & under	30	2
14	55	69			

Table 8

Standard Score Conversion Chart - TATIS Factor 3: Beliefs about professional roles and responsibilities (PRF)

Raw Score	T-Score	% Rank	Raw Score	T-Score	% Rank
4 & under	30	2	12	57	76
5	33	4	13	60	84
6	37	10	14	63	90
7	40	16	15	67	96
8	43	24	16	70	98
9	47	38	17	73	98.9
10	50	50	18	77	99.7
11	53	62	19 & over	80	99.9

Appendix A: Teacher Attitudes Toward Inclusion Scale (TATIS).

Directions: The purpose of this confidential survey is to obtain an accurate and valid appraisal of your perceptions of the inclusion of students with mild to moderate disabilities in regular classrooms. It also contains questions pertaining to your beliefs about professional roles, attitudes toward collegiality, and perceptions of the efficacy of inclusion (i.e., whether or not you believe that inclusion can succeed). Because there are no "right" or "wrong" answers to these items, please respond candidly.

Definition of Full Inclusion: For the purposes of this survey, full inclusion is defined as the integration of students with mild to moderate disabilities into regular classrooms for 80% or more of the school day. Under federal special education law, mild to moderate disabilities include Learning Disabilities; Hearing Impairments; Visual Impairments; Physical Handicaps; Attention Deficit Disorders; Speech/Language Impairments; and mild/moderate Emotional Disturbance, Mental Retardation, Autism, or Traumatic Brain Injury.

Use the following scale for all items:
1=Agree Very Strongly (AVS), 2=Strongly Agree (SA), 3=Agree (A), 4=Neither Agree nor Disagree (NAD), 5=Disagree (D), 6=Strongly Disagree (SD), 7=Disagree Very Strongly (DVS)

	1 AVS	2 SA	3 A	4 NAD	5 D	6 SD	7 DVS
1. All students with mild to moderate disabilities should be educated in regular classrooms with non-handicapped peers to the fullest extent possible.	O	O	O	O	O	O	O
2. It is seldom necessary to remove students with mild to moderate disabilities from regular classrooms in order to meet their educational needs.	O	O	O	O	O	O	O
3. Most or all separate classrooms that exclusively serve students with mild to moderate disabilities should be eliminated.	O	O	O	O	O	O	O
4. Most or all regular classrooms can be modified to meet the needs of students with mild to moderate mild to moderate disabilities.	O	O	O	O	O	O	O
5. Students with mild to moderate disabilities can be more effectively educated in regular classrooms as opposed to special education classrooms.	O	O	O	O	O	O	O
6. Inclusion is a more efficient model for educating students with mild to moderate disabilities because it reduces transition time (i.e., the time required to move from one setting to another).	O	O	O	O	O	O	O
7. Students with mild to moderate disabilities should not be taught in regular classes with non-disabled students because they will require too much of the teacher's time.	O	O	O	O	O	O	O
8. I have doubts about the effectiveness of including students with mild/moderate disabilities in regular classrooms because they often lack the academic skills necessary for success.	O	O	O	O	O	O	O
9. I have doubts about the effectiveness of including students with mild/moderate disabilities in regular classrooms because they often lack the social skills necessary for success.	O	O	O	O	O	O	O
10. I find that general education teachers often do not succeed with students with mild to moderate disabilities, even when they try their best.	O	O	O	O	O	O	O
11. I would welcome the opportunity to team teach as a model for meeting the needs of students with mild/moderate disabilities in regular classrooms.	O	O	O	O	O	O	O
12. All students benefit from team teaching; that is, the pairing of a general and a special education teacher in the same classroom.	O	O	O	O	O	O	O
13. The responsibility for educating students with mild/moderate disabilities in regular classrooms should be shared between general and special education teachers.	O	O	O	O	O	O	O
14. I would welcome the opportunity to participate in a consultant teacher model (i.e., regular collaborative meetings between special and general education teachers to share ideas, methods, and materials) as a means of addressing the needs of students with mild/moderate disabilities in regular classrooms.	O	O	O	O	O	O	O

Appendix B: Scoring Sheet for the TATIS

(T-Scores have a mean of 50 and a standard deviation of 10; Percentile ranks range from 1 to 99)

Part 1: TATIS Factor Scores			
Item	**Factor 1: POS**	**Factor 2: BEI**	**Factor 3: PRF**
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			
11			
12			
13			
14			
Factor Raw Scores	Add 1-6	Add 7-10	Add 11-14
Factor T-Scores (See tables 6 to 8)			
Factor Percentile Ranks (See tables 6 to 8)			
Part 2: TATIS Full Scale			
Total Raw Score	Raw score POS = _____ + (32-Raw Score BEI = _____) + Raw Score PRF = _____ = _____ TATIS Total Raw Score		
Total T-Score (See table 5)			
Total Percentile Rank (See tables 5)			

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