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Scale Validation of High School Teachers' Attitudes Toward Inclusion of Students with Disabilities

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SCALE VALIDATION OF HIGH SCHOOL
TEACHERS' ATTITUDES
TOWARD INCLUSION OF STUDENTS
WITH DISABILITIES
BY
CATHERINE ERNST

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Abstract

Research has shown that teacher attitudes influence their expectations of students and the way in which they interact with them (Brophy & Good, 1972; Brownwell & Pajares, 1999; Bryan 1974; Cook 2001; Harris, Snodgrass, & Rosenthal, 1986; Jordan & Stanovich, 2001; Kuklinski & Weinstein, 2001; Rosenthal, 2002). Ajzen and Fishbein (1969) developed the Theory of Reasoned Action, which proposes that people's behavior is determined by intention and that these intentions are represented in people's attitudes toward the behavior and the perceived norm of that behavior. Beginning with the passage of Public Law 94-142 and the IDEA reauthorization, regular education teachers are required to include students with many different kinds of disabilities in their classrooms (Lipsky & Gartner, 1997). It is likely that teachers' attitudes and expectations with regard to inclusion can influence their actions and behaviors within a classroom making it important to gain an understanding of teachers' attitudes towards inclusion.

Van Reusen, Shoho, and Barker, (2001) examined teacher attitudes toward inclusion of students with disabilities at the high school level. To assess teacher attitudes, Van Reusen et al. developed a two part survey: The first part of the survey solicited demographic and background information about the participants, while the second part of the survey contained statements used to elicit teacher attitudes toward inclusion. The content validity of the scale was addressed but other psychometric properties such as construct validity and reliability were not examined.

The purpose of the present study is to begin to explore the construct validity of the Van Reusen et al. scale as well as estimate its reliability. Principal factor analysis

was conducted on the data collected in Van Reusen et al.'s (2001) study to assess the dimension(s) of teacher attitudes toward the inclusion of students with disabilities into regular education classrooms. An item analysis was also conducted on the 20-item scale in order to determine the strength of the individual items. Coefficient alpha was used to assess the reliability of the scale. The item analysis indicated that a number of items were not directly related to the construct being measured. Therefore, these items were dropped before further analysis was completed. Using principal factor analysis it was suggested that there are two factors in this scale underlying high school teachers' attitudes toward inclusion, labeled *Academic Climate* and *Teacher Preparation for Students with Special Needs*. The scale was found to have a satisfactory reliability estimate with a coefficient alpha of .77. Limitations of the present study and future directions of research are also discussed.

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Background and Introduction

Teacher Attitudes and Impact on the Classroom

Attitudes can be defined as favorable or unfavorable evaluative reactions toward a person or thing and are exhibited in one's beliefs, feelings or intended behavior (Olsen & Zanna, 1993). Ajzen and Fishbein (1969) developed the Theory of Reasoned Action, which suggests that attitudes and subjective norms combine to determine behavioral intentions, which then impact behavior.

There have been several research studies examining teacher attitudes and expectations within the classroom. It has been found that teacher attitudes and expectations have an impact on their behavior, which subsequently impacts students' achievement and self-concept within the classroom (Brophy & Good, 1972; Brownwell & Pajares, 1999; Bryan, 1974; Cook, 2001; Harris, Snodgrass, & Rosenthal, 1986; Jordan & Stanovich, 2001; Kuklinski & Weinstein, 2001; Rosenthal, 2002).

Two studies in particular examined the impact of teacher attitudes on their behavior within the classroom (Brophy & Good, 1972; Silberman, 1969). These authors suggest that there are four attitudes teachers may adopt toward the children in their classrooms, including attachment, concern, indifference and rejection (Brophy & Good, 1972; Silberman, 1969). The teacher's category of attitude toward a child may influence how the teacher will interact with that particular child. For example, Brophy and Good (1972) found that when teachers placed students in their rejection category, the teachers were less likely to call on those students to read and less likely to give feedback to them when compared to students in the other three categories. Silberman

(1969) conducted a study using the same attitude categories and also found that teacher attitudes are generally revealed in their actions.

When examining teachers' attitudes within an inclusion context, one must first have an understanding of the terms mainstreaming and inclusion. It is important to recognize that there are some differences between mainstreaming and inclusion and that the literature is not always clear about which is being studied. Mainstreaming is the term used for the placement of students with disabilities in general education settings only when they can meet traditional academic expectations with minimal assistance or when the expectations are not relevant (Friend & Bursuck, 1996). Inclusion, a more recent term, is defined as providing equitable opportunities in receiving effective educational services to all students, regardless of the severity of their disability, with needed supports, in age appropriate classrooms in their neighborhood schools (Lipsky & Gartner, 1997).

Within the inclusion literature there is support for the suggestion that teacher attitudes may impact the classroom and the students. For example, Cook (2001) studied teacher attitudes toward students with disabilities that varied in severity by using the four different attitude categories from Brophy and Good (1972) and Silberman (1969). The results indicated that students whose disabilities were not easily seen were more likely to fall into a teacher's rejection category while those whose disabilities were very apparent were overrepresented in teachers' indifference nominations. These results suggest that teacher attitudes are indeed different toward students with different disabilities, indicating that teachers' behaviors may also be different toward these

students, which in turn might influence the type of education students with disabilities receive.

Jordan and Stanovich (2001) examined teachers' beliefs about students with exceptionalities. The authors were interested in whether the teachers' beliefs would influence their behaviors as well as the students' self-concept. It was found that teachers who held the belief that students' exceptionalities were a permanent characteristic were less likely to interact with students with exceptionalities, as well as have lower levels of cognitive interactions with these students. Students who had these teachers were found to have a lower self-concept than students who had teachers that believed that interventions would help.

Research also shows that people's behaviors and attitudes are subject to outside influences making it difficult to measure and predict exactly how attitudes will impact behavior (Meyers, 1999). However, Ajzen and Fishbein (1977) found, in a review of studies, that attitude did predict behavior when the attitude that was being measured was directly related to the situation. This indicates that it is important to measure attitudes towards a specific act or object if one wants to get an accurate view of how the attitudes may impact behavior.

High School Teacher Attitudes on Inclusion

Beginning with the passage of Public Law 94-142 and the subsequent IDEA reauthorizations, most regular education teachers are required to include students with many different kinds of disabilities in their classrooms (Lipsky & Gartner, 1997) making it essential to understand teachers attitudes toward including all students, as well as to understand exactly what population is being studied. Because high school

teachers and administrators are faced with having to include students with disabilities into the regular education classrooms, one population that becomes important to study is high school teachers. There is some evidence to show that these teachers and administrators may hold different opinions on the inclusion of students with disabilities as compared to their elementary and junior high school colleagues (Balboni & Pedrabissi, 2000; Gickling & Theobald, 1975; Scruggs & Mastropieri, 1996; Van Reusen, Shoho, & Barker, 2001). For example, it has been shown that elementary school teachers have more positive attitudes toward inclusion and often have a more negative attitude toward specialized schools as compared to high school teachers (Balboni & Pedrabissi, 2000; Gickling & Theobald, 1975; Scruggs & Mastropieri, 1996). Gickling and Theobald (1975) found that more elementary than high school teachers held the attitude that a child placed in a self-contained classroom is socially isolated. High school teachers in this study felt that special classrooms would be more effective than regular classrooms for students with special needs (Gickling & Theobald, 1975) which corroborates Balboni and Pedrabissi's finding, in 2000, that high school teachers hold a more positive view of separate schools and separate classrooms for students with disabilities.

There are a number of reasons that high school teachers may have different attitudes toward the inclusion of students with disabilities, many having to do with the structure of the high school setting. According to Cole and McLesky (1997), at the high school level teachers are required to have their students work with more complex and a broader range of material than at the elementary school level. Teachers at the secondary level also have limited contact with any one student and tend to spend most of their

instructional time in front of large groups of students. In a high school setting, teachers tend to be content specialists and may find the inclusion experience more frustrating as the students are not able to keep up in their specific content areas (Cole & McLesky, 1997). MacKinnon and Brown (1994) also found that high school teachers may find inclusion more difficult because secondary schools are not structured the same as elementary schools. Finally, at the high school level, teachers' attitudes toward inclusion may be impacted by pressure from sources outside of the school including: governments, universities, and businesses. Teachers may be held accountable by these sources for providing students with the knowledge needed to succeed upon completion of school, leaving teachers wondering how they will meet these expectations in an inclusive environment.

Measurement of Teacher attitudes

Each of the studies mentioned above had a method that the authors believed would be the best to study teacher attitudes. One of the ways that teachers' attitudes were often measured was with the use of a self-report scale. These types of scales are often chosen because they can be an efficient, reliable and cost effective way to gather large amounts of data. However, developing scales that will gather accurate and important information can be quite challenging to researchers. In order to have a good understanding of what teacher attitudes are, one must also have an understanding of how the scales that were used to measure these attitudes were developed.

In gaining an understanding of the scales that are used to study teacher attitudes, many aspects of measurement need to be considered. These include: having a theory behind the construct and how that construct is being operationalized, knowing the level

of specificity of the construct, deciding how many and what items to include and determining the reliability of the scale (Clark & Watson, 1995; DeVellis, 1991).

Having a theory behind a measurement tool is extremely important in order to establish the construct validity of a scale (Clark & Watson, 1995; DeVellis, 1991). Oftentimes researchers wish to measure a phenomenon that cannot be observed directly making it important to have well-grounded ideas or a theory that will serve as a guide (DeVellis, 1991). A theory serves to clarify the boundaries of the phenomenon being studied so that the content of the scale does not drift into unintended domains (DeVellis, 1991).

Another important aspect of measurement to consider when a scale is developed is the level of specificity of the phenomenon being studied. Scales can be and are developed to assess constructs at many different levels of abstraction from very specific behaviors or constructs to more general or global measures (Clark & Watson, 1995; DeVellis, 1991). Whether the scale is more general or specific will be determined by the function of the scale. The decision of how specific the scale is going to be should be made prior to developing the scale (DeVellis, 1991). This aspect of scale development is important because it will help to ensure the outcome is related to the scientific question that is being asked (DeVellis, 1991). It is also known that variables will most strongly relate to each other when they match on the level of specificity (DeVellis, 1991).

Finally, one of the most important aspects when examining how a scale has been developed is considering how and what items make up the scale. There are at least two kinds of validity one must take into consideration when looking at what items make up

a scale. These are content validity and construct validity. The first of these, content validity, examines the extent to which a specific set of items reflects a content domain (DeVellis, 1991). This can be fairly difficult when one is measuring beliefs, attitudes or dispositions because there is not a set list of what the potential items can be or when a sample of items is completely representative. One suggested way to maximize the appropriateness of the items chosen is to have experts in the area examine the items to look for appropriateness to the domain of interest (DeVellis, 1991). Construct validity examines the theoretical relationship of one variable to other variables (DeVellis, 1991). Construct validity is also a way of examining whether or not a measure behaves the way the construct purports it should. This leads to the idea that one of the fundamental goals when creating an item pool is to make sure that the items that are chosen are ones that would represent the whole construct of interest (Clark & Watson, 1995; DeVellis, 1991). If the individual items do not accurately reflect the concept that one is trying to articulate, then the scale itself may not truly capture the essence of the construct (DeVellis, 1991).

Examples of Scales

Several researchers have constructed scales to measure teachers' attitudes toward mainstreaming and inclusion (Balboni & Pedrabissi, 2000; Gickling & Theobald, 1975; Van Reusen, et al., 2001). For example, Gickling and Theobald (1975) conducted a study that examined teacher attitudes toward mainstreaming across elementary school teachers, secondary education teachers and administrators within a school district. These authors chose to use a "yes-no" format to look at teachers' knowledge and attitude toward practices and trends within the field of special

education. Because much of the information from the questions posed was descriptive, the authors decided to use simple percentages to relay the results. Within this article there is no mention of how the scale they used was developed, nor was any information provided about the validity of the scale. Gickling and Theobald did not state in the article whether or not they had considered content validity leaving the reader unsure as to how the items were chosen and why they may have been chosen. No information about the reliability of the scale was reported in the article. There is very little evidence from the article that the authors had based their questionnaire on a solid theory behind teacher attitudes toward inclusion. In examining the different aspects to consider when developing a scale, Gickling and Theobald did portray a clear idea of the specificity with which they wanted to examine the construct. They were specifically examining teacher attitudes toward mainstreaming and toward the mechanics used to prepare both regular and special education personnel to work together.

Another study examining high school teacher attitudes toward inclusion was completed in Italy (Balboni & Pedrabissi, 2000). This study looked specifically at teacher attitudes toward the inclusion of students with mental retardation. In order to create this scale the authors examined and used the aspects of inclusion they felt were most studied in the literature. The authors included areas of inclusion concerning: evaluation of the benefits and problems coming from inclusion, changes to be implemented in teachers' training, and school organization that would facilitate inclusion. The scale was made up of 26 items on which the teachers had to respond on a Likert-type scale. These authors estimated the reliability of the questionnaire using coefficient alpha, finding it to be .81. The authors also carried out exploratory factor

analysis in order to examine the construct validity of the scale. The exploratory factor analysis resulted in five content areas that covered many aspects of inclusion. The five factors included: An Evaluation of Inclusion (Factor 1); An Evaluation of Special Classes (Factor 2); Organization of the Didactic Activity (Factor 3); Tasks of Special and General Teachers (Factor 4); and Limitations of Traditional Teachers' Training (Factor 5). Although the authors did not state a specific theory, their scale was based on specific aspects of the inclusion literature. These authors were also clear on the level of specificity with which they wanted to examine the construct. They were specifically examining parent and teacher attitudes toward the inclusion of students with mental retardation.

Both of these scales (Balboni & Pedrabissi, 2000; Gickling & Theobald, 1975) are very specific in what they are measuring making it difficult to generalize the questionnaire to attitudes toward inclusion in a more general way. A literature search yielded only one scale that measured high school teacher attitudes toward inclusion with a broader level of specificity. Van Reusen et al. (2001) developed an instrument to gain an understanding of how demographic and personal variables such as gender, subject taught, length of time teaching, and amount of special education training would impact on teacher attitudes toward the inclusion of students with disabilities. These authors found that teachers who reported adequate and high levels of special education training held more positive views of inclusion than did teachers who reported minimal or no special education training. The variables of content, subject taught and number of years taught did not impact the teachers' attitudes toward including students with disabilities.

In constructing the instrument the authors were attempting to measure teacher attitudes across four domains: preparation in serving special populations, academic climate, academic content/teacher effectiveness, and social adjustment of the students. The six items directed toward preparation in serving special populations were written toward assessing the teachers' perceptions of their level of preparation for including students with special needs in their classroom. The four items written about academic climate were designed to assess the teachers' perceptions of how students with special needs would affect the classroom-learning environment. The six academic content/teacher effectiveness items were developed to let teachers identify their beliefs about their effectiveness in teaching both content and skills to students with special needs. Finally, the four items in the social adjustment domain were written to allow the teachers to identify their beliefs about social acceptance, rejection or isolation of students with special needs by their non-disabled peers. When completing the analysis these authors found that in two of the domains (teacher preparation and academic content/teacher effectiveness) teachers who reported adequate to high levels of special education training held more positive views than did teachers who had no or minimum training in special education. The authors explored the content validity of the scale by having a professor of special education, an educational psychologist, and a special education program coordinator review the items used in the survey. The construct validity and reliability of the instrument are unknown. Although the authors did not state a specific theory, their scale was based on specific aspects of the inclusion literature. Further research is needed to establish the psychometric properties of the

scale in order to know that this scale is a valid and reliable measure of high school teachers' attitudes toward inclusion.

Research Proposal

In summary, teachers' attitudes have been shown to have an impact on the students' achievement and the classroom setting. Because of federal and state laws, teachers are required to include students with many different ability levels into their classrooms making it important to have an understanding of their attitudes toward inclusion. Because high school teachers' attitudes may differ from their elementary counterparts, this population in particular is important to study. However, in looking at many of the scales that are available to study high school teachers' attitudes toward inclusion it becomes apparent that many of the scales fall short in how they were developed. The goals of this study are to add to this area of research by examining the reliability, and factor structure, as well as completing an item analysis of the scale that was developed by Van Reusen et al. (2001). Validity and reliability are two of the key elements in a useful and meaningful scale. Therefore, research on this scale will help determine if this scale is ready for use or if further scale development is needed. The researcher was given permission to use the same data that Van Reusen et al. had collected for their study.

Method

Participants

Van Reusen et al. (2001) collected data in a suburban high school setting outside of San Antonio, Texas. The school population was 3,263 students in grades 9-12 with 10 % of the student population receiving special education services. The level of disability ranged from mild to moderate and included students with learning disabilities, vision impairments, hearing impairments, orthopedic impairments and health impairments. The school did not have any self-contained classrooms for students with severe and profound developmental disabilities, as these students were given services at another school in the district. There were 125 teachers who participated in the study. Table 1 provides demographic information.

Table 1
Demographic Characteristics of High School Teachers

Demographic	Frequency
Gender	
Female	92 (73.6%)
Male	33 (26.4%)
Years of Experience	
0-4	19 (15.2%)
5-10	26 (20.8%)
11-15	21 (16.8%)
16 and over	59 (47.2%)
Special Education Training	
None	21 (16.8%)
Minimum	47 (37.6%)
Adequate	48 (38.4%)
High	9 (7.2%)
Subject Area	
Hard Sciences	30 (24.0%)
Social Sciences	39 (31.2%)
Other	56 (44.8%)
Certification	
Alternative	4 (3.2%)
Traditional	121 (96.8%)

Instruments

The Van Reusen et al. (2001) 20-item scale will be the main focus of the study. The first section of the survey asks personal background information about the teachers including: years of teaching experience, gender, professional responsibility, content assignment, as well as type of teacher training and level of training in special education (see Appendix A). The second part of the survey includes 20 statements designed to elicit teacher attitudes (see Appendix B). Each of the twenty statements is followed by a four-point Likert-type response. A Likert scale presents each item as a declarative sentence that is followed by response options that indicate varying degrees of agreement with or endorsement of the statement (DeVellis, 1991). Using a 4-point Likert-type

scale, teachers were asked to indicate the level to which they agreed with each statement:

1 = Strongly agree

2 = Agree

3 = Disagree

4 = Strongly Disagree

The possible range of scores for all of the items was set from 20-80. Half of the responses were worded positively while half are worded negatively. In order for the total score of the questionnaire to be interpreted as favorable toward inclusion, the score of the negatively worded statements were inverted. Therefore, higher scores from the teachers represented a more positive attitude toward inclusion. For example, with the statement "students with disruptive behavior are usually special education students," if teachers checked strongly disagree, it would indicate that teachers held a more positive view of including students with disabilities in the regular education classroom. Lower scores indicated that the teachers held a more negative view of including students with disabilities.

Procedure

For this study, a letter, via electronic mail, was sent to Dr. Van Reusen requesting use of the data that had been collected in the Van Reusen et al. (2001) study. Permission was given to use the data (see Appendix C) for the purposes of examining the psychometric properties of the scale. The data set was received on a large photocopied Excel spreadsheet. The data were then entered into SPSS, a statistical package, for further analysis.

The data set was collected during a mandatory staff development program for the 191 teachers assigned to the school. Teachers were given a copy of the survey and told that participation in the study was voluntary. Teachers who were absent were given a copy of the survey the following day. Over a two-day period, 128 surveys were returned. Three of the surveys could not be used because of missing data or the teacher had double marked an answer. Therefore, 125 completed surveys (65% response rate) were used in the Van Reusen et al. (2001) study.

Results

Overview of Data Analyses

To begin the data analysis, a data screening process was necessary. The data were checked for accuracy, missing values and outliers. An investigation of the assumptions underlying the proposed statistical analyses including sample size, normality, linearity, heterogeneity of variance and factorability of the correlation matrix was completed. Descriptive statistics (means, standard deviations, range of scores, skew, and kurtosis) were completed in order to describe the characteristics of the items. Next, an item analysis was completed using item-scale correlations, item means, and item variances. Principal factor analysis was performed in order to examine the psychometric properties of the Van Reusen et al. (2001) survey. SPSS 10 was used to complete both the item analysis as well as the principal factor analysis. Finally, the reliability of the survey was examined using coefficient alpha.

Data Screening

The first step in the analysis was to screen the data that had been collected using the Van Reusen et al. (2001) survey. SPSS was used as a tool to examine the data in terms of distributions and assumptions that underlie a multivariate analysis. Along with SPSS, the authors who collected the data were contacted and asked if there had been any missing data. The authors reported that there had been no missing data, which was corroborated through SPSS using frequency analyses. Using Tabachnick and Fidell (2001) as a guide, the data set was screened for outliers using SPSS box plots as a quick screen for univariate outliers and Mahalanobis Distance in order to obtain the multivariate outliers. Seven univariate outliers were found in total that were greater

than 3.29 standardized scores away from the mean (Tabachnick & Fidell, 2001). These items were checked for accuracy of data input as well as for patterns made by the subject. It was found that the items had been entered accurately and nothing appeared abnormal in the data set. The mean of the outliers was compared to the overall mean of the rest of the items and was not found to be significantly different. Therefore, it was decided to keep all of the data that had been possible univariate outliers as a part of the data set. Next, the data set was screened for possible multivariate outliers, using Mahalanobis distance. Mahalanobis distance is the distance of an item's mean from the intersection of the means of all the variables (Tabachnick & Fidell, 2001). No multivariate outliers were identified using this formula.

Item Analysis

Prior to conducting the factor analysis, an item analysis was conducted. The variables were examined to see that there was a fit between their distributions and the assumptions underlying multivariate analysis. One of the first areas that was examined included the item means and item variances. Table 2 provides a list of the item means and variances.

In examining the item means it was found that all of the variables had means that were reasonably in the center of the range of possible scores, with question 3 (All special needs students should be included in the regular classroom, no matter what the disability) having the lowest mean at 1.65 and question 16 (I can be effective with special education students in my classes) having the highest mean at 3.02. Next in the item analysis, each of the twenty variances was examined. Again, it was found that the variances were acceptable as most were fairly high (0 would mean there was no

variance on an item and therefore would not discriminate among individuals answers), with question 18 (Special education students behave like regular education students) having the least amount of variance among the items at .281. Item 2 (Teachers should be required to take more special education courses during undergraduate training) had the most variance at .682.

Table 2
Means and Variances for Scale Items

Item	Mean	Variance	Item	Mean	Variance
1	2.62	.607	11	1.79	.376
2	2.21	.682	12	2.54	.444
3	1.65	.423	13	2.84	.426
4	2.88	.413	14	2.15	.436
5	2.75	.478	15	2.57	.376
6	1.90	.587	16	3.02	.298
7	1.72	.461	17	2.28	.413
8	2.44	.652	18	2.64	.281
9	2.30	.517	19	2.21	.618
10	2.50	.317	20	2.18	.474

It was also important to examine the skew and kurtosis for all of the variables. The balance of the distributions was examined in order to determine if any were highly skewed or seemed unbalanced. Using SPSS and the guidelines of two for skew and four for kurtosis (Tabachnick & Fidell, 2001) it was found that all of the items were within these limits, indicating that all of the items had a fairly normal distribution. After examining these numbers and the histograms it was decided that no transformation or adaptation of the items was necessary.

Finally, one of the most important steps in an item analysis is to look at the correlations both between items and item-scale correlations. For this procedure, DeVellis (1991) suggestions for interpretation were used as a guideline. DeVellis (1991) recommends using the corrected item-scale correlation because it correlates the item being evaluated with all of the scale items, while excluding itself. This corrected item-scale keeps the correlation coefficient from becoming inflated. Following this recommendation, an examination of the corrected item-scale correlations was conducted looking for correlations that were higher than .30 (Pallant, 2001). Here it was found that four items: item 2, item 3, item 7 and item 20, were well below .30, indicating that these four questions might be measuring something different than the overall scale. In order to further examine whether those four items were measuring something different, a factor analysis was run using all twenty of the items. The results indicated that these four items did not load on either a two or four factor solution. Therefore, it was decided that these items would be dropped from any further analysis. Finally, the overall alpha level was examined using Cronbach's alpha. It was found to be .77 indicating a satisfactory reliability estimate.

Principal Factor Analysis

A principal factor analysis (PFA) was chosen as the best way to examine the underlying structure of the scale because the authors had indicated that they believed there were four domains in which teacher attitudes could be measured (Tabachnick & Fidell, 2001). A 16 X 16 matrix of item intercorrelations was generated. There are a number of different methods that can be used as guides in determining the number of factors in a solution. Tabachnick and Fidell (2001) recommend Kaiser and Cattell's

decision rules. However, Velicer, Eaton and Fava (2000) do not recommend the use of the Kaiser rule as it has been shown to lead to the over-extraction of the number of factors. These authors also discuss the use of Cattell's Scree procedure, which looks at the plotted eigenvalues and finds that those above the elbow are the ones that should be extracted. Velicer, Eaton and Fava (2000) report that this procedure is a good adjunct procedure but should not be used as a stand-alone procedure. Therefore, in this analysis, Cattell's Scree procedure (Cattell, 1966) as well as a Parallel Analysis (Horn, 1965) and Minimum Average Partial method (Velicer, 1976) was used in determining the number of factors to retain. Parallel Analysis is a procedure, which compares the eigenvalues of this data set to the average eigenvalue of a random data set of the same size. Factors are retained if the eigenvalues of this data set exceed the eigenvalue of the random data set (Velicer et al., 2000). Minimum Average Partial method gives the point at which the average squared partial correlation reaches a minimum and indicates the number of components at this point (Velicer et al., 2000). The Scree procedure and Minimum Average Partial method indicated that there were two factors while Parallel Analysis suggested 4. Both the two and four factor solutions were examined further.

Next, the type of rotation that would be used for interpretation was decided. The inter-factor correlation matrix was examined to help get an idea of whether an orthogonal rotation or an oblique rotation would best help in the interpretation of the factors. The inter-factor correlation matrix showed that factor one and two were not highly correlated. However, the communalities were also examined and were found to be somewhat high, therefore, it was decided to examine both a varimax rotation as well as an oblique rotation. In running both, similar results were found in how the variables

loaded on the two factors. However, when oblique rotation was performed, the inter-factor correlations were found to be .294, which suggests little correlation. Varimax rotation was therefore selected as the factor extraction method for this scale.

In completing the factor analysis, principal axis factoring was performed on 16 items from the Van Reusen et al. (2001) survey. A cut score of .40, as determined by the researcher, was used for inclusion of a variable in a factor. In general one does not interpret variables with loadings of less than .32. It is also important to consider that the greater the loading the more the variable is a pure measure of the factor (Tabachnick & Fidell, 2001) therefore a cut of .40 was chosen. When examined, the four-factor solution did not have enough items that loaded greater than .40 to be considered a factor. There were two items that loaded on the third factor at greater than .40, and only one that loaded greater than .40 on the fourth factor. Two of the sixteen items did not load greater than .40 on any of the factors.

When the two-factor solution was looked at, the results indicated two solid factors. The first factor had 10 items that loaded greater than .40 on the factor (see Table 3). The second factor had five items that loaded greater than .40 (see Table 3). Coefficient alpha for the first factor was found to be poor at .63 (Devellis, 1991) while coefficient alpha was found to be satisfactory at .76 for the second factor (Devellis, 1991).

After examining these in further detail and taking into consideration what had been found using both Cattell's scree procedure and the Minimum Average Partial Method, it was decided to retain two factors for the scale. These two factors accounted for 43 percent of the variance.

Table 3
Factor Structure for the Van Reusen, Shoho and Barker (2001) Scale

Item	Factor Loading		Communality
	1	2	
1. My lack of special education training hinders my ability to teach special needs students effectively.	.155	.690	.494
6. My undergraduate teacher education program prepared me adequately for teaching special education students.	.033	.463	.419
8. I have the instructional background to teach inclusion students effectively.	-.021	.877	.594
14. My knowledge of special education laws is limited.	.002	.558	.290
4. Special education students have a negative impact upon the learning environment of my classroom.	.720	.249	.536
5. The presence of special education students in my regular class had caused me to reduce the amount of curriculum content I should normally cover during the year.	.615	.251	.433
9. Teacher effectiveness is compromised by the amount of preparation required for placement of special needs students into the regular classroom.	.464	.330	.402
10. Special education students are socially well adjusted in the classroom.	.429	.035	.267
11. The number of special education students in a particular class affects the teacher's effectiveness for that class	.409	.282	.349
13. Students with disruptive behavior are usually special education students.	.505	-.038	.259
15. The inclusion of special education students affects the learning climate of my classroom.	-.586	-.156	.388
16. I can be effective with special education students in my classes.	.453	.326	.399
17. Other classmates socially reject disruptive special education students.	.386	-.025	.312
18. Special education students behave like regular education students.	.584	-.005	.450
19. I have adequate preparation time for special needs students placed into the regular classroom.	.400	.571	.512
	$\alpha = .63$	$\alpha = .76$	

Upon examining the variables individually it was found that 14 out of the 16 variables loaded on at least one of the factors. One of the variables in the solution was considered to be complex as it loaded higher than .40 on both of the factors and was therefore eliminated. Two of the variables did not load higher than .40 on either factor and were therefore discarded. After examining the items that loaded, the two factors were named “Academic Climate” and “Teacher Preparation in Serving Special Needs Students” respectively. Factor one was defined by 9 variables. A sample item from this factor is: “Special education students have a negative impact upon the learning environment of my classroom.” Factor two was defined by 4 variables. A sample item from this factor is: “My lack of special education training hinders my ability to teach special needs students effectively.”

Discussion

The main purpose of this study was to examine the factor structure and reliability of the Van Reusen et al. (2001). A second goal of this study was to complete an item analysis on the scale in order to determine which items seemed to best measure the construct of teacher attitudes toward inclusion.

Item Analysis

In completing the item analysis and in running the reliability tests, it was found that four items had to be dropped from the scale because they seemed to be unrelated to the content that the authors were trying to measure. In order to develop a good scale Clark and Watson (1993) suggest that the initial pool of questions should be more comprehensive than one's own view of the construct and should include content that may be shown to be unrelated to the construct. These authors feel that with more psychometric analyses any weak and unrelated items will be identified and can then be dropped from the scale but that a psychometric analysis is powerless to come up with content that should have been included (Clark & Watson, 1993). Therefore, it seems to be a fairly normal part of the scale development process to have some questions that will be dropped from the initial item pool. Keeping this process in mind, it is also important to recognize that the number of items in the scale impacts the overall reliability of the scale. One does not want too few items in the overall scale or on individual factors within the scale. However, in this scale, 16 items did appear to be related to the constructs being measured and appeared to be good items for use in the scale.

Teacher Attitudes toward Inclusion

In contrast to the initial hypothesis, based on the Van Reusen et al. (2001) domains for the scale, that this scale might have four factors, it was found that the scale had two factors. These two factors, "Academic Climate" and "Teacher Preparation in Serving Special Needs Students" were identified through a principal factor analysis. While the idea of four content areas guided the way in which the authors wrote and selected items, a two factor solution seems to be a better fit with the information obtained. The two-factor solution that was obtained was in line with two of the domains that Van Reusen et al. (2001) had suggested when they created the survey. It should be noted that factor one seemed to have elements of two of the hypothesized domains, academic climate and teacher effectiveness. Factor two followed very closely to what the authors had suggested in that all of the questions were related to teachers' preparation in serving special populations. The four factor solution that was also examined did not seem to be a fit with what the authors had predicted as no factors that would underlie academic content or social adjustment were found.

In examining the factors and comparing these factors to those that were found in the study by Balboni and Pedrabissi (2000), it can be seen that in both scales there was one factor related to teachers' training. This shows support for teacher preparation being one aspect in teacher attitudes toward inclusion. In both studies only a few items loaded onto this factor indicating that it may be hard to find questions that elicit this aspect of teacher attitudes specifically, and more questions with regards to this part of the construct may be something for future development of a stronger scale.

The “Academic Climate” factor did not seem to fall into line with either what Van Reusen et al. (2001) had expected or what Balboni and Pedrabissi (2000) found with their scale. Balboni and Pedrabissi (2000) described four other factors: evaluation of inclusion, evaluation of special classes, organization of the didactic activity, and task of special and general teacher, that seemed to split up this part of the construct. This may be due to the fact that those authors examined both teacher and parents and were looking at attitudes toward students with mental retardation specifically. The current scale looked only at teacher attitudes and many different types of disabilities, which may have had an impact on the underlying factors of the construct that were found.

The reliability of the overall scale was also examined and was found to be satisfactory at .77 (Devellis, 1991). However, when examining coefficient alpha with respect to the different factors, one of the factors was found to have poor internal consistency (Devellis, 1991). This suggests that although academic climate may be a factor in teacher attitudes toward inclusion, the questions that currently make up this factor are not doing a good job of measuring one similar construct. The second factor was found to have satisfactory internal consistency (Devellis, 1991). However, this was not great internal consistency, suggesting that there is room for improvement in the number and types of questions to be included on this factor specifically.

Limitations and Steps for the Future

One of the limitations of this study was the relatively small sample size. Because correlation coefficients tend to be less reliable when they come from small samples, it becomes important to have a sample that is large enough for the correlations to be reliably estimated. Tabachnick and Fidell (2001) recommend the use of 300

subjects in order for one to have confidence that factor analysis is examining reliable correlation coefficients. In this particular study, it was not possible to have a larger sample size because the data had already been collected. It is recommended that more studies be done looking at these factors and that more teachers participate in future studies in order to show that the correlations have been reliably estimated and to replicate the results found in this study.

A second limitation of this study is that there was no definition of inclusion given in the survey. As can be seen in the review of the literature, all people do not define inclusion in the same way. A definition is an important part of this type of survey so that all respondents have a similar understanding of inclusion. The validity of the scale may be improved if a definition were to be added. It can also be seen in the literature that a clear definition can be important for other reasons too. Ajzen and Fishbein (1977) found that the more specific a study is about the attitude is that is being measured, the more likely it is going to be able to predict a behavior. Because no definition of inclusion was provided, teachers may have answered questions with a very vague thought of inclusion. This may have impacted the accuracy of the teachers' views of inclusion, which in turn impacts how their behaviors might be predicted. Van Reusen et al. (2001) found in their study that teachers who had more special education training held a more positive view of the inclusion of students with disabilities. It is possible that teachers who did not have special education training may not have had as solid an understanding of the definition of inclusion. This may have influenced their answers about their own attitudes toward inclusion. If a new scale examining inclusion were to be developed it would be important to include a specific definition of inclusion

at the beginning of the scale to gain accurate information about teachers' attitudes and the impact on their behaviors within the classroom. This scale, after development, could then be used as a tool in studies pertaining to teacher attitudes and behavior toward including children with special needs in the regular education classroom.

Van Resuen et al. also found that in two of their domains (teacher preparation and academic content/teacher effectiveness) teachers who reported adequate to high levels of special education training held more positive views toward inclusion than did teachers who had no or minimum training in special education. In light of the findings from the current study these results should be interpreted carefully. Teacher preparation was found to account for some underlying part of teacher attitudes toward inclusion. However, in this study, academic content/ teacher effectiveness did not appear to account for an underlying piece of teacher attitudes. It is possible that with more questions or questions that are worded differently the idea of academic content/ teacher effectiveness may be found to be a part of the explanation for teacher attitudes toward inclusion. Further research is needed to determine this.

The scale that was developed by Van Reusen et al. (2001) is a good starting point in the scale development process. It is not recommended that this be used as a final scale for a number of reasons: it had only satisfactory reliability, the second factor was made up of only five items and only 16 of the original 20 items were demonstrated to be valid. However, the Van Reusen et al. (2001) scale provides a solid beginning in the development of a scale that will give us accurate information on high school teachers' attitudes toward the inclusion of students with disabilities.

As the law is requiring most teachers to begin to include students of all ability levels, it is important to try and understand teacher attitudes toward inclusion. A refined scale would give researchers, administrators, teachers and others access to a measurement tool that will allow them to collect data to accurately assess inclusion within the schools.

Appendix A

Inclusion Survey

Thank you for your participation in this study. To ensure anonymity, do not write your name on it. Please take your time and answer each item in a manner that reflects your perspective. The purpose of this study is to evaluate attitudes toward inclusion. Results of this study will be made available to participants.

Part I: Please fill out the following information about yourself.

1. Years of completed teaching experience: ☐ 0-4
 ☐ 5-10
 ☐ 11-15
 ☐ 16+
2. Gender: ☐ Female ☐ Male
3. Professional Responsibility: Administrator: ☐
 Teacher: ☐
 Staff: ☐

For teachers only- please check your dominant teaching field:

☐ Business	☐ Math
☐ Career and Technology	☐ P.E./Athletics/Health
☐ Computer Science	☐ R.O.T.C.
☐ Economics	☐ Science
☐ English	☐ Social Studies/Government
☐ Fine Arts	☐ Special Education
☐ Foreign Language	☐ Speech
☐ Journalism	Other: _____

4. Route to Teaching Certification:
☐ Alternative (e.g., through Region 20)
☐ Traditional (e.g., through a college or university)
5. My level of expertise in Special Education is:
☐ none ☐ minimal ☐ adequate ☐ high

Appendix B

Teacher Attitudes Scale by Van Reusen, A., Shoho, A., & Barker, K.

Part II: Please check the answer that best describes your feeling about each statement.

1. My lack of special education training hinders my ability to teach special needs students effectively.	☐ Strongly Agree ☐ Agree ☐ Disagree ☐ Strongly Disagree
2. Teachers should be required to take more special education courses during undergraduate training.	☐ Strongly Agree ☐ Agree ☐ Disagree ☐ Strongly Disagree
3. All special needs students should be included in the regular classroom, no matter what the disability.	☐ Strongly Agree ☐ Agree ☐ Disagree ☐ Strongly Disagree
4. Special education students have a negative impact upon the learning environment of my classroom.	☐ Strongly Agree ☐ Agree ☐ Disagree ☐ Strongly Disagree
5. The presence of special education students in my regular class had caused me to reduce the amount of curriculum content I should normally cover during the year.	☐ Strongly Agree ☐ Agree ☐ Disagree ☐ Strongly Disagree
6. My undergraduate teacher education program prepared me adequately for teaching special education students.	☐ Strongly Agree ☐ Agree ☐ Disagree ☐ Strongly Disagree
7. There are disabilities that are inappropriate for the regular classroom.	☐ Strongly Agree ☐ Agree ☐ Disagree ☐ Strongly Disagree
8. I have the instructional background to teach inclusion students effectively.	☐ Strongly Agree ☐ Agree ☐ Disagree ☐ Strongly Disagree
9. Teacher effectiveness is compromised by the amount of preparation required for placement of special needs students into the regular classroom.	☐ Strongly Agree ☐ Agree ☐ Disagree ☐ Strongly Disagree
10. Special education students are socially well adjusted in the classroom.	☐ Strongly Agree ☐ Agree ☐ Disagree ☐ Strongly Disagree
11. The number of special education students in a particular class affects the teacher's effectiveness for that class	☐ Strongly Agree ☐ Agree ☐ Disagree ☐ Strongly Disagree

12. The presence of special education students in my regular classes has minimal affect upon implementation of curriculum content.	☐ Strongly Agree ☐ Agree ☐ Disagree ☐ Strongly Disagree
13. Students with disruptive behavior are usually special education students.	☐ Strongly Agree ☐ Agree ☐ Disagree ☐ Strongly Disagree
14. My knowledge of special education laws is limited.	☐ Strongly Agree ☐ Agree ☐ Disagree ☐ Strongly Disagree
15. The inclusion of special education students affects the learning climate of my classroom.	☐ Strongly Agree ☐ Agree ☐ Disagree ☐ Strongly Disagree
16. I can be effective with special education students in my classes.	☐ Strongly Agree ☐ Agree ☐ Disagree ☐ Strongly Disagree
17. Other classmates socially reject disruptive special education students.	☐ Strongly Agree ☐ Agree ☐ Disagree ☐ Strongly Disagree
18. Special education students behave like regular education students.	☐ Strongly Agree ☐ Agree ☐ Disagree ☐ Strongly Disagree
19. I have adequate preparation time for special needs students placed into the regular classroom.	☐ Strongly Agree ☐ Agree ☐ Disagree ☐ Strongly Disagree
20. Regular education teachers are informed about special education laws.	☐ Strongly Agree ☐ Agree ☐ Disagree ☐ Strongly Disagree

The teacher attitudes scale developed by Van Reusen, A. K., Shoho, A.R., Barker, K. S. (2001). High school teacher attitudes toward inclusion. *High School Journal*, 84, 7-21.

Appendix C

The University of Texas ★ San Antonio

College of Education and Human Development

Department of Interdisciplinary Studies and Curriculum & Instruction

March 26, 2002

Ms. Catherine Kennedy
168 West Thames Street, Apt.8
Norwich, CT 06360

Dear Ms. Kennedy:

With this correspondence, I am providing my consent and permission for you utilized the original survey data collected in a study entitled High School Teacher Attitudes Toward Inclusion, and published in The High School Journal, December 2000/January 2001, pgs. 7-20. The data provided to you does not provide any identifying information of the teacher participants involved in the study other than general demographic characteristics (e.g., gender, years of experience, subject area, special education training, and process used to obtain teacher certification). This consent and permission is granted as long as you provide a complete citation of the published work. Please do not hesitate to contact me should you have additional questions, and I wish you success on your research efforts.

Sincerely,

Anthony K. Van Reusen, Ph.D.

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