

**THE DEVELOPMENT OF AN INSTRUMENT FOR MEASURING PRE-SERVICE  
TEACHERS' SENTIMENTS, ATTITUDES, AND CONCERNS ABOUT INCLUSIVE  
EDUCATION**

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*This paper describes the development of an improved scale for measuring sentiments, attitudes and concerns about inclusive education in pre-service teachers based on an examination of data gathered from 996 pre-service teachers from five tertiary institutions using a modified version of the Interactions with People with Disabilities scale (Forlin, Jobling & Carroll, 2001; Gething, 1991, 1994), the Concerns about Inclusive Education Scale (Sharma & Desai, 2002), and the Attitudes Toward Inclusive Education Scale (Wilczenski, 1992, 1995). Based on the results of principal component analyses, conceptual judgments made by the research team, and a critique of content and format from an 'expert group', a new scale, the Sentiments, Attitudes and Concerns about Inclusive Education scale (SACIE), is developed. The rationale behind the development of the scale is discussed.*

Inclusive education involves students from a wide range of diverse backgrounds and abilities learning with their peers in regular schools that adapt and change the way they work in order to meet the needs of all students (Loreman, 1999). Inclusion is a philosophy based on a notion of social justice that advocates equal access to all educational opportunities for all students regardless of the presence of difference.

One area which has been identified as being vital to the continued development and success of inclusive educational practices is pre-service teacher education (Dev, 2002; Loreman, Deppeler, Harvey & Rowley, 2006; Loreman, Sharma, Forlin & Earle, 2005). Beginning teachers need not only the skills and knowledge base to be successful in inclusive environments, but also need to develop positive attitudes and sentiments towards their work in this area in order to ensure an inclusive future in their classrooms (Avramidis, Bayliss, & Burden, 2000; Avramidis & Norwick, 2002). Teachers' support for inclusion in their classrooms is crucial for its successful implementation as it is they who implement and facilitate any innovation at the classroom level (Soodak, Podell & Lehman, 1998).

Many educators have reservations about including children with diverse learning needs in their *regular* classrooms since they feel that they are not well-prepared (DeLuke, 2000). Studies that have been done which examine teacher's attitudes and concerns towards inclusive education find that successful implementation of any inclusive policy is largely dependent on teacher's positive attitudes about it (Avramidis & Norwick, 2002). Teacher's attitudes have been found to be strongly influenced by factors such as the nature and severity of the disabling conditions of the learners, teacher training, and availability of physical and human resources (Bradshaw & Mundia, 2006).

Recent research in this area by our international team is contributing to understandings of pre-service teacher attitudes, sentiments, and concerns while at the same time raising an awareness of the limitations of the instruments which are available to measure these aspects (see Chong, Forlin & Lan, 2006; Forlin, Loreman, Sharma & Earle, 2006; Lau, 2005; Loreman & Earle, 2006; Loreman et al. 2005; Sharma, Forlin, Loreman & Earle, 2006a; Sharma, Forlin, Loreman & Earle, 2006b).

Most teacher training institutions are now required to produce graduates who are able to respond to diverse student populations in their mainstream classes (Loreman, 2002). Many are modifying their pre-service programs to address the issue of inclusion, however, to date there is little empirical evidence on which judgments about pre-service teachers' knowledge, skills and attitudes are made. It is difficult to make decisions about the content of teacher training without appropriate empirical evidence to support the approaches being used. It is, therefore, critical to provide more accurate and empirical methods to determine the impact of teacher training programs related to inclusion on the development of more positive sentiments towards children with disabilities, the reduction of concerns about inclusive education, and the development of more positive attitudes. The limitations of the tools that we are currently using make the provision of such data difficult (for example, internal consistency using Cronbach's alpha for the IPD is 0.68 which is 0.02 below the mark where DeVellis (2003) argues one should be careful in the use of a scale).

This study is an attempt to develop an improved scale based on examination of international data gathered from pre-service teachers using a modified version of an original scale developed by Gething (1991, 1994) called the *Interactions with People with Disabilities* scale (IPD) (Forlin, Jobling, & Carroll, 2001), the *Concerns about Inclusive Education Scale* (CIES) (Sharma & Desai, 2002), and the *Attitudes Toward Inclusive Education Scale* (ATIES) (Wilczenski, 1992, 1995). The goal was to construct a single brief, reliable, and valid instrument which can be easily used and interpreted to help identify progress in three areas identified in the literature as being core values underlying the philosophy of inclusion. These are: (a) *positive attitudes towards increased inclusion of students with disabilities*, (b) *high sense of teaching efficacy*, (c) *willingness and ability to adapt one's teaching to meet the individual educational needs of students with disabilities* (Martinez, 2003, p. 474).

### Method

Data were gathered from pre-service teachers in teacher training institutions in Western Australia; Victoria, Australia; Edmonton, Canada; Singapore; and Hong Kong. Participation in the research was voluntary. The total data set comprised of 996 completed questionnaires (Western Australia = 208; Victoria, Australia = 57; Edmonton, Canada = 191; Singapore = 102; Hong Kong = 438). The variability of responses between countries allowed for the scale to be refined from a broad base. The data were collected between 2003 and 2005 using the IPD (Forlin et al., 2001; Gething, 1991, 1994), CIES (Sharma & Desai, 2002) and the ATIES (Wilczenski, 1992, 1995). Statistical analysis was conducted on the data employing principal component analysis (PCA) followed by a varimax rotation of the principal axes to minimize the number of scale items that have high loadings on each factor. This procedure simplified the interpretation of the factors with a view to:

- 1) Identifying any factors in which questions could be reduced (eliminated) due to similar response patterns.
- 2) Identifying questions which were spread across multiple factors and eliminating them or 'splitting' them into questions which are clearer.
- 3) Identifying common factors from which new questions could be extracted and used in a revised scale.
- 4)

The PCA revealed a number of thematically linked questions, redundancies, and questions which students clearly had difficulty interpreting.

Following the statistical analysis a meeting involving the research team took place in Hong Kong on June 11-13, 2006, at which time the PCA results were discussed and a draft of the newly structured *Sentiments, Attitudes, and Concerns about Inclusive Education* (SACIE) scale was constructed. The SACIE was based on a mixture of accepted research methodologies using the results of statistical data and the making of conceptual judgments and subsequently, revisions by an *expert group* (DeVellis, 2003). As the response anchors differed between the CIES and the other two scales, the use of a system of common anchors was also discussed.

The expert group comprised of senior academics and researchers was convened to critique the draft SACIE scale at a further meeting in Hong Kong on June 14, 2006. The expert group consisted of academics with expertise in inclusive education as well as in measurement and research design. The scale was presented to the group and they were asked to provide suggestions about the anchors, the wording, and the appropriateness of the items. A number of suggestions were made. The results of this critique were recorded, discussed, and where appropriate, included in the SACIE by the research team. During meetings across the next two days a final draft of the scale was produced (see appendix).

### Results and Discussion

The PCA results are presented here with reference to item numbers on the IPD (I + number), CIES (C + number) and ATIES (A + number).

#### Demographics

In addition to refining the existing scales into a new scale, we also refined the demographic section of the scale so that it provided information that is more likely to explain variance in pre-service teachers' attitudes and sentiment scores. Information in this section of the scale was modified based on results from the previously gathered data and areas where we perceived confusion from respondents during the various instances of data collection. Areas which were modified included the program in which students were enrolled, highest levels of previous education, age categories, prior interactions with people with disabilities, and teaching experience.

#### The IPD

**Table 1**  
*Principal Component Analysis of the IDP scale*  
Component loadings (PCA covariance matrix pairwise deletion).  
VARIMAX rotation of principal axes.

	1	2	3	4	5
I17	0.809	0.007	0.057	0.090	0.033
I20	0.764	0.098	1.082	-0.187	0.060
I16	0.737	0.324	-0.223	-0.240	0.073
I18	0.708	-0.178	0.284	0.204	0.090
I11	0.689	0.096	-0.005	0.147	0.014
I09	0.687	0.175	0.221	0.389	-0.111
I12	0.642	0.310	0.084	0.562	-0.025
I05	0.032	0.816	0.128	0.099	0.037
I04	0.469	0.807	-0.133	-0.008	0.126
I13	-0.460	0.762	0.492	-0.218	0.538
I03	0.271	0.681	-0.083	0.148	-0.187
I07	-0.056	0.106	0.820	0.392	-0.183
I06	0.312	0.279	0.182	1.143	0.081
I10	0.067	-0.132	0.003	0.548	-0.028
I08	-0.055	0.256	0.280	-0.122	-1.191
I19	0.144	0.227	0.161	-0.094	0.276
I15	0.440	-0.345	0.073	0.303	0.121
I02	0.001	0.484	0.052	-0.001	-0.036
I01	-0.212	0.295	0.078	-0.138	-0.032
Percent of Total Variance Explained					
	1	2	3	4	5
	16.4%	12.0%	9.0%	9.5%	7.0%

Items 8 and 15 have negative loadings on factors 5 and 2 respectively where other items have positive loadings. They are included as this is due to these questions being 'reversed' in the asking when compared to other items. Item 14 has been omitted from the analysis as it was judged by the research team to be a poorly worded and hence a confusing question.

The PCA identified five factors in the IPD, however we decided to address only the first three factors in the construction of the SACIE scale. Factor four was eliminated because all questions loaded on multiple factors and a version of question nine was already incorporated as a question to be retained in the SACIE scale under factor one. Factor five was eliminated because it does not explain a sufficiently high level of variance and because the two questions involved, while strong in contribution to the overall loading of the factor, ran in contrary directions. While the questions we elected to retain did not always display the highest loadings within a factor, the factor on which they loaded was always the highest for that individual question and conceptually they seemed most appropriate.

The questions from the IPD which were retained (albeit in modified versions) for the SACIE scale are shown in Table 2.

Table 2  
*IPD Questions Selected for Retention.*

Factor theme	Questions selected for retention	Rationale for selection
1. Fear and discomfort	Q I9. I feel comfortable around people with disabilities. Q I17. I am afraid to look the person with a disability straight in the face.	Both load heavily and only on this factor and are representative of the theme. QI9 is converted to a positive statement making it easier to endorse.
2. Helping and coping	Q II. It is rewarding when I am able to help.	Although by comparison to other items it does not load heavily, it does load heavier on factor two than on any other factor and is clearly worded and highly relevant to the theme of 'helping'.
3. Disability is abnormal and is to be avoided.	Q I7. I am grateful that I do not have a disability.	Loads heavily and clearly worded. Modified to remove word 'burden'.

Table 2 shows that items were selected for retention both on the basis of their PCA loadings and conceptual judgments made by the research team. Where changes in wording could have made the questions clearer this has been done.

### *The CIES*

The results of the PCA conducted on the CIES are shown in Table 3.

Table 3  
*Principal Component Analysis of the CIES*  
Component loadings (PCA covariance matrix, pairwise deletion)  
Rotated Loading Matrix ( VARIMAX, Gamma = 1.0000)

	1	2	3	4	5
C04	<b>0.675</b>	0.086	0.260	0.153	0.084
C10	<b>0.660</b>	0.124	0.297	-0.043	0.176
C09	<b>0.630</b>	0.240	-0.131	0.161	0.200
C11	<b>0.589</b>	0.211	0.125	0.131	0.225
C07	0.170	<b>0.637</b>	-0.023	0.204	0.063
C13	0.069	<b>0.631</b>	0.198	0.032	0.101
C08	0.064	<b>0.623</b>	0.169	0.094	0.084
C14	0.069	<b>0.619</b>	0.174	0.028	0.118
C12	0.184	<b>0.555</b>	0.122	0.117	0.082
C20	0.154	<b>0.527</b>	0.206	0.080	0.159
C03	0.029	0.204	<b>0.573</b>	0.113	-0.027
C01	0.152	0.149	<b>0.502</b>	0.101	0.064
C05	0.083	0.133	0.187	<b>0.697</b>	0.125
C06	0.170	0.211	0.074	<b>0.692</b>	0.136
C17	0.112	0.134	0.124	0.126	<b>0.739</b>
C16	0.204	0.139	0.132	0.094	<b>0.632</b>
C15	<b>0.339</b>	0.098	0.025	0.128	<b>0.551</b>
C18	0.076	0.198	<b>0.440</b>	0.063	<b>0.412</b>
C21	<b>0.378</b>	0.150	<b>0.434</b>	0.102	<b>0.308</b>
C19	0.107	0.224	<b>0.452</b>	-0.017	0.297
C02	0.275	0.089	<b>0.395</b>	<b>0.309</b>	0.176
Percent of Total Variance Explained					
	1	2	3	4	5
	14.544	17.051	11.512	8.461	12.349

Table three shows that all but four questions on the CIES load only on a single factor, meaning that much of the decision making with respect to which questions to retain could be made on the basis of conceptual judgments. In addition to the PCA we examined another source of analysis on the CIES (Sharma & Desai, 2002) and found that identified themes were generally comparable as is seen in Table 4 below.

**Table 4**  
**Comparison of factors and themes in the CIES**

Factor	PCA results	Sharma & Desai (2002)
1	Workload and stress (Questions 4, 9-11, 15, 21)	Concerns about workload (Questions 4, 9-11)
2	Resources (Questions 7, 8, 12-14)	Concerns about resources (Questions 7, 8, 12-14, 20)
3	Time, training, and competence (Questions 1-3, 18, 19, 21)	
4	Other student relationships (Questions 2, 5, 6)	Concerns about acceptance (Questions 1-3, 5, 6)
5	Academic impact on rest of class (Questions 15-18, 21)	Concerns about academic standards (Questions 15-19, 21)

The questions from the CIES which were retained (albeit in modified versions) for the SACIE scale are shown in Table 5

**Table 5**  
**Selected ATIES questions for retention**

Factor Theme	Questions selected for retention	Rationale for selection
Communication Non-conformity	Q A9. Students who have difficulty expressing their thoughts verbally should be in regular classes.	QA9 loads well and concerns expressive language, representing questions 6, 9 & 11. New question 'A' was included for the same reason. It is an amalgamating QA7, 11 & 14.
	New question A. Students who require communicative technologies (for example Braille, sign language) should be in regular classes.	
	New question B. Students who are inattentive should be in regular classes.	New question 'B' was devised to represent questions such as A4 and A15.
Conduct and aggression	Q A2. Students who physically aggressive towards others should be in regular classes.	QA2 loads heavily on factor 3 and is representative of the theme.
Academics	Q A13. Students who need an individualized academic program should be in regular classes.	QA13 was retained to represents QA4 and 5. New question 'D' was devised with a view to gaining insights into views about children who are not academically successful.
	New question D. Students who frequently fail exams should be in regular classes.	
High needs	Q A10. Students who need assistance with personal care should be in regular classes.	Question 10 and new question 'C' have been included primarily because they ask for views on the inclusion of children with severe and/or multiple disabilities who often come to classrooms with additional support.
	New question C. With appropriate support all students with disabilities should be in regular classes.	

Table six outlines the results of a PCA conducted on the ATIES. The PCA revealed that many of the questions load across multiple factors. Many questions were excluded from the SACIE on the basis of this.

**Table 6**  
**Principal Component Analysis of the ATIES**  
Component loadings (PCA Covariance Matrix, Pairwise Deletion)  
Rotated Loading Matrix ( VARIMAX, Gamma = 1.0000)

	1	2	3	4	5
A07	<b>1.192</b>	0.027	-0.047	0.172	0.273
A11	<b>1.175</b>	0.057	-0.016	0.106	<b>0.306</b>
A14	<b>1.039</b>	0.028	0.158	<b>0.318</b>	-0.025
A13	<b>0.766</b>	0.247	0.233	<b>0.503</b>	-0.084
A10	<b>0.678</b>	<b>0.334</b>	0.225	0.125	0.173
A06	<b>0.609</b>	<b>0.404</b>	-0.006	<b>0.411</b>	<b>0.364</b>
A09	<b>0.525</b>	<b>0.524</b>	0.074	0.228	<b>0.327</b>
A12	<b>0.523</b>	0.236	<b>0.677</b>	0.124	-0.095
A16	0.220	<b>0.933</b>	0.127	0.132	0.035
A15	0.009	<b>0.865</b>	<b>0.489</b>	-0.044	-0.076
A04	0.140	<b>0.622</b>	-0.124	0.242	<b>0.478</b>
A08	-0.008	<b>0.572</b>	<b>0.628</b>	-0.030	0.175
A02	0.023	0.069	<b>0.858</b>	0.182	0.189
A01	0.308	-0.097	0.288	<b>0.919</b>	-0.003
A05	0.285	<b>0.362</b>	-0.026	<b>0.833</b>	0.215
A03	0.351	0.102	<b>0.332</b>	0.067	<b>1.045</b>
Percent of Total Variance Explained					
	1	2	3	4	5
	28.179	14.322	9.929	10.435	8.585

The themes in table seven below were identified on inspection of the questions which loaded on each factor in table six.

**Table 7**  
**Themes identified in the ATIES**

Factor	PCA results
1	Communication (Questions 6, 7, 9, 10 -14)
2	Non-conformity (Questions 4-6, 8-10, 15, 16)
3	Conduct and aggression (Questions 2, 3, 8, 12, 15)
4	Academics (Questions 1, 5, 6, 13, 14)
5	High needs (Questions 3, 4, 6, 9, 11)

Taking into account the PCA data in Table six and the themes identified in Table seven, along with input from the research team and the expert group, the following seven questions were devised or retained from the ATIES, some in modified form.

#### **Anchors**

The survey using the IPD, ATIES and CIES operated on a system of differing anchor points with the CIES being rated on a range of 1-4 and the other scales on a range of 1-6. A range of 1-4 has been chosen for the SACIE scale because it alleviates some of the problems associated with mid-point (3-4) responses of an indecisive nature, and is less subtle in its distinctions than a 1-6 Likert scale (Dawis, 1987). A 4-point scale forces respondents to take a stance, either positive or negative and retains an even number of anchor points as had been used previously. The anchor points have been changed from numerals to acronyms (for example, *I* now equals *Strongly Agree* and is represented on the SACIE as

SA) and the most positive response has been positioned closest to the corresponding question on the page.

**Table 8**  
**Selected CIES questions for retention**

Factor Theme	Questions selected for retention	Rationale for selection
Workload & stress	Q C10. I am concerned that my workload will increase if I have students with disabilities in my class.	QC10 was chosen as it loads high and only on this factor. The question is clear and unequivocal. Question 21 was also modified as a representation for the 'stress' element of factor 1. Although this question loaded across three factors it is conceptually important. The modification of the wording should alleviate any instances of multiple interpretations.
	Q C21. I am concerned that I will be more stressed if I have students with disabilities in my class.	
Resources	Q C13. I am concerned that there will be inadequate resources/staff available to support inclusion.	QC13 loads high and only on this factor and is modified to include staff as well as physical resources.
Time, training, competence	Q C3. I am concerned that I do not have knowledge and skills required to teach students with disabilities.	QC3 was selected and modified to represent competency. It loads high and only on this factor and is clearly worded.
Other student relationships	Q C5. I am concerned that students with disabilities will not be accepted by the rest of the class.	Question 5 has been chosen to represent factor 4 on student acceptance because it loads high and is clearly worded.
Academic impact on rest of class	Q C18. I am concerned that all students in an inclusive classroom will not get appropriate attention.	QC18, while loading on factors 3 and 5, was modified to remove the teacher competence issue identified in factor 3. This was done by depersonalizing the nature of the question from "It will be difficult to..." to the more general "I am concerned that..." The word 'equal' was also changed to 'appropriate'.
	Q C17. I am concerned that the academic achievement of students without disabilities will be affected.	QC17 is also included to represent this factor because it loads high and only on this factor and is clear and unequivocal.

### **Coding and analyzing**

When analyzing the data for the SACIE scale, for *Strongly Agree* (SA) to be seen as a positive response on all items of the scale, items 2, 4, and 13-19 must be reverse coded. A higher score on SACIE would mean that an individual has a more positive attitude towards including students with disabilities into mainstream classes, possesses a lower level of concern towards including such students in his or her classroom, and has more positive sentiments when dealing with persons with disabilities compared to a person who receives a lower score on it.

### **Conclusion**

This paper describes the development of the *Sentiments, Attitudes, and Concerns about Inclusive Education* scale (SACIE) based on research data using a modified version of the *Interactions with People with Disabilities* scale (IDP) (Forlin et al., 2001; Gething, 1991, 1994), the *Concerns about Inclusive Education Scale* (CIES) (Sharma & Desai, 2002), and the *Attitudes Toward Inclusive Education Scale* (ATIES) (Wilczenski, 1992, 1995). This development is based on the results of principal component analyses, conceptual judgments made by the research team, and a critique of content and format from an *expert group*. The final SACIE scale is available for use in order to identify the perceptions of pre-service teachers in preparation for teaching in inclusive classrooms.

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**Appendix: The SACIE scale.**  
**The Sentiments Attitudes and Concerns about Inclusive Education Scale**

In order to be able to track pre and post data **please include your student number**. This will not be used to identify individuals.

**Please check or write the number on the line as required.**

A. I am teaching/training to teach in:

Early Childhood \_\_\_\_\_

Primary/Elementary \_\_\_\_\_

Secondary \_\_\_\_\_

Special Education \_\_\_\_\_

B. I am: Male \_\_\_\_\_ Female \_\_\_\_\_

C. My age 29 years and under \_\_\_\_\_

30 – 39 years \_\_\_\_\_

40+ years \_\_\_\_\_

D. My highest level of education completed is.....

High School \_\_\_\_\_ Undergrad degree \_\_\_\_\_ Postgrad degree/diploma \_\_\_\_\_

E. I have had significant/considerable interactions with a person with a disability.

Yes \_\_\_\_\_ No \_\_\_\_\_

F. I have had the following level of training focusing on the education of students with disabilities:

1. None \_\_\_\_\_ 2. Some \_\_\_\_\_ 3. High (at least 40hrs) \_\_\_\_\_

G. My knowledge of the local legislation and/or policy as it pertains to children with disabilities is....

Very good \_\_\_\_\_ Good \_\_\_\_\_ Average \_\_\_\_\_ Poor \_\_\_\_\_ None \_\_\_\_\_

H. My level of confidence in teaching students with disabilities is....

Very High \_\_\_\_\_ High \_\_\_\_\_ Average \_\_\_\_\_ Low \_\_\_\_\_ Very Low \_\_\_\_\_

I. My level of experience teaching a student with a disability is:

1. Nil \_\_\_\_\_ 2. Some \_\_\_\_\_ 3. High (at least 30 full days) \_\_\_\_\_

The following statements pertain to inclusive education which involves students from a wide range of diverse backgrounds and abilities learning with their peers in regular schools that adapt and change the way they work in order to meet the needs of all

**Please circle the response which best applies to you.**

SA	A	D	SD
Strongly Agree	Agree	Disagree	Strongly disagree

1	It is rewarding when I am able to help people with disabilities.	SA	A	D	SD
2	I am grateful that I do not have a disability.	SA	A	D	SD
3	I feel comfortable around people with disabilities.	SA	A	D	SD
4	I am afraid to look a person with a disability straight in the face.	SA	A	D	SD
5	Students who have difficulty expressing their thoughts verbally should be in regular classes.	SA	A	D	SD
6	Students who need assistance with personal care should be in regular classes.	SA	A	D	SD
7	Students who are physically aggressive towards others should be in regular classes.	SA	A	D	SD
8	Students who need an individualized academic program should be in regular classes.	SA	A	D	SD
9	Students who require communicative technologies (for example Braille and sign language) should be in regular classes.	SA	A	D	SD
10	Students who are inattentive should be in regular classes.	SA	A	D	SD
11	With appropriate support all students with disabilities should be in regular	SA	A	D	SD

	classes.	
<b>12</b>	Students who frequently fail exams should be in regular classes.	<b>SA A D SD</b>
<b>13</b>	I am concerned that my workload will increase if I have students with disabilities in my class.	<b>SA A D SD</b>
<b>14</b>	I am concerned that there will be inadequate resources/staff available to support inclusion.	<b>SA A D SD</b>
<b>15</b>	I am concerned that I do not have knowledge and skills required to teach students with disabilities	<b>SA A D SD</b>
<b>16</b>	I am concerned that it will be difficult to give appropriate attention to all students in an inclusive classroom.	<b>SA A D SD</b>
<b>17</b>	I am concerned that students with disabilities will not be accepted by the rest of the class.	<b>SA A D SD</b>
<b>18</b>	I am concerned that the academic achievement of students without disabilities will be affected.	<b>SA A D SD</b>
<b>19</b>	I am concerned that I will be more stressed if I have students with disabilities in my class.	<b>SA A D SD</b>