DOCUMENT RESUME

ED 420 936 EC 306 499

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TITLE Cross-Cultural Study of Teachers' Attitudes toward Gifted Children and Programs for Gifted Children.

PUB DATE 1998-04-14

NOTE 48p.; Paper presented at the Annual Meeting of the American Educational Research Association, (San Diego, CA, April 13-17, 1998).

PUB TYPE Reports - Research (143) -- Speeches/Meeting Papers (150) -- Tests/Questionnaires (160)

EDRS PRICE MF01/PC02 Plus Postage.

DESCRIPTORS Acceleration (Education); *Cross Cultural Studies; Cultural Differences; Elementary Secondary Education; Enrichment Activities; Equal Education; Foreign Countries; *Gifted; *Special Classes; *Special Education Teachers; *Special Programs; Student Placement; Student Teachers; *Teacher Attitudes; Teacher Surveys

IDENTIFIERS *Finland

ABSTRACT

A study compared the attitudes of 91 regular teachers, 124 second year pre-service teachers, and 91 gifted program teachers from Finland and the United States toward gifted children and gifted programs. Results indicated significant differences between cultures and among teacher types. American teachers were more favorable toward special services for gifted children and they acknowledged the differences between the children in schools. The American teachers also advocated acceleration and special classes to meet the needs of gifted children, while Finnish teachers were more reserved in their attitudes toward special classes. Finnish teachers were more concerned about the negative consequences of special programs for the gifted, more worried about the future effects of such arrangements, and more concerned about issues concerning equality in gifted education; however, Finnish teachers were also more concerned about gifted students dropping out unless special program were available. Gifted program teachers and regular classroom teachers were more supportive of enrichment alternatives, and acknowledged the special needs of the gifted and the advantages of being gifted more than the pre-service teachers; however, pre-service teachers favored acceleration and special classes for the gifted more than the others. Appendixes contain the assessment instruments and results. (Contains 5 tables, 13 figures, and 24 references.) (CR)

Cross-Cultural Study of Teachers' Attitudes Toward Gifted Children and Programs for Gifted Children

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Cross-Cultural Study of Teachers' Attitudes Toward

Gifted Children and Programs for Gifted Children

Objectives

The primary purpose of this study was to compare the attitudes of three groups of teachers from Finland and the United States toward gifted children and programs for gifted children. These were pre-service teachers, regular classroom teachers, and teachers of the gifted. In addition, the relationship of attitude to other demographic variables, such as age, gender, having a gifted family member, and giftedness of respondents, were examined. The final purpose of this study was to describe the psychometric properties of scores on a widely-used instrument designed to measure these attitudes.

Review of the Literature

Negative attitudes of teachers can set up a situation of conflict in the classroom (Whitmore, 1986). In one study, teachers of the gifted were profoundly concerned about attitudes of society and of school personnel toward gifted children (Delisle & Govender, 1988). It is important in gifted education to be able to predict who might be in opposition so that appropriate training and awareness sessions can be designed and negative attitudes, confronted and/or prevented.

In prior studies few variables have consistently emerged as substantial explanatory factors for attitudes toward and perceptions of gifted children and services for the gifted. Begin and Gagne (1994), in their analysis and summary of results of 30 studies with almost 50 variables, concluded that only three potentially valid predictors emerged. These were contact with gifted children, sex of the respondents, and teachers vs. parents. However, methodological problems

and much variation among studies prompted them to make several recommendations for future studies.

Results from several other studies (e.g., Copenhaver & McIntyre, 1992; Jones & Southern, 1992; Morris, 1987) demonstrated that those with more knowledge about gifted children hold more favorable attitudes toward them. Another factor that emerged from many studies is experience working with gifted children. In general, teachers who have worked with them have more positive attitudes toward them than teachers who have no experience teaching gifted children (Begin & Gagne, 1994; Copenhaver & McIntyre, 1992; Dettmer, 1985; Townsend & Patrick, 1993).

Pre-service teachers have been queried in only a few studies on attitudes regarding gifted children, and results have been mixed. In one study of attitudes toward acceleration, their responses were not significantly different from that of practicing teachers (Townsend & Patrick, 1993). In another study, Buttery (1980) found that pre-service teachers held a more negative attitude toward gifted children than did practicing teachers. However, Morris (1987) who also found this to be true in her study, discovered that their attitudes improved with more knowledge of gifted children.

Some of the studies concerning attitude have been conducted in countries other than the United States (e.g., Awanbor, 1991; Busse, Dahme, Wagner, & Wieczerkowski, 1986; Gagne, 1983; Tirri, 1997; Tirri & Uusikylä, 1994; Ojanen & Freeman,1994). Only two of these studies (Busse, et al., 1986; Ojanen & Freeman, 1994) were cross-cultural. The first one (Busse, et al., 1986) compared samples from Germany and from the United States. This study examined teacher perceptions of characteristics of highly gifted students. There were some differences,

with Germans focusing more on creativity and Americans focusing on intelligence as indicative of giftedness. The other cross-cultural study (Ojanen & Freeman, 1994) examined the attitudes and experiences of headteachers, class-teachers, and highly-able students toward the education of the highly able in Finland and Britain. According to this study the British headteachers were more concerned than the Finns about the potential problems of their highly able students. The Finnish teachers preferred to keep highly able students within normal classroom routine and with other children, in order to promote their social skills, and also to have them as good examples for the less talented students. They were afraid of the isolation which might occur should talented children be placed in special schools something they all deplored. Instead, they preferred special arrangements within ordinary, mixed-ability classes and schools (Ojanen & Freeman, 1994).

Other studies were conducted in Nigeria (Awanbor, 1991) and in Quebec (Gagne, 1983). In the former study, no clear predictors of attitudes emerged with no differences for gender, age, and educational level. In Gagne's study, there were no differences between primary and secondary teachers. Also teachers had a more positive attitude than parents, but there were large variations in attitude toward acceleration as a service option for gifted children. In studies in Finland (Tirri, 1997; Tirri & Uusikylä, 1994), contrary to the Gagne findings, there was a difference noted between elementary and secondary teachers. Elementary teachers preferred the regular classroom for gifted students, and secondary teachers preferred special classes and schools. It is possible that this difference between the two studies was partially due to differences in instrumentation.

More research is needed in the area of attitudes toward the gifted, particularly with pre-service teachers. Also, the mixed results and methodological problems cited by Begin and Gagne

(1994) and the lack of clear predictor variables warrant further research. Following recommendations from Begin and Gagne, more studies are needed that use a sound instrument, a large heterogeneous sample to minimize error, and more general than specific categories of variables. Also, samples that are cross-cultural will help to extend the generalizability of results, a problem encountered in past studies conducted only in one country. The present study attempted to do all of these things, in order to shed more light on variables affecting attitudes toward gifted children and services for these students and on cultural differences in these attitudes.

Methods

Participants were from Finland (n - 147) and the United States (n = 160). These were regular classroom teachers (n = 91), second year pre-service teachers (n = 124), and gifted program teachers (n = 91). All groups included elementary and secondary teachers, several grade levels, several subject areas, and varying years of experience. Pre-service teachers from Finland received instruction about the nature and needs of gifted students, but USA pre-service teacher received little of this instruction. In Table 1, you can see the number of participants there were in each group. Some participants are missing from this table, because they did not note whether they were elementary or secondary teachers.

Insert Table 1 about here

The Instrument utilized was Form A of the Attitudes Toward Giftedness scale developed by Gagne and Nadeau (1985). The authors sorted this 60-term scale, with Likert-type items, into

five factors: 1) support for social services, 2) objections to school services, 3) opposition to acceleration, 4) perceptions of rejection and isolation, and 5) social value, with a possible sixth factor called opposition to homogeneous grouping. See Appendix A for a copy of the scale. Scores on some items were reversed following the recommendations by Gagne and Nadeau. These were negatively worded items or items that expressed negative or inappropriate attitudes. Therefore, a higher score on a factor indicated a more positive attitude.

Procedures included administration of the instrument within college classes for pre-service teachers. Other teachers were asked by school personnel to participate. All participation was anonymous and voluntary. Attached to the instrument was a demographics sheet asking age, gender, subjects taught, grade levels taught, if they were gifted, or if they had a gifted family member.

Results

Analysis included descriptive statistics with means and standard deviations for scores on the Attitudes Toward Giftedness scale by country, by teacher type, and by other demographic variables. Some comparisons between groups such as between elementary and secondary teachers, were not made for this study due to the large differences in group size. Descriptive statistics are noted on tables shown later with the inferential statistics results.

Following the descriptive statistics, several other analyses were performed. First, we tested the Gagne and Nadeau five factor solution for the attitude instrument. Following that we performed an exploratory factor analysis and a Multivariate Analysis of Variance (MANOVA) to explore group differences on the factors derived from the exploratory factor analysis by teacher

type and country. After that we performed a Discriminate Analysis to inform the results of the MANOVA.

Results of the First Factor Analyses

From the theoretical setting of the Gagne and Nadeau study (1985) we have two essential pieces of information. The first one is that the expected number of factors is five using maximum-likelihood factor analysis. After performing factor analysis in the same manner as Gagne and Nadeau (1985) we found the five factor solution to be unjustified for our sample. The five factor solution explained only 33% of the total variance, and the criteria of eigenvalues greater than one was not met with that number of factors. The second piece of information is that the existence of correlation between the latent variables influences our choice of rotation method for factor analysis. The use of the varimax (orthogonal) method for rotation in the Gagne and Nadeau study (1985) has become a de facto standard in educational research. However, in many cases the use of oblique rotations could have produced significantly different results (Tirri, 1997). This is not surprising if one realizes that in many cases the underlying dimensions are clearly correlated already because of the theoretical framework, and thus an orthogonal rotation will be able to find only artifacts; i.e., approximations to the true structures. In our case the latent variables representing the various dimensions of attitudes toward gifted education are naturally all highly correlated, and thus to achieve the simplest interpretation structure the use of oblimin rotation (Harman, 1976) is more appropriate than varimax solutions. Following Harman's recommendation (1976) we used direct oblimin rotation in our factor analysis.

Any exploratory analysis has to be preceded by observations relating to the appropriateness of its use. Consequently we have tested both the hypothesis that the correlation

matrices in question are identity matrices (Bartlett's test of sphericity) and the relationships of observed correlation coefficients to the magnitudes of the partial correlation coefficients(the Kaiser-Meyer-Olkin measure). In both of these respects the correlation matrices seem to satisfy the requirements for factor analysis well. The Bartlett sphericity test value was 5450.6 with 0 significance level, and the KMO value was .78, a value which Kaiser (1974) characterizes as meritorious.

One of the central issues in exploratory factor analysis is the question of deciding the right number of factors; i.e., when to stop factoring. There exist formal tests such as Bartlett's test based on chi-square approximations (Bartlett, 1950), but these tests only provide an upper bound for the number of factors that can be of practical significance. A statistical test of significance only indicates the existence of factors, but not necessarily ones that are identifiable in the semantic framework studied. In our case, the commonly used guideline of latent root curve criterion; i.e., the "scree" of Cattell (Cattell, 1978) clearly underestimates the number of factors. Thus as a numeric guideline to choose the proper number of factors we have used the "variance greater than 1.0" rule (Kaiser, 1970), which is the default in SPSS software. In general, the most important factor influencing the choices has been the simplicity of interpretation.

The chosen factor solution explained 62.3% of the total variance. To increase the readability, we report a summary of each factor in a "nutshell" without incorporating all the high loadings in the text. An interested reader can request the entire information from the authors. Table 2 lists all 18 factors along with item numbers for each factors. In Appendix B you can see the Structure Matrix for this solution. Many of the factors in this solution are closely related.

However, there are no justifiable criteria to force the number of factors to be smaller. This relationship is accounted for by using oblique rotation which allows the factors to correlate. It is also a property of oblique rotations that variables can get high loadings on several factors. You will notice that this did occur with our 18-factor solution.

Factor 1 "Enrichment alternatives'

Number of high loading variables	**5**
Highest loading variable	**var 38, loading .983**
Percentage of variance explained	**13,0**
Naming based on	**Highest loading**

The first factor has one very high loading item 38 "The enrichment tract is a good means with which to meet certain special needs of gifted children" (.983). The factor was named based on this highest loading variable. Two other high loading variables supported the interpretation. Item 39 "The gifted need special attention in order to fully develop their talents" (.368), item 28 "Special programs for gifted children make them more motivated to learn" (.329) and item 43 "Sooner or later, regular school programs may stifle the intellectual curiosity of certain gifted children" (.326) emphasized the need to provide extra help for gifted children. Item 7 "It is unfair to deprive gifted children of the enrichment which they need (.358) supported our decision to emphasize enrichment alternatives in naming this factor.

Factor 2 "Special needs of gifted"

Number of high loading variables	**5**
Highest loading variable	**var 32, loading .979**

Percentage of variance explained	**6,6**
Naming based on	**Highest loading**

The highest loading item in this factor is item 32 "The speed of learning in our school is far too slow for the gifted" (.979). The other high loading items in this factor include item 15 "The gifted waste their time in regular class" (.400), item 28 "Special programs for gifted children make them more motivated to learn" (.394), item 53 "Some children are more gifted than others" (.383), item 50 "Equal opportunity in education does not mean having the same program for everyone, but rather programs adapted to the specific needs of each child" (.361). The highest loading item with the support from the other high loading items guided our decision to name this factor "special needs of gifted".

Factor 3 "Investment for gifted"

Number of high loading variables	**5**
Highest loading variable	**var 6, loading -.626**
Percentage of variance explained	**5,3**
Naming based on	**Highest loading**

The highest loading item for factor 3 was item 6 "Since we invest supplementary funds for children with difficulties, we should do the same for the gifted" (-.626). The other high loading items included item 1 "Talent is a rare commodity which we must encourage" (-.412), item 35 "We should give special attention to the gifted just as we give special attention to children with difficulties: (-.410), item 2 "Devoting special funds to the education of gifted children constitutes a profitable investment in the future of our society" (-.384) and item 16 "If the gifted are not sufficiently motivated in school, they may become lazy" (-.358). A common idea behind all

these statements was the need to invest funds and attention to the special needs of gifted. The highest loading item emphasized funds in that investment and the factor was named "investment for gifted".

Factor 4 "Social problems"

Number of high loading variables	**3**
Highest loading variable	**var 55, loading .683**
Percentage of variance explained	**4,6**
Naming based on	**Summarizing**

The highest loading item for factor four was item 55 "A child who has been identified as gifted has more difficulty in making friends" (.683). The other high loading items were item 46 "Gifted children are often unsociable" (.621) and item 57 "When gifted children are put together in a special class most adapt badly to the fact that they are no longer at the head of the class" (.479). The interpretation of this factor was very clear with the evident emphases on the social problems experienced by gifted children: Thus, the factor was named "social problems".

Factor 5 "Acceleration"

Number of high loading variables	**4**
Highest loading variable	**var 59, loading -.754**
Percentage of variance explained	**4,2**
Naming based on	**Summarizing**

The highest loading item for factor 5 was item 59 "Skipping a grade forces children to progress too rapidly" (-.754). The other items in this factor also dealt with questions related to acceleration. Item 58 "Skipping a grade emphasizes scholastic knowledge too much" (-.620) and

20 "A greater number of gifted children should be allowed to skip a grade" (.610) took different points of views to acceleration. The statement included in items 21 "Most gifted children who skip a grade have difficulties in their social adjustment to a group of older students" (-.424) measured a negative attitude toward acceleration as the loading indicates. Overall, this factor dealt with different aspects of acceleration for gifted children and it was easy to name "acceleration".

Factor 6 "Advantages of being gifted"

Number of high loading variables	**4**
Highest loading variable	**var 13, loading .776**
Percentage of variance explained	**3,3**
Naming based on	**Summarizing**

The highest loading item for factor 6 was item 13 "Whatever the school program, the gifted will succeed in any case" (.776). Item 14 "Because of a lack of appropriate programs for them, the gifted of today may become the dropouts and delinquents of tomorrow" (-.533) measures an opposite attitude of the same issue than the item 13. Items 52 "Generally, teachers prefer to teach gifted children rather than those who have difficulties" (.381) and 17 "The gifted come mostly from wealthy families" (.363) dealt with general attitudes toward gifted children. The factor was named based on the two highest loading variables as "Advantages of being gifted".

Factor 7 "Special classes for gifted"

Number of high loading variables	**3**
Highest loading variable	**var 25, loading .754**
Percentage of variance explained	**2,8**

Naming based on	**Highest loading**

The highest loading item for factor 7 was item 25 "The best way to meet the needs of the gifted is to put them in special classes" (.754). Item 40 "It is less profitable to offer special education to children with difficulties than to gifted children" (.358) and item 49 "It is more damaging for a gifted child to waste time in class than to adapt to skipping a grade" (.331) measured the same positive attitude toward special classes for gifted children. However, the factor was named according to the highest loading item as "special classes for gifted".

Factor 8 "Everybody is gifted"

Number of high loading variables	**2**
Highest loading variable	**var 18, loading .781**
Percentage of variance explained	**2,6**
Naming based on	**Summarizing**

The highest loading item for factor 8 was item 18 "All children are gifted" (.781). Item 56 "All children could be gifted if they benefited from a favorable environment" (.698) was the other high loading item in this factor supporting the name of the factor "Everybody is gifted".

Factor 9 "Equality of opportunities"

Number of high loading variables	**5**
Highest loading variable	**var 4, loading - .759**
Percentage of variance explained	**2,4**
Naming based on	**Summarizing**

The highest loading item for factor 9 was item 4 "Special services for the gifted constitute an injustice to other children" (-.759). Item 3 "Offering special help to the gifted helps perpetuate

social inequalities" (-.725) had the same meaning and almost as high loading as the highest loading item. Other high loading items in this factor were item 5 "Special programs for gifted children have the drawback of creating elitism" (-.485), item 42 "The idea of offering special education services to gifted children goes against the democratic principles of our society" (-.433) and item 51 "Special education services for the gifted are a mark of privilege" (-.420). The factor was easy to name because all the high loading items dealt with the same issue - equality of opportunities.

Factor 10 "Special services for gifted"

Number of high loading variables	**2**
Highest loading variable	**var 60 and 11, loadings .566**
Percentage of variance explained	**2,3**
Naming based on	**Summarizing**

The highest loading items for factor 10 were items 60 "There are no gifted children in our school" (.566) and 11 "Gifted children don't need special educational services" (.566). Both these statements measured negative attitudes toward special services for gifted. The items 7 "It is unfair to deprive gifted children of the enrichment which they need" (-.536) and 50 "Equal opportunity in education does not mean having the same program for everyone, but rather programs adapted to the specific needs of each child" (-.523) reflected the opposite view of this issue. The factor was named "special services for gifted".

Factor 11 "Current situation in schools"

Number of high loading variables	**2**
Highest loading variable	**var 10, loading .714**

Percentage of variance explained	**2,3**
Naming based on	**Summarizing**

The highest loading item for factor 11 was item 10 "Our schools are already adequate in meting the needs of the gifted" (.714). The other high loading item in this factor, item 9 "In our schools, it is not always possible for gifted children to fully develop their talents" (-.653) reflected the opposite view of the same issue. The factor was named based on these two high loading items as "current situation in schools".

Factor 12 "Special programs for gifted"

Number of high loading variables	**6**
Highest loading variable	**var 12, loading .599**
Percentage of variance explained	**2,0**
Naming based on	**Summarizing**

The highest loading item for factor 12 was item 14 "Because of a lack of appropriate programs for them, the gifted of today may become the dropouts and delinquents of tomorrow" (.599). The other high loading items included item 43 "Sooner or later, regular school programs may stifle the intellectual curiosity of certain gifted children" (.582), item 16 "If the gifted are not sufficiently motivated in school, they may become lazy" (.524), item 28 "Special programs for gifted children make them more motivated to learn" (.505), item 15 "The gifted waste their time in regular classes" (.486) and item 39 "The gifted need special attention in order to fully develop their talents" (.408). The interpretation of this factor was evident. All the high loading items dealt with special programs for the gifted children and thus, the factor named "special programs for gifted".

Factor 13 "Consequences of gifted education"

Number of high loading variables	**4**
Highest loading variable	**var 37, loading .423**
Percentage of variance explained	**1,9**
Naming based on	**Summarizing**

The highest loading for factor 13 was item 37 "It isn't a compliment to be described as a "whiz kid" (.423). The other high loading item was item 45 "In order to progress, a society must develop the talents of gifted individuals to a maximum" (-.403). Item 2 reflected the same issue than item 45 with its statement "Devoting special funds to the education of gifted children constitutes a profitable investment in the future of our society" (-.340). On the other hand, item 5 "Special programs for gifted children have the drawback of creating elitism" (.319) was more in accord with the highest loading item. This factor was interpreted as "consequences of gifted education".

Factor 14 "Future directions in gifted education"

Number of high loading variables	**3**
Highest loading variable	**var 2, loading .464**
Percentage of variance explained	**1,9**
Naming based on	**Highest loading**

The highest loading item for factor 14 was item 2 "Devoting special funds to the education of gifted children constitutes a profitable investment in the future of our society" (.464). Item 47 "The gifted should spend their spare time helping those who progress less rapidly" (-.459) reflected another kind of view on arranging gifted education. Item 31 "Gifted children might

become vain or egotistical if they are given special attention" (-.342) emphasized negative consequences of special arrangements for the gifted children. We named this factor according to the highest loading item "future directions in gifted education".

Factor 15 "Priorities in special education"

Number of high loading variables	**2**
Highest loading variable	**var 44, loading .638**
Percentage of variance explained	**1,9**
Naming based on	**Summarizing**

The highest loading item for factor 15 was variable 44 "We have a greater moral responsibility to give special help to children with difficulties than to gifted children" (.638). The other high loading item in this factor was item 8 "Children with difficulties have the most need of special educational services" (.559). The interpretation was easy, both statements reflected the issue of priorities in special education. We named this factor "priorities in special education".

Factor 16 "Rapid progress of the gifted"

Number of high loading variables	**2**
Highest loading variable	**var 22, loading -.482**
Percentage of variance explained	**1,8**
Naming based on	**Summarizing**

The highest loading for factor 16 was item 22 "Schools should allow gifted students to progress more rapidly" (-.482). Item 36 "Some teachers are jealous of the talents their gifted students possess" (-.462) can be interpreted as one of the reasons the gifted students are not allowed to progress as rapidly as they could. This factor was named "Rapid progress of the gifted".

Factor 17 "Enrichment vs. acceleration"

Number of high loading variables	**4**
Highest loading variable	**var 23, loading .454**
Percentage of variance explained	**1,8**
Naming based on	**Summarizing**

The highest loading item for factor 17 was item 23 "Enriched school programs respond to the needs of gifted children better than skipping a grade" (.454). The other high loading items were item 21 "Most gifted children who skip a grade have difficulties in their social adjustment to a group of older students" (.422), item 24 "An enriched school program can help gifted children to completely develop their abilities" (.358) and item 20 "A greater number of gifted children should be allowed to skip a grade" (-.374). The main issues in this factor dealt with enrichment versus acceleration and the factor was named accordingly.

Factor 18 "Labeling"

Number of high loading variables	**4**
Highest loading variable	**var 29, loading .769**
Percentage of variance explained	**1,7**
Naming based on	**Summarizing**

The highest loading item for this factor was item 29 "When the gifted are put in special classes, the other children feel devalued (.769). The other high loading items included item 27 "By separating students into gifted and other groups, we increase the labeling of children as strong-weak, good-less good, etc. (.544), item 5 "Special programs for gifted children have the drawback of creating elitism" (.482), and item 31 "Gifted children might become vain or

egotistical if they are given special attention" (.478). The factor was easy to name as "labeling".

Results of the MANOVA

MANOVA results for the demographic variables did not demonstrate any significant differences. However, the results with country (Finland, USA) and type of teacher (pre-service, regular classroom, gifted program) did suggest differences between cultures and among teacher types. These are the MANOVAs that will be reported.

For the 18 factors there was a significant effect for country [Wilks Lambda = .60, F (18,283) = 10.52, p = .0001]. Scores for 12 of the 18 factors demonstrated significant differences between teachers in Finland and those in the United States. The results of the univariate analyses are shown in Table 3 along with means and standard deviations for each. There were no differences for factors 3, 5, 8, 11, 16 and 17.

Insert Table 3 about here

Discriminate Analysis Results

To further explore the differences in the attitudes of Finnish and American teachers we performed a discriminate analysis with the factor scores gained in the factor analysis. This analysis will help to determine which of the significant differences or factors might be those which discriminate best between countries. Every 18 factor scores represented the high loading variables of each factor. The classification results showed that country was a very good prediction of teachers' differences in their attitudes toward gifted education. The discriminate analysis classified 86.6% of original grouped cases correctly. The statistical indicators, such as

Wilks's Lambda (Klecka 1981), F-value and statistical significance of the group means showed that some of the factors discriminated the teachers from two countries better than the others. The teachers differed most from each other in their attitudes toward "Special services for gifted" (factor 10). American teachers were more favorable toward special services for gifted, and they acknowledged the differences between the children in schools. The Finnish teachers were more oriented toward "the same education for everybody" and they were not as ready as American teachers to label some of the children gifted. This result is very understandable, because gifted education has a longer tradition in the United States than in Finland. Only during the last 10 years has Finland officially acknowledged the need to arrange special services for gifted and talented students (Tirri, 1997).

Insert Table 4 about here

The second best discriminating factor between American and Finnish teachers was factor 7 "Special classes for gifted". The American teachers advocated special classes in efforts to meet the needs of gifted children. The Finnish teachers were more reserved in their attitudes toward special classes. The same attitude was found in the other study with Finnish teachers, in which the elementary teachers preferred differentiated methods within the regular classroom (Tirri & Uusikylä, 1994).

"Consequences of gifted education" (factor 13) were shown to be of more concern to Finnish teachers than to their American colleagues. The Finnish teachers were more concerned about the negative consequences of special programs for gifted, and they were worried about the

future effects of such arrangements. The American teachers, on the other hand, viewed the consequences of gifted education in a more positive light than their Finnish colleagues. However, in factor 2 "Special needs of gifted", the Finnish teachers surprisingly acknowledged the special needs of gifted children more than the American teachers. The same trend was present with the issues dealing with "Special programs for gifted" (factor 12). The Finnish teachers were more concerned about the dangers of gifted children becoming dropouts of tomorrow unless special programs are arranged for them. The American teachers were not that worried about the lack of special programs for the gifted. This difference can be explained by the current debate in Finland over the importance of arranging special programs for gifted children. In the United States these programs have been available longer, and teachers might not be as worried about the lack of them as their Finnish colleagues.

The issues related to "Equality of opportunities" (factor 9) showed significant differences between the American and the Finnish teachers. In the Finnish society, the school system has traditionally looked most after the weakest members of the society, for example, the children with learning disabilities and behavioral problems. In this light it is natural that the Finnish teachers were more concerned about issues concerning equality in gifted education than their American colleagues. The same tendency for Finnish teachers to emphasize the needs of children with difficulties was seen in the differences of American and Finnish teachers toward issues on "Priorities in special education" (factor 15). The Finnish teachers were more in favor of special help for children with difficulties than for gifted children.

According to Van Tassell-Baska (1992) acceleration is the key issue that tests acceptance toward gifted education. In our data, American teachers favored acceleration options (factor 5)

more than the Finnish teachers. This tendency was natural because of the lack of acceleration options we have had in Finland. However, today it is possible for the parents to decide if they want their child to start school in the age of 6 (earlier the age was 7).

MANOVA Results by Teacher Type

There were also significant differences for the type of teacher [Wilks Lambda = .70, F (36, 566) = 3.14, p = .0001]. These were teachers in gifted programs, regular classroom teachers, and second year pre-service teachers. There were significant difference for one or more teacher group pairs on 12 of the 18 factors. There were no significant differences for factors 4, 10, 11, 13, 16 and 17. Table 5 list results for the Scheffe statistics for the univariate analyses.

Insert Table 5 about here

For three factors, both gifted program teachers and regular classroom teachers scored higher than the pre-service teachers. These were enrichment alternatives, special needs of gifted, and advantages of being gifted. For two factors, the gifted program teachers scored higher than pre-service teachers. These were factors three and twelve, investment for the gifted and special programs for the gifted. For two factors preservice teachers scored higher than regular classroom teachers. These were for acceleration and special classes for the gifted. Both pre-service teachers and regular classroom teachers scored higher than gifted program teachers on everybody is gifted and labeling. Preservice teachers scored higher than gifted program teachers on future directions in gifted education and priorities in special education and scored higher than both other groups on equality of opportunities.

The interaction effect of type of teacher by country was also significant in this multivariate analysis [Wilks Lambda = .77, F (36,566) = 2.22, p = .0001]. For this analysis 10 of the interactions tested with univariate analysis were significantly different. Those that were not different were factors 4, 5, 7, 8, 11, 13, 14, and 18. Listed next are bar graphs of these interactions. Only those that were significantly different will be shown. These graphs are seen in Figures 1 to 10.

Insert Figures 1-10 about here

Conclusions and Significance of the Study

Factor solutions as well as score differences demonstrated cultural differences with the scale used. It is possible that the longer presence of gifted programs in the USA has fostered better and sometimes different attitudes. The main cross-cultural differences between American and Finnish teachers were related to the negative side effects of special classes and other special arrangements for the gifted outside the regular classroom. The earlier cross-cultural study that compared teacher attitudes toward gifted education in Finland and Britain showed the same tendency of Finnish teachers to be concerned about the social and affective development of highly able children in the special classes (Ojanen & Freeman, 1994). What is promising is that the Finland teachers have profited from training, in that their pre-service teachers' training resulted in positive attitudes. Therefore, training has again emerged as a significant factor. Based on the results of this study, the Finnish teachers would need training that provides information and knowledge on the contents of special classes and programs for the gifted. The

same is true for pre-service teachers in the U.S.A. Evidently, in the Finnish context the social and affective needs of gifted children should be emphasized in the design of special arrangements for highly able. In Finland, as well as in the U.S.A., we want to educate the whole personality of the child; not only his/her academic achievement. In the context of gifted education this emphasis should be acknowledged with both pre-service and in-service teachers.

In some cases, it was apparent that both regular classroom teachers and gifted program teachers had better attitudes toward gifted children and programs for them than the pre-service teachers did. Results of this study add to cross cultural studies which are rarely conducted in gifted education. In addition, new knowledge is contributed to the field of gifted education. This new knowledge is more information about factors related to attitudes toward gifted children as well as information about instrumentation used for these studies. This information can be used to promote training of all teachers, including pre-service teachers.

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Table 1

Frequencies for Type of Teacher by Elementary and Secondary for USA and Finland (N = 300)

USA	Finland
Student Teachers	Student Teachers
Elementary = 27	Elementary = 44
Secondary = 52	Secondary = 0
Practicing Teachers	Practicing Teachers
Elementary = 27	Elementary = 39
Secondary = 14	Secondary = 9
Gifted Teachers	Gifted Teachers
Elementary = 27	Elementary = 17
Secondary = 12	Secondary = 32

Table 2

Factor Analysis Solution for 18 Factors

Factor	Items In Loading Order
1. Enrichment alternatives	38, 39, 28, 43, 7
2. Special needs of the gifted	6, 1, 35, 2, 16
3. Investment for gifted	32, 15, 28, 53, 50
4. Social problems	55, 46, 57
5. Acceleration	5, 58, 20, 21
6. Advantages of being gifted	13, 14, 52, 17
7. Special classes for the gifted	25, 40, 49
8. Everybody is gifted	18, 56
9. Equality of opportunities	4, 3, 5, 42, 51
10. Special services for gifted	60, 11
11. Current situation in schools	10, 9
12. Special programs for gifted	14, 43, 16, 28, 15, 39
13. Consequences of gifted education	37, 45, 2, 5
14. Future directions in gifted education	2, 47
15. Priorities in special education	44, 8
16. Rapid progress of the gifted	22, 36
17. Enrichment vs. acceleration	23, 21, 24, 20
18. Labeling	29, 27, 5, 31

Table 3

MANOVA Results for the 18-Factor Solution by Country

Factor	P	F	Finland M/SD	USA M/SD
1. Enrichment alternatives	.0143	6.07 = F	20.35/2.80	19.24/3.46
2. Special needs of gifted	.0001	28.90 = F	20.43/3.12	18.31/3.08
3. Investment for gifted	No differences			
4. Social problems	.0159	5.88	7.76/2.37	7.15/2.38
5. Acceleration	No differences			
6. Advantages of being gifted	.0001	69.53	12.18/2.43	9.87/2.11
7. Special classes for gifted	.0001	54.50	6.22/1.82	17.99/2.23
8. Everybody is gifted	No differences			
9. Equality of opportunities	.0104	6.65	10.90/3.53	12.45/4.23
10. Special services for gifted	.0002	13.96	2.58/1.00	3.12/1.31
11. Current situation in schools	No differences			
12. Special programs for gifted	.0001	15.62	22.37/4.06	20.21/4.48
13. Consequence of gifted education	.0002	14.52	14.48/2.48	13.43/2.04
14. Future directions in gifted education	.0304	4.73	9.97/2.02	9.62/1.68
15. Priorities in special education	.0003	13.72	5.96/1.95	5.30/2.10
16. Rapid progress of the gifted	No differences			
17. Enrichment vs. acceleration	No differences			
18. Labeling	.0432	4.12	13.19/3.57	12.70/3.52

Table 4

Test of Equality of Group Means

Factor			Wilks' Lambda	F	df1	df2	Sig.
REGR factor score	10 for analysis	1	.816	68.640		305	.000
REGR factor score	7 for analysis	1	.875	43.527	1	305	.000
REGR factor score	13 for analysis	1	.879	42.077	1	305	.000
REGR factor score	2 for analysis	1	.885	39.534	1	305	.000
REGR factor score	12 for analysis	1	.891	37.420	1	305	.000
REGR factor score	9 for analysis	1	.945	17.638	1	305	.000
REGR factor score	15 for analysis	1	.949	16.472	1	305	.000
REGR factor score	5 for analysis	1	.958	13.386	1	305	.000
REGR factor score	16 for analysis	1	.960	12.861	1	305	.000
REGR factor score	6 for analysis	1	.976	7.590	1	305	.006
REGR factor score	8 for analysis	1	.984	5.103	1	305	.025
REGR factor score	4 for analysis	1	.985	4.554	1	305	.034
REGR factor score	11 for analysis	1	.988	3.779	1	305	.053
REGR factor score	17 for analysis	1	.990	3.001	1	305	.084
REGR factor score	1 for analysis	1	.993	2.134	1	305	.145
REGR factor score	3 for analysis	1	.995	1.587	1	305	.209
REGR factor score	14 for analysis	1	.997	.859	1	305	.355
REGR factor score	18 for analysis	1	.998	.599	1	305	.440

Table 5

Scheffe Results for MANOVA by Teacher Type (multiple comparisons)

	Factor	Type	M/SD	Type	M/SD
1.	Enrichment alternatives	Gifted	20.7/3.4	Pre-service	18.9/2.8
		Regular	20.0/3.3	Pre-service	18.9/2.8
2.	Special needs of the gifted	Gifted	20.6/3.1	Pre-service	18.3/3.0
		Regular	19.5/3.4	Pre-service	18.3/3.0
3.	Investment for the gifted	Gifted	21.0/2.9	Pre-service	19.7/2.8
4.	Social problems	No differences			
5.	Acceleration	Pre-service	8.9/1.9	Regular	8.3/1.8
6.	Advantages of being gifted	Gifted	11.6/2.8	Pre-service	10.3/2.3
		Regular	11.4/2.5	Pre-service	10.3/2.3
7.	Special classes for the gifted	Pre-service	7.5/2.1	Regular	6.7/2.3
8.	Everybody is gifted	Pre-service	7.1/1.9	Gifted	5.9/2.2
		Regular	6.8/2.4	Gifted	5.9/2.2
9.	Equality of opportunities	Pre-service	13.1/3.4	Regular	11.3/4.3
		Pre-service	13.1/3.4	Gifted	10.1/3.8
10.	Special services for the gifted	No differences			
11.	Current situation in schools	No differences			
12.	Special programs for gifted	Gifted	22.3/4.2	Pre-service	20.3/4.1
13.	Consequence of gifted education	No differences			
14.	Future directions in gifted education	Pre-service	10.1/1.7	Gifted	9.4/2.2
15.	Priorities in special education	Pre-service	6.1/1.9	Gifted	5.2/2.2
16.	Rapid progress of the gifted	No differences			
17.	Enrichment vs. acceleration	No differences			
18.	Labeling	Pre-service	13.7/3.0	Gifted	11.5/3.9
		Practicing	13.3/3.4	Gifted	11.5/3.9

Figure 1

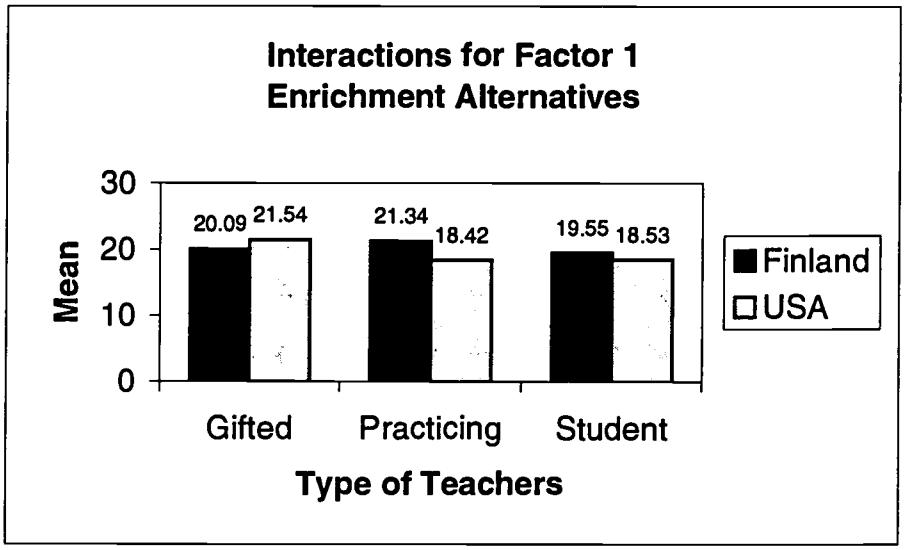


Figure 2

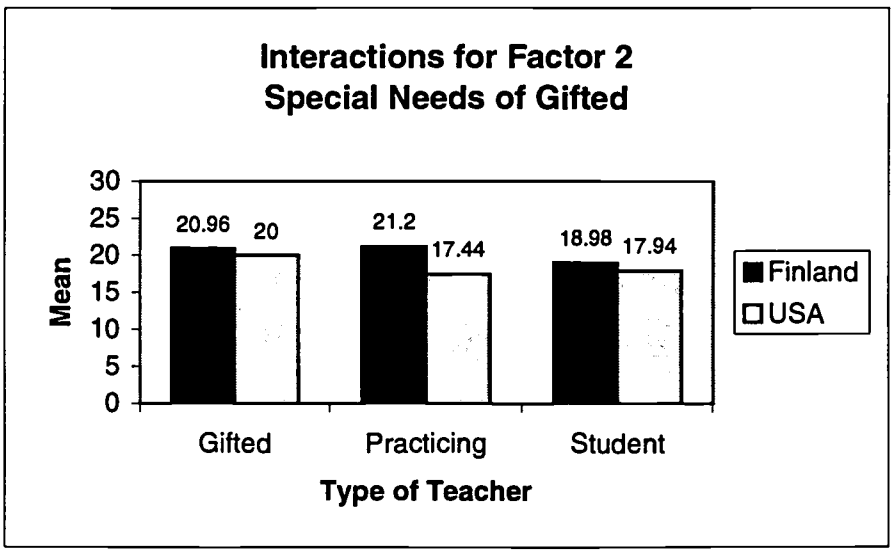


Figure 3

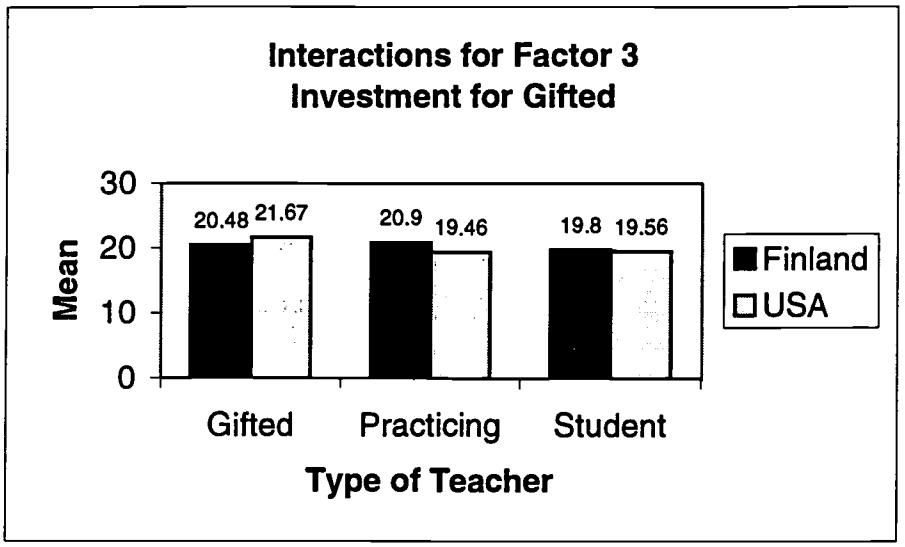
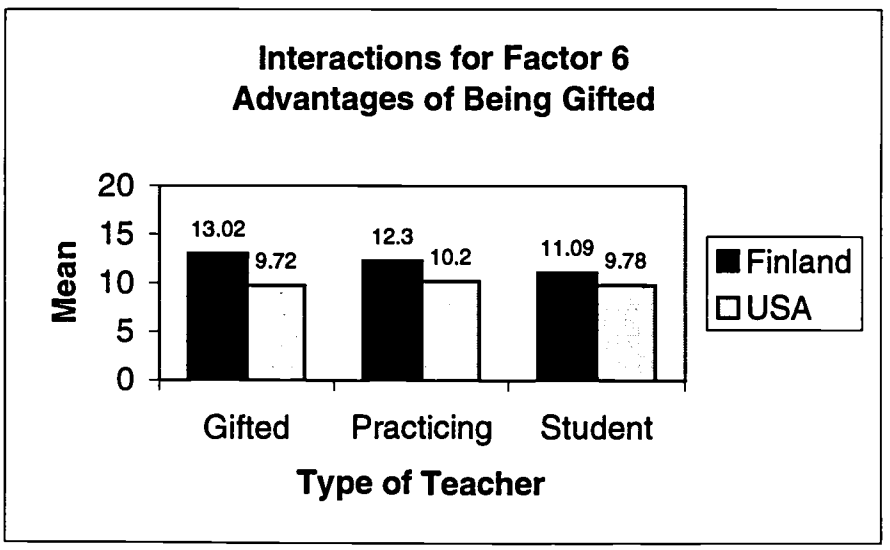


Figure 4



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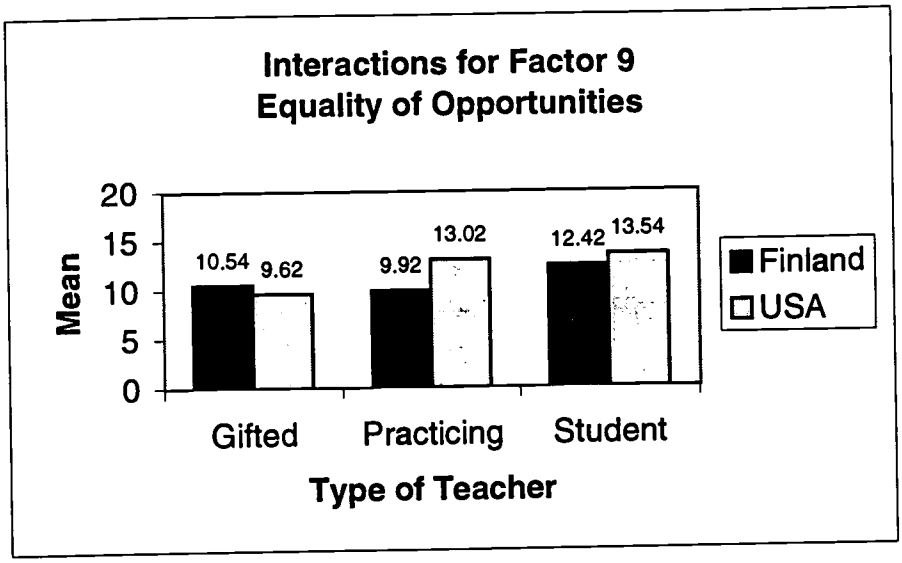

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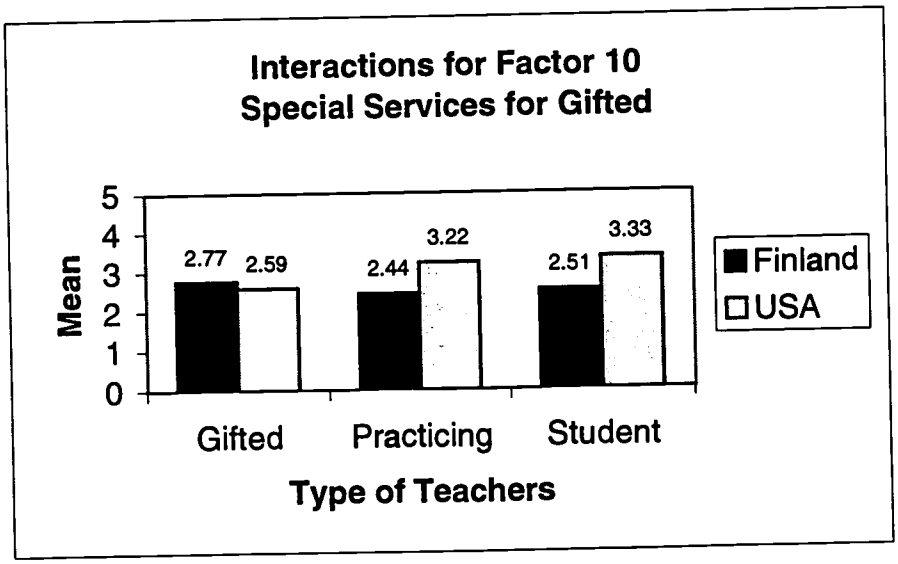


Figure 7

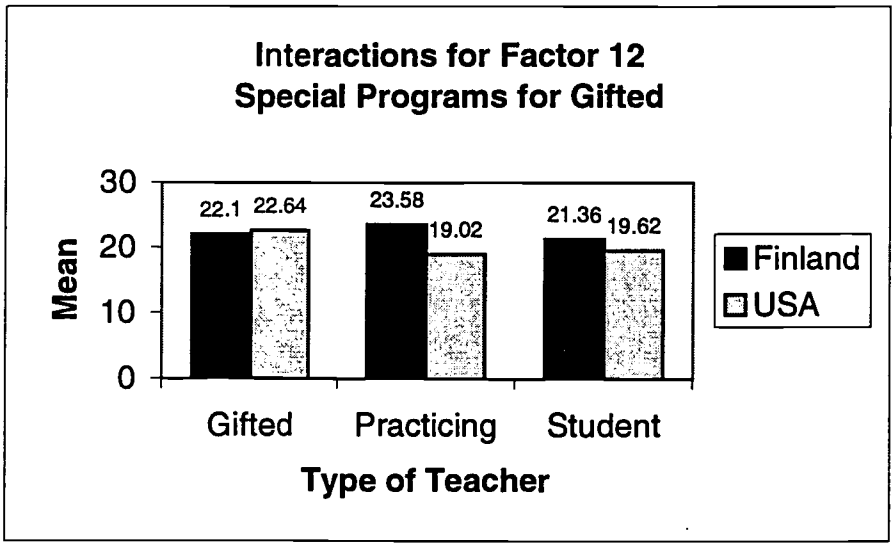


Figure 8

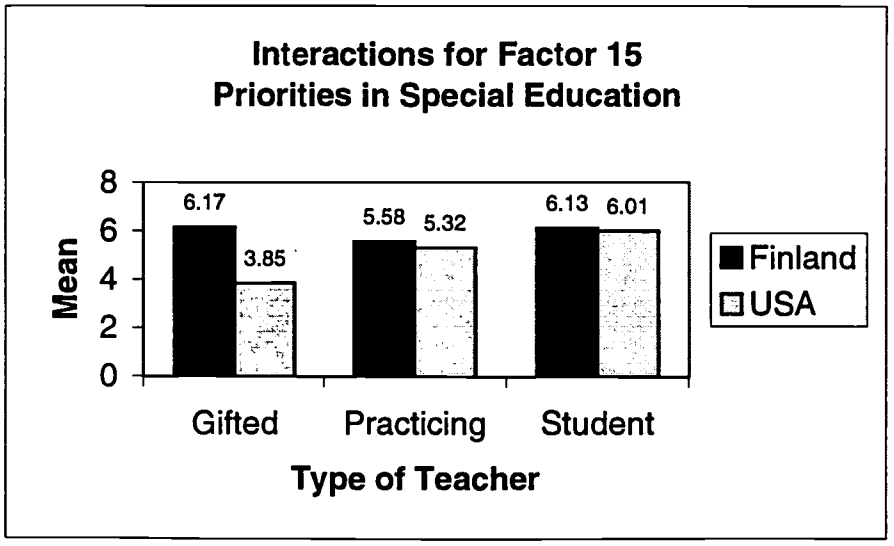


Figure 9

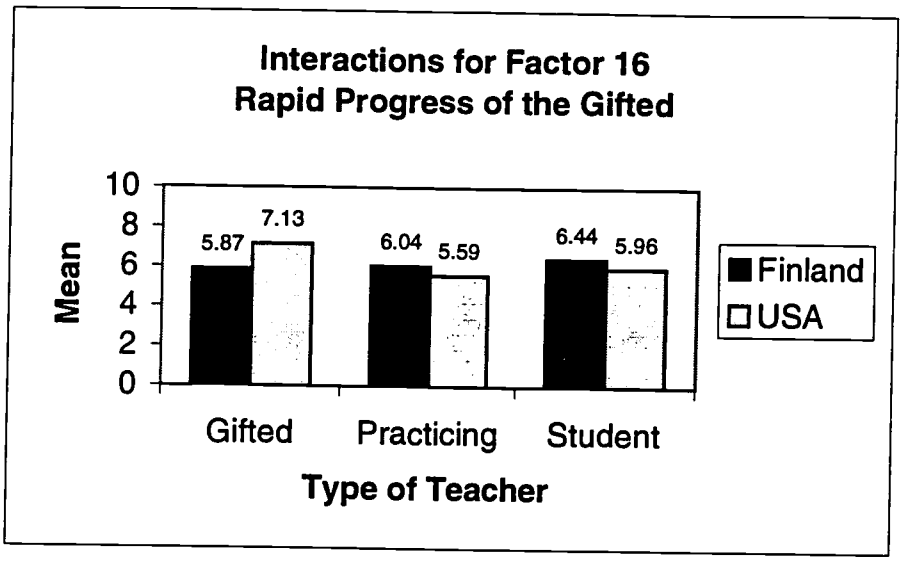


Figure 10

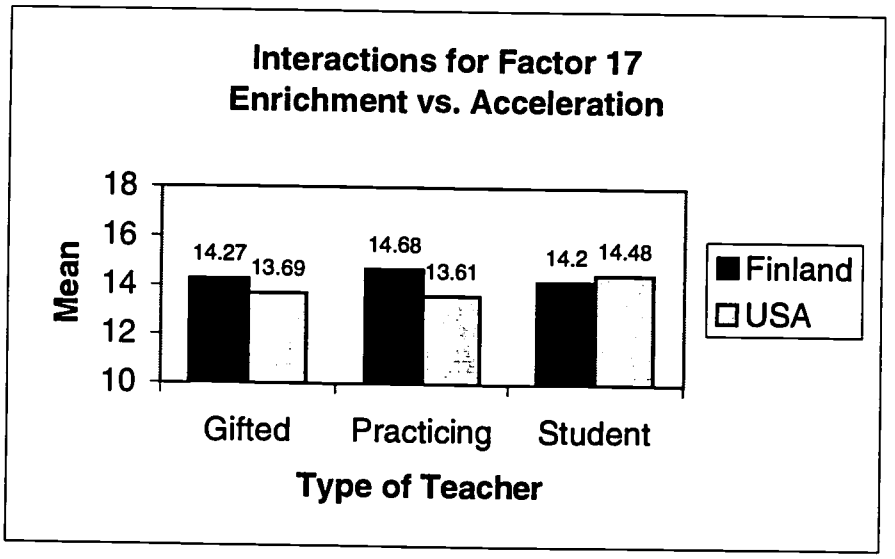


Figure 11

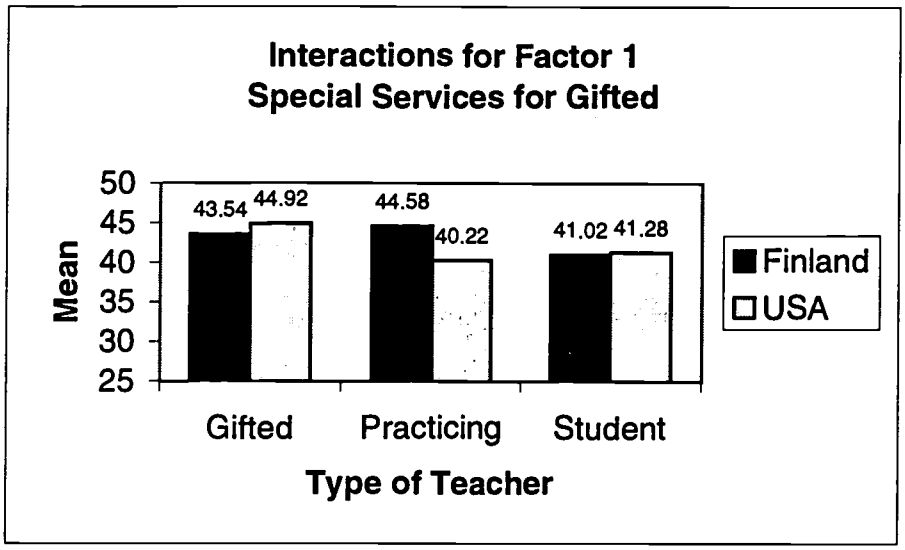


Figure 12

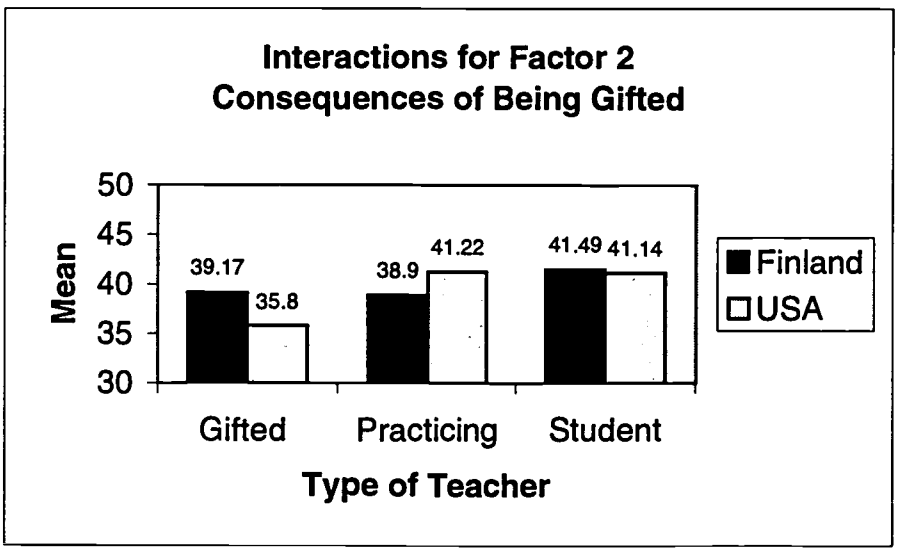
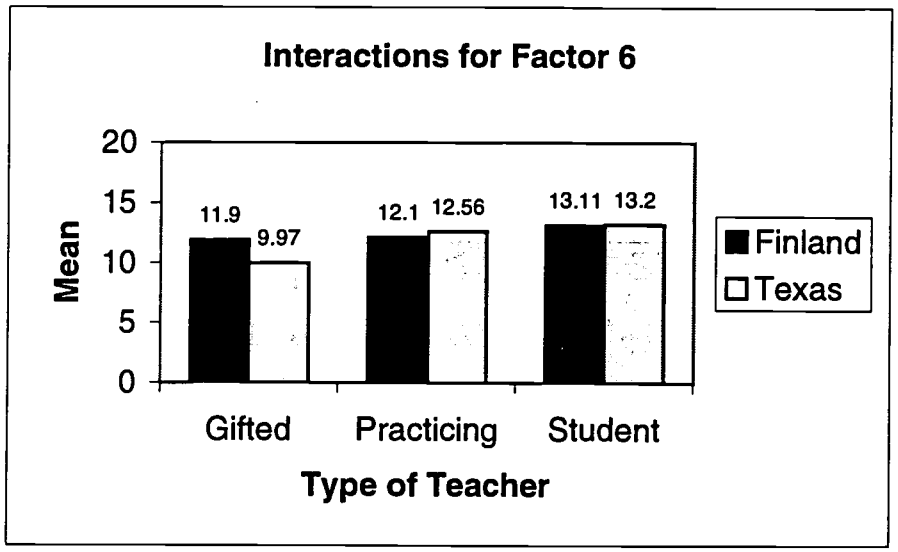


Figure 13


Interactions for Factor 6
Mean
20
15
10
5
0
11.9
9.97
12.1
12.56
13.11
13.2
Finland
Texas
Gifted
Practicing
Student
Type of Teacher

APPENDIX A

Directions: Please answer the following questions/items by circling the answers or filling in the blank, whichever is appropriate.

1. Male _____ Female _____

2. Year of birth: _____

3. Check one of the following:

   Elementary education _____

   Secondary education _____

4. Subjects I am/will be specialized in (two possibilities): _____

   _____

5. Subjects I have competence in: _____

   _____

6. Which of the following applies to you? Check all that apply.

   I am married. _____

   I have a family member who is gifted. _____

   I think I am gifted. _____

   I have taught or worked with gifted children. _____

   I am considered a gifted program teacher. _____

Attitudes Towards Giftedness

Directions: Indicate your agreement or disagreement using a five-point Likert scale **(1 = completely disagree, 2 = moderately disagree, 3 = undecided, 4 = moderately agree, 5 = completely agree).** Circle the appropriate number for each question below.

1. Talent is a rare commodity which we must encourage.	1	2	3	4	5
2. Devoting special funds to the education of gifted children constitutes a profitable investment in the future of our society.	1	2	3	4	5
3. Offering special help to the gifted helps perpetuate social inequalities.	1	2	3	4	5
4. Special services for the gifted constitute an injustice to other children.	1	2	3	4	5
5. Special programs for gifted children have the drawback of creating elitism.	1	2	3	4	5
6. Since we invest supplementary funds for children with difficulties, we should do the same for the gifted.	1	2	3	4	5
7. It is unfair to deprive gifted children of the enrichment which they need.	1	2	3	4	5
8. Children with difficulties have the most need of special educational services.	1	2	3	4	5
9. In our schools, it is not always possible for gifted children to fully develop their talents.	1	2	3	4	5
10. Our schools are already adequate in meeting the needs of the gifted.	1	2	3	4	5
11. Gifted children don't need special educational services.	1	2	3	4	5
12. The gifted are already favored in our schools.	1	2	3	4	5
13. Whatever the school program, the gifted will succeed in any case.	1	2	3	4	5
14. Because of a lack of appropriate programs for them, the gifted of today may become the dropouts and delinquents of tomorrow.	1	2	3	4	5
15. The gifted waste their time in regular classes.	1	2	3	4	5
16. If the gifted are not sufficiently motivated in school, they may become lazy.	1	2	3	4	5
17. The gifted come mostly from wealthy families.	1	2	3	4	5
18. All children are gifted.	1	2	3	4	5
19. People are born gifted, you can't become gifted.	1	2	3	4	5
20. A greater number of gifted children should be allowed to skip a grade.	1	2	3	4	5
21. Most gifted children who skip a grade have difficulties in their social adjustment to a group of older students.	1	2	3	4	5
22. Schools should allow gifted students to progress more rapidly.	1	2	3	4	5
23. Enriched school programs respond to the needs of gifted children better than skipping a grade.	1	2	3	4	5
24. An enriched school program can help gifted children to completely develop their abilities.	1	2	3	4	5

1=completely disagree, 2=moderately disagree, 3=undecided, 4=moderately agree, 5=completely agree

25. The best way to meet the needs of the gifted is to put them in special classes.	1	2	3	4	5
26. Most teachers do not have the time to give special attention to their gifted students.	1	2	3	4	5
27. By separating students into gifted and other groups, we increase the labeling of children as strong-weak, good-less good, etc.	1	2	3	4	5
28. Special programs for gifted children make them more motivated to learn	1	2	3	4	5
29. When the gifted are put in special classes, the other children feel devalued.	1	2	3	4	5
30. Often, gifted children are rejected because people are envious of them.	1	2	3	4	5
31. Gifted children might become vain or egotistical if they are given special attention.	1	2	3	4	5
32. The speed of learning in our schools is far too slow for the gifted.	1	2	3	4	5
33. I am sometimes uncomfortable before people I consider to be gifted.	1	2	3	4	5
34. Average children are the major resource of our society, so, they should be the focus of our attention.	1	2	3	4	5
35. We should give special attention to the gifted just as we give special attention to children with difficulties.	1	2	3	4	5
36. Some teachers are jealous of the talents their gifted students possess.	1	2	3	4	5
37. It isn't a compliment to be described as a "whiz kid".	1	2	3	4	5
38. The enrichment tract is a good means with which to meet certain special needs of gifted children.	1	2	3	4	5
39. The gifted need special attention in order to fully develop their talents.	1	2	3	4	5
40. It is less profitable to offer special education to children with difficulties than to gifted children.	1	2	3	4	5
41. Gifted students often disturb other students in the class.	1	2	3	4	5
42. The idea of offering special educational services to gifted children goes against the democratic principles of our society	1	2	3	4	5
43. Sooner or later, regular school programs may stifle the intellectual curiosity of certain gifted children.	1	2	3	4	5
44. We have a greater moral responsibility to give special help to children with difficulties than to gifted children.	1	2	3	4	5
45. In order to progress, a society must develop the talents of gifted individuals to a maximum.	1	2	3	4	5
46. Gifted children are often unsociable.	1	2	3	4	5
47. The gifted should spend their spare time helping those who progress less rapidly.	1	2	3	4	5
48. It is parents who have the major responsibility for helping gifted children develop their talents.	1	2	3	4	5
49. It is more damaging for a gifted child to waste time in class than to adapt to skipping a grade.	1	2	3	4	5

1=completely disagree, 2=moderately disagree, 3=undecided, 4=moderately agree, 5=completely agree

50. Equal opportunity in education does not mean having the same program for everyone, but rather programs adapted to the specific needs of each child.	1	2	3	4	5
51. Special educational services for the gifted are a mark of privilege.	1	2	3	4	5
52. Generally, teachers prefer to teach gifted children rather than those who have difficulties.	1	2	3	4	5
53. Some children are more gifted than others.	1	2	3	4	5
54. In our schools, it is possible to meet the educational needs of the gifted without investing additional resources.	1	2	3	4	5
55. A child who has been identified as gifted has more difficulty in making friends.	1	2	3	4	5
56. All children could be gifted if they benefited from a favorable environment.	1	2	3	4	5
57. When gifted children are put together in a special class most adapt badly to the fact that they are no longer at the head of the class.	1	2	3	4	5
58. Skipping a grade emphasizes scholastic knowledge too much.	1	2	3	4	5
59. Skipping a grade forces children to progress too rapidly.	1	2	3	4	5
60. There are no gifted children in our school	1	2	3	4	5

APPENDIX B

Structure Matrix

	Factor																	
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
R1	9,484E-02	-3,60E-02	-,412	-5,03E-03	,133	8,323E-03	5,259E-02	-,222	-1,64E-02	-1,12E-03	-5,59E-02	,125	-,187	,240	,187	-5,72E-02	-2,80E-02	6,288E-02
R10	-,132	-,219	,111	-,121	4,049E-02	,143	6,615E-02	4,327E-02	-,244	,233	,714	-,179	-3,60E-02	-,264	,110	-3,30E-02	3,250E-03	3,415E-02
R11	-,231	-,220	,288	-2,35E-02	5,399E-03	,156	2,238E-02	-,138	-,320	,566	,394	-,188	,307	-,183	,183	7,184E-02	-3,55E-02	,215
R12	-,222	-,294	,205	8,965E-03	-,164	,129	-5,93E-02	9,158E-02	-,465	,234	,263	-5,15E-02	9,805E-02	-,268	,134	-,106	,159	,249
R13	-,102	-8,16E-02	6,545E-02	-6,25E-02	7,209E-02	,776	-3,12E-02	-,135	-3,09E-02	1,629E-02	,200	-6,81E-02	,101	-3,12E-02	,304	,114	6,409E-02	,114
R14	,189	,331	-,124	,276	7,273E-02	-,533	-1,81E-02	5,191E-02	,246	-,326	-,287	,599	,104	,295	-,161	-5,26E-02	-9,25E-02	-7,51E-02
R15	,164	,400	-,142	,193	6,588E-02	3,138E-03	,166	-,119	,136	-9,89E-02	-,238	,486	4,676E-02	-1,71E-02	1,990E-02	-3,43E-02	-6,60E-02	9,611E-02
R16	,180	,330	-,358	,190	-5,43E-03	-5,52E-02	3,560E-02	1,318E-02	,121	-,205	-,305	,524	-3,05E-02	3,848E-02	3,852E-02	-,153	-2,81E-03	-,142
R17	-1,78E-02	,203	-5,07E-02	9,844E-03	,176	,383	-,128	-,327	2,842E-02	-6,81E-02	4,097E-02	,255	,157	5,296E-02	,274	9,897E-02	-,169	7,145E-02
R18	2,790E-02	-,212	6,776E-02	-2,90E-02	-5,11E-02	-,172	-1,53E-02	,781	-9,46E-02	-5,37E-02	-5,20E-02	-,147	2,692E-02	-9,46E-02	1,017E-02	2,111E-02	4,149E-02	8,993E-02
R19	-,146	8,105E-02	,143	-4,42E-02	8,600E-02	8,159E-02	,187	-,297	,159	-1,36E-02	2,625E-02	-8,53E-03	6,654E-02	6,173E-02	-1,51E-02	,122	8,212E-02	9,516E-02
R2	,289	,204	-,384	6,435E-02	-8,68E-03	5,083E-02	,139	-,113	,259	-,193	-,229	,164	-,340	,464	-,123	-,134	3,695E-02	-,209
R20	5,949E-03	,252	-,347	,134	,610	5,445E-02	4,435E-02	2,476E-02	,176	-,121	2,726E-02	,274	,181	-,106	,108	-2,51E-02	-,374	-6,28E-02
R21	-4,22E-02	-6,76E-02	-6,84E-02	,192	-,424	-4,32E-02	,103	-2,41E-03	-,143	-7,65E-02	-,311	-3,43E-02	9,864E-02	5,473E-02	,149	-7,48E-02	,422	,268
R22	,103	,280	-,362	8,210E-02	,380	-6,22E-02	1,219E-02	3,580E-02	,185	-,155	-8,61E-02	,240	,101	,184	5,491E-03	-,482	-2,69E-02	-,268
R23	,273	,153	-,116	-,131	-,345	2,091E-03	-,172	1,109E-02	4,628E-02	-,191	-,202	9,214E-02	-8,25E-02	,120	6,307E-02	3,344E-02	,454	-4,10E-02
R24	,207	-5,74E-02	2,402E-02	-4,63E-02	-,224	,135	,136	-3,56E-02	-3,28E-02	,130	-2,37E-02	-6,65E-02	-2,66E-02	-1,68E-02	5,308E-02	5,655E-02	,358	-3,52E-02
R25	,100	5,239E-03	-,190	-9,53E-02	-6,81E-02	-6,00E-02	,754	-6,48E-02	1,394E-02	6,646E-02	-2,67E-02	7,322E-02	-,284	5,096E-02	-,106	-,129	6,684E-02	-,134
R26	9,041E-02	,283	-,136	8,055E-02	-7,55E-04	5,279E-02	-5,66E-02	-6,16E-02	,110	-,160	-,279	,397	,186	-2,83E-02	,115	-,110	4,608E-02	1,780E-02
R27	-,182	-4,03E-02	,106	6,432E-02	-,219	,154	-,104	,168	-,222	-8,59E-02	-,132	8,275E-03	8,754E-02	-,111	,204	-,133	5,798E-02	,544
R28	,329	,394	-,315	2,689E-02	,104	4,573E-02	7,402E-02	-,301	,315	-,235	-,350	,505	-,231	8,230E-02	3,686E-02	1,913E-02	,126	-,306
R29	-,158	-3,26E-02	5,104E-02	,141	-2,89E-02	5,068E-02	-8,56E-02	4,111E-02	-,293	5,315E-02	4,139E-02	-3,05E-02	5,479E-02	-,101	,208	1,518E-02	-4,07E-02	,769
R3	-,170	-,156	,149	9,613E-02	-,115	5,414E-02	3,993E-02	9,269E-03	-,725	,155	,143	-,109	8,082E-03	-,239	,175	-6,05E-02	2,821E-02	,292
R30	3,409E-02	,203	-,227	,334	1,077E-02	-,125	-,100	1,770E-02	-,137	-2,61E-02	-,209	,232	7,841E-02	4,512E-02	-2,64E-02	-,287	-7,93E-02	,187
R31	-,153	3,920E-02	5,319E-04	,401	-,114	,347	-,131	-4,52E-02	-,239	-,147	4,601E-02	,138	,118	-,342	,269	-,252	-6,38E-02	,478
R32	,233	,979	-,134	,179	9,784E-02	1,750E-02	2,052E-03	-,231	,161	-,117	-,255	,354	5,639E-02	8,400E-02	2,568E-02	-1,87E-02	-2,10E-02	2,464E-03
R33	-5,88E-02	-,145	5,637E-04	,122	-,173	5,202E-02	,133	-1,47E-02	-,174	,283	-3,12E-02	-,153	-1,46E-03	-2,91E-03	,138	-,350	3,644E-02	,200
R34	-9,53E-02	-,107	-2,04E-02	8,804E-02	-2,05E-02	,141	,109	-4,32E-02	-,255	,202	,139	-,140	-5,70E-03	-3,22E-03	,290	5,045E-02	7,858E-03	,361
R35	,313	,153	-,410	-3,26E-02	7,019E-02	-,304	,134	,210	,264	-,116	-,158	,138	-6,65E-02	,136	-,299	-6,85E-02	,270	-,275
R36	,106	1,298E-02	-5,37E-02	,227	-,143	-,134	9,374E-02	4,618E-02	-3,50E-04	-4,98E-02	-,130	,107	5,216E-04	8,860E-02	-,244	-,462	-,117	-5,15E-02
R37	-3,16E-02	,137	9,602E-03	9,820E-02	-1,17E-02	9,831E-02	-,128	-6,91E-02	2,359E-03	-4,65E-02	-8,37E-02	,132	,423	-3,18E-03	4,474E-02	-5,92E-02	-2,39E-02	-9,82E-03
R38	,983	,163	-,136	-4,92E-02	-5,49E-02	-1,89E-02	-4,08E-02	2,887E-02	,155	-9,49E-02	-8,97E-02	8,484E-02	-9,81E-02	8,000E-02	2,949E-02	-9,53E-03	,122	-,139
R39	,368	,332	-,256	4,895E-02	5,099E-02	-8,32E-02	-5,20E-02	-3,12E-02	,299	-,291	-,370	,408	-,284	,241	-2,96E-02	-,262	-3,28E-02	-,233
R4	-,193	-,191	3,512E-02	8,454E-02	-3,71E-02	4,711E-02	-6,41E-02	,122	-,759	,156	,193	-,122	9,389E-02	-7,42E-02	,115	-7,90E-03	-5,68E-02	,217
R40	-,103	-,139	1,296E-02	9,332E-02	-8,30E-02	,105	,358	-,184	-,145	,356	,118	-,118	-4,43E-02	-1,43E-02	1,148E-02	-,169	-,204	1,590E-02
R41	,177	,205	6,845E-03	,339	3,828E-03	-,167	7,482E-02	2,680E-02	,117	-9,54E-02	-,282	,253	5,489E-03	4,127E-02	-6,78E-02	-,121	-7,44E-02	-1,88E-02
R42	-,161	-,113	,135	,153	-,115	7,722E-02	,192	-1,70E-02	-,433	,362	,129	-7,68E-02	,253	-,132	,164	-,147	-,291	,318
R43	,326	,328	-,272	,296	4,138E-02	-,116	9,553E-02	1,997E-02	6,638E-02	3,822E-02	-,437	,582	-,115	,274	-,266	-,252	-8,91E-03	-8,34E-02
R44	-1,89E-02	1,966E-02	2,876E-02	8,922E-02	-,102	,195	1,777E-02	4,214E-02	-,188	9,821E-02	,118	1,255E-02	8,815E-02	-,283	,638	9,459E-03	-,121	,195
R45	,170	,298	-,230	7,143E-02	,121	3,494E-02	7,733E-02	-,145	,233	-,185	-4,60E-02	,272	-,403	,223	-4,35E-02	-3,74E-02	-7,59E-02	-,162
R46	4,134E-02	7,885E-02	-,152	,621	-2,25E-02	-5,71E-02	-4,92E-02	8,568E-03	-9,46E-02	5,573E-02	-6,46E-02	5,902E-02	-6,41E-02	3,825E-02	1,608E-02	-,213	-2,52E-02	8,198E-02
R47	-7,88E-02	-6,45E-02	9,511E-02	8,475E-02	-8,52E-02	,104	1,554E-02	3,350E-02	-,154	,109	,151	-5,01E-02	3,280E-02	-,459	,262	6,879E-02	-2,67E-02	9,414E-02
R48	5,151E-02	7,507E-02	-9,21E-02	,140	2,316E-03	,185	-,176	-5,08E-02	-,160	-1,00E-02	3,780E-02	9,288E-02	2,838E-02	-8,54E-02	,158	-,148	-5,26E-02	,122
R49	8,270E-03	7,359E-02	-,115	8,372E-02	,237	-,152	,331	6,816E-02	,130	,155	2,849E-02	,180	-,134	-,124	-7,12E-02	-,296	-,310	-1,16E-02
R5	-,130	-2,76E-02	8,291E-02	7,090E-02	-,151	,102	-,154	,113	-,485	-,188	-7,32E-02	5,985E-02	,319	-,166	,230	-,244	4,248E-02	,482
R50	,238	,361	-6,28E-02	4,857E-02	,102	-,105	-,122	1,435E-02	,220	-,523	-,246	,359	-2,51E-02	,122	-,150	2,761E-02	,205	-,171
R51	-9,10E-02	-,286	,108	,134	-,234	8,467E-02	,254	,136	-,420	,320	,214	-,178	-,237	-,231	,188	-,280	-8,82E-02	,349
R52	4,187E-02	,240	-7,83E-02	,115	-,222	,381	-7,45E-02	-9,31E-02	-6,49E-02	-2,95E-02	-6,10E-04	9,044E-02	7,775E-02	-,140	8,922E-02	-8,06E-02	-7,28E-02	6,839E-02
R53	,182	,383	-,343	6,771E-02	4,417E-02	,249	-2,53E-02	-,372	,154	-,237	6,465E-03	,286	4,574E-02	,160	4,151E-02	-,152	5,717E-02	-5,86E-02
R54	-6,37E-02	-,299	6,829E-02	-6,68E-02	-,107	4,339E-02	9,114E-02	,231	-,116	,276	,112	-,207	,104	-,197	7,128E-02	-6,73E-02	-1,03E-02	-4,30E-02
R55	-4,89E-02	8,706E-02	5,363E-02	,683	-7,19E-02	3,375E-02	3,815E-02	-1,55E-02	-,114	9,270E-02	-6,53E-02	,108	,128	-6,87E-02	8,137E-02	-,113	-,111	,130
R56	-4,83E-02	-,147	1,987E-02	3,073E-02	-6,37E-02	-7,81E-02	-,112	,698	-,137	,114	,124	2,445E-02	-7,53E-02	-,166	-1,50E-02	-,110	-2,48E-02	,107
R57	-6,13E-02	9,969E-02	4,421E-02	,479	-4,59E-02	7,425E-02	-,113	1,038E-02	-8,58E-02	-,190	-7,08E-02	,149	,103	-,210	-7,99E-04	-3,38E-02	-4,84E-02	,108
R58	,118	-3,53E-02	5,205E-02	8,270E-02	-,820	3,626E-02	9,044E-03	6,425E-02	-2,37E-02	-2,77E-02	2,458E-03	-2,31E-02	,102	-8,03E-02	1,228E-03	-8,47E-02	,141	6,816E-02
R59	-4,82E-02	-,148	7,609E-02	4,488E-02	-,754	2,519E-02	,122	,124	-,205	,131	-7,18E-02	-,128	-2,53E-02	-,169	1,929E-02	-4,95E-02	,108	7,391E-02
R6	,295	,330	-,626	2,153E-02	-9,65E-03	-4,92E-02	,102	-5,32E-02	,285	-,335	-,301	,235	-,157	,223	-,185	-,110	4,163E-02	-,143
R60	-8,16E-02	-,137	,129	-7,64E-03	-8,32E-03	-1,30E-02	,116	8,092E-02	-,113	,566	,169	-,111	2,828E-03	-,126	5,221E-02	-7,18E-03	-2,85E-02	9,570E-03
R7	,358	,279	-,355	-4,20E-02	5,982E-02	-7,68E-02	-4,03E-04	3,219E-02	,350	-,536	-,269	,305	-,141	,124	-,161	2,903E-02	8,384E-02	-,137
R8	-7,15E-03	-5,06E-02	-2,45E-03	-2,67E-02	5,642E-02	,222	-,166	-4,57E-02	-,125	4,148E-02	5,887E-02	2,717E-02	4,848E-02	-9,73E-02	,559	-5,20E-03	,168	,164
R9	,160	,274	-,145	,103	7,076E-02	-,129	3,285E-02	-3,24E-02	,143	-,191	-,653	,317	7,683E-02	7,887E-02	-,120	-,169	,167	-2,60E-02

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Corporate Source: Paper presented at the Annual Meeting of American Educational Research Association, San Diego, April 1998

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