Cross-Cultural Investigation of Interest-Based Training and Social Interpersonal Problem Solving in Students with Mental Retardation

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Abstract: This study examined the effects of two training methods (interest-based method vs. traditional method) in improving independent problem solving performance of students with mild mental retardation representing three cultural backgrounds (African-American, European-American and Nigerian) as measured by Edeh Scale of Interpersonal Problem Situations. Students were randomly assigned to one of the three treatment groups: Interest-based method vs. Traditional method vs. Control group. Significant treatment group main effects were found in problem solving performance. Results indicated that the participants in the interest-based method significantly generated higher posttest scores in independent problem solving responses than both the participants in traditional method and the control groups. Participants in the traditional method significantly generated higher posttest scores in independent problem solving responses than participants in the control group. Three months follow-up showed that higher percentage of students in interest-based method maintained the independent problem solving skills than both the participants in traditional method and the control groups. Curriculum implications were addressed.

There is considerable research suggesting that the poor community adjustment of many adults with mental retardation is due as much to deficits in social competence as to limited intellectual abilities (D’Zurilla & Goldfried, 1971; D’Zurilla & Nezu, 1980; Edeh & Hickson, 2002; Gumpel, 1994; McFall, 1982; Zigler, 1969). Gresham, Sugai, and Horner (2001) stated that various service delivery and instructional approaches are utilized as a remediation for the deficits in social competence functioning. However, Edeh and Hickson suggested that culture could be an important barrier in designing effective curricula for students from different cultural backgrounds since “various cultures emphasize different approaches to problem solving” (p. 6). Social interpersonal problem solving is the ability to generate a wide variety of potential strategies, the ability to evaluate probable consequences of each strategy, and the ability to plan a logical sequence for implementing useful strategies (Smith, 1986). D’Zurilla and Goldfried implied that social interpersonal problem solving encompasses activities that include the generation of alternative responses as well as selecting the “best” alternative that would change the original state of a situation into a desired state. In the real-life setting, knowing the “best” alternative is especially important, since most of life’s problems have more than one “correct” solution; and they may be handled adequately in a number of different ways, some of which may be more effective or appropriate than others (Gagne, 1959; Maier, 1960).

Culture

Though culture plays an important role in problem solving, relatively little attention has been paid to the role of culture in problem solving among students with mental retardation. Culture, as used in the present study and broadly accepted by most anthropologists according to Goodenough (1987) in Hunt and Marshall (1999) is defined as “ways of perceiving, believing, evaluating, and behaving.”
This definition is important because it illustrates the pervasive influence of culture on people’s values, attitudes, beliefs, behaviors, and approaches to problem solving (Shade & Edwards, 1987).

According to the Bilingual Education Office of the California Department of Education (1993), American youths are encouraged, in educational institutions, to develop an independent viewpoint and to express it. However, Anderson (1985) contended that European American style is projected by most institutions as the one that is most valued, therefore putting the minority youths, such as African-American at a disadvantage. Cultural and cognitive conflict often occurs when a group is asked to perform in a manner and setting which in some ways is foreign to their style. In many critical areas of human functioning and behavior, the world view of the dominant group is indifferent to or conflicts with the world view of other groups in that culture (Baldwin, 1985; Day, 1985; Green span, 1983; Jenkins, 1982).

Nigeria is a predominantly traditional non-western society in which the African mode of thought (often referred to as anthropomorphic) is dominant (Jegede & Okebukola, 1992). The few studies of Nigerian youths have focused on classroom performance, especially in science subjects (Adigwe, 1991, 1992; Jegede & Okebukola, 1992; Nwana, 1987). However, in their study of interpersonal problem solving style, Edeh and Hickson (2002) suggested that Nigerian students used different problem solving style compared to African-American and European-American students. The authors attributed this style differences to the Nigerian social and cultural make-up, which places much value on the extended family and community as part of the immediate family (Edeh & Hickson).

European Americans, on the other hand, are from Western cultures while African American are from non-Western cultures and both are presently living in the United States of America (Anderson, 1985). In American society, the educational system is recognized as a primary vehicle to success and achievement. According to Cohen (1969), this system is built upon the European world view, which was alluded to earlier and tends to benefit European Americans whose cultural style is more attuned to it. The performance differences between African American and European American students, according to Edeh and Hickson (2002) could not be attributed to style differences, but rather to other variables. According to the authors, “the significant performance differences found in [their] study appeared to be an adaptation rather than a deficit issue. This adaptation issue,” they continued, “may be related to the type of training received in the educational system rather than a lack of adaptation by individual students” (Edeh & Hickson; p. 13).

Culture and Problem Solving

External factors, such as culture, play an important role in children’s cognition. Geary (1995) presents two general classes of cognitive ability that he labels as “biologically primary cognitive abilities and biologically secondary cognitive abilities” (p. 25). Biologically primary cognitive abilities, according to Geary, seem to have evolved mostly by means of natural selection. Biologically primary cognitive abilities are likely to be supported by neurobiological systems that are specialized for the processing of domain-specific information. These cognitive abilities also appear to be associated with information-processing systems that include basic implicit knowledge or skeletal principles of domain (Gelman, 1990; 1993). These principles, according to Gelman, appear to orient the child to relevant features of the environment and guide the processing of these features. For example, the function of play across mammalian species and across human cultures appears to be the acquisition of adult-like abilities (Eibl-Eibesfeldt, 1989; Panksepp, Siviy, & Normansell, 1984; Rubin, Fein, & Vandenberg, 1983; Stevens, 1977). Although all forms of play are not the same across cultures, Eibl-Eibesfeldt (1989) contends that certain types of play activities are universal and serve a similar function most of the time.

Biologically secondary cognitive abilities, on the other hand, reflect “the cooptation of primary abilities for purposes other than the original evolution-based function and seem to develop only in specific cultural contexts” (Geary, 1995, p. 27). These abilities do not appear to have the same biological advantages.
as biologically primary cognitive abilities. Acquisition of biologically secondary cognitive abilities, is generally slow, effortful, and occurs only with sustained formal and informal instruction (Gelman, 1993). For example, development of expertise in musical and athletic domains requires high levels of sustained, deliberate practice. There are some cognitive abilities that emerge in some cultures, but not in others, suggesting that certain cognitive abilities do not have the advantage of skeletal principles, but may be artifacts of cultural emphases (Geary). TenHouten (1971) has suggested that within a social order, cognitive styles can vary by ethnicity and social class and that social privilege may be associated with certain cognitive skills. The distinction between these classes of ability has important implications for understanding children’s cognitive development and problem solving abilities (Geary).

Geary (1995) suggested that cultural factors play an important role in influencing children’s perception and cognition. In order to understand children’s cognitive and academic growth, one needs to consider both the biological and cultural realms as having equal influence on children’s cognition. Geary stated, Cultural practices can instill in children a mix of cognitive abilities that are in some respects unrelated to evolutionary pressures because the highly specialized neurocognitive systems that support biologically primary abilities can be used for purposes other than the original evolution-based function (p. 28).

Geary seems to suggest the possibility that cultural practices might instill in some children a particular mix of problem solving strategies. Therefore, a full understanding of children’s cognitive and problem-solving abilities should include both biological as well as cultural influences.

*Mental Retardation and Problem Solving*

Many studies (Kavale & Forness, 1999; Mathur, Kavale, Quinn, Forness, & Rutherford, 1998) indicated that “in spite of its popularity, traditional social skills training has not been shown to be a particularly strong inter-

vention for students with high-incidence disabilities” such as learning disabilities, mental retardation, and emotional disturbance (Gresham et al., 2001, p.332). Gresham and colleagues continued by pointing out that “social skills training has not produced particularly large, socially important, long-term, or generalizable changes in social competence for students with high-incidence disabilities” (p. 332). The social skills training used by some researchers, teaches the content of effective responses to specific problem situations rather than the process. Many findings seem to support the contention that people with mental retardation can be taught to employ social problem solving processes (Foss, Auty, & Irvin, 1989; Hazel, Schumaker, Sherman, & Sheldon, 1982; Ostly, Butler, & Glenberg, 1984). Therefore, the goal in developing problem-solving skills training among individuals with mental retardation should include using their interests so that when problems arise the students have the tools needed to resolve them. This training method should allow for students’ input and incorporation and infusion of diverse students’ interests in the training.

Three groups (African-American, Euro-American, and Nigerian) were chosen for this study because it is hypothesized that African-American students have learning styles that are Afro-centric, which may be similar to Nigerian students. However, both European-American and Nigerian students are taught in schools in which there is a congruence between culture of the family and culture of the school. Therefore, it is appropriate to investigate whether interest-based method is better at training multi-cultural students with mild mental retardation to problem solve compared to the traditional method.

The theoretical concept of an interest-based approach to teaching was influenced by Dewey’s theoretical concepts of recognizing children’s interests in the educational environment (Dewey, 1938). Dewey stated that when children’s educational imports are recognized, educators can direct the experience of the young without engaging in imposition. Dewey contended that incorporating students’ interests into the teaching process provides educators with a powerful tool for reaching each child educationally (Dewey). The inter-
The interest-based method is a training approach that allows for student input. It is based upon the premise that when students can relate to what is going on in the classroom, they are more likely to be motivated to participate, to learn, and to remember the information. The interest-based method, used as one of the training methods in this study, was designed not only to teach the content of effective responses to specific problem situations, but also to help the students use the skills learned in the training throughout other environments.

The Framework for the Present Study

We know that the acquisition of biologically secondary cognitive abilities, is generally slow, effortful, and occurs only with sustained formal and informal instruction (Geary, 1995; Gelman, 1993). In addition, we know that it is not practical or efficient to design curricula around the many cultures that exist in each classroom today with our current knowledge. Therefore, using children actual interests in training will maximize learning and the retention of the information learned. In doing so, educators can direct the experience of the children without imposing any particular cultural biases on their students. When children’s interests are used in training, it will allow for their input therefore minimizing both cultural and gender biases that may exist in the classrooms.

Social Skills and Interest-Based Training

The intent of using interest-based method in training is to weave targeted positive social skills goals with the activities of the students’ interests in such a way as to use those interests as settings in which appropriate social skills will be practiced in positive, engaging, and reinforcing ways. The interest activities should be considered a very appropriate avenue for holding a student’s attention, engaging them, and dealing with the student’s identified social skill deficits by cultivating socially acceptable behaviors. Presented alone, lessons in social skills goals may appear unrealistic and isolated. The activities may be perceived as non-functional, irrelevant, or punitive to the student. When woven through the interest activities that the student has chosen, these same goals become stronger and more relevant; they will be taught as needed skills to help solve activity problems.

This study was designed to examine effects of two training methods (interest-based and traditional) in improving independent problem solving performance of African American, European American, and Nigerian students with mild mental retardation to solve social-interpersonal problem situations they face daily. Students’ interests are used to create interest-based materials that are used to teach the process of social interpersonal problem solving rather than using the content of solutions to specific problems.

Method

Participants

Prior to the visit to schools, signed consents were received from schools and parents/guardians. The 48 African American and European American participants were randomly selected from the pool of the 61 whose parents/guardians willingly and voluntarily gave consents for their children to participate. The 24 Nigerian participants were randomly selected from the pool of the 27 whose parents/guardians willingly and voluntarily gave consents for their children to participate. Participants for this study were balanced across the three cultures: 24 African Americans, 24 non-Hispanic European Americans, and 24 Nigerians. An equal number of males and females classified as having mild mental retardation (IQ 55-70) were selected for each cultural sample. All participants met the screening criteria, which included an IQ range from 55-70 and attending special education schools or classes for at least 7 years and at most 10 years. They ranged in age from 10 to 14. Participants were matched in age and time in school across the cultures. All participants were required to meet the same criteria used for Edeh and Hickson’s study (2002). These criteria are:

1. Participants with mild mental retardation were selected if their current IQ scores (based on tests administered within three years) were within the range.
of 55-70 and they were at least two years below grade level in academic subjects.

2. All participants obtained at least 75% correct on the cognitive comprehension screening test. A comprehension measure was included in the screening criteria to reduce any differences that may have existed due to variations in the methods of IQ assessment across the cultures.

3. African-American participants were eligible only if they were born in the United States to families living in the United States of America and were classified as African-American according to the Board of Education ethnicity coding. Euro-American participants were eligible only if they were non-Hispanic and born in United States to families living in the United States of America and were classified as Euro-American according to the Board of Education ethnicity coding. Nigerian participants were eligible only if they were born and living in Nigeria with their families living in Nigeria for at least four generations (p. 9).

Twenty-nine of 48 U.S. participants were from urban public schools while the remaining 19 participants were from private schools. Eight of 24 Nigerian participants were from urban public schools while the remaining 16 participants were from private schools. All the participants were identified and registered in special education programs.

Means and standard deviations (SDs) of participants’ age, years in school, and IQ scores by treatment groups are presented in Table 1. One-way analyses of variance (ANOVAs) for age, years in school, and IQ scores, failed to reveal any significant mean differences among the treatment groups.

### Design

A 3 (treatment groups) × 2 (gender) analysis of covariance (ANCOVA) on self-generated independent problem solving performance was conducted. Treatment groups (interest-based training, traditional training, and control group) and gender (male vs. female) were the between-subject factors. Analysis of covariance was used to compare the effects of training on participants’ independent problem solving performance. The ANCOVA included the posttest scores of independent problem solving performance as the dependent variables and the pretest scores of independent problem solving performance as covariates.

An additional 3 (treatment groups) × 2 (gender) ANCOVA on self-generated of independent problem solving performance was conducted using the three months follow up responses. This analysis of covariance included the three months follow up scores of independent problem solving performance as the dependent variables and the pretest scores of independent problem solving performance as covariates.

### Materials

The materials for this study included the IQ scores, Edeh Scale of Interpersonal Problem

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**TABLE 1**

Means and Standard Deviations (SDs) of Participants’ IQ scores, Age, and Years in School by Treatment Groups and Overall

<table>
<thead>
<tr>
<th>Treatment Group</th>
<th>Interest-Based Method</th>
<th>Traditional Method</th>
<th>Control</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>M</td>
<td>SD</td>
<td>M</td>
<td>SD</td>
</tr>
<tr>
<td>IQ (55–70)</td>
<td>68.54</td>
<td>4.1</td>
<td>69.08</td>
<td>3.9</td>
</tr>
<tr>
<td>Age</td>
<td>12.08</td>
<td>1.50</td>
<td>11.71</td>
<td>1.40</td>
</tr>
<tr>
<td>Years in school</td>
<td>8.89</td>
<td>1.03</td>
<td>9.22</td>
<td>2.70</td>
</tr>
</tbody>
</table>

**Note.** There were 24 participants in each treatment group, 12 males and 12 females. Maximum age = 14 years. Maximum = 11 years in school.
Situations (Sample presented in Table 2). Only Situations with Self-Generated Responses was used in this study and training materials. Interest-based materials were created using the students’ identified interests, during the first meeting, after the pretest was completed. Every student was asked (individually) with “what are two of your favorite activities either in school or outside of school?” When one activity answer was provided, a follow-up question, “what is the second one?” was asked to make sure each student identified two activities s/he did for fun. Participants came up with “what they liked to do for fun” after which their ideas were grouped into the following categories. Sports included: soccer, golf, football, and basketball. Music included: playing the piano and listening to different types of music such as rap, jazz, and rock and roll. Playing in the neighborhood included: playing on swings, running, throwing a ball or frisbee, and going down a slide. Dance included: ballet and jazz. From these categories, interest-based materials were created for the participants in the interest-based training group.

Edeh and Hickson (2002) reported the overall Cronbach alpha reliability coefficients for Edeh Scale of Interpersonal Problem Situations self-generated independent responses as: Independent individualistic responses = 76.6% and Independent cooperative/negotiation responses = 80.3% respectively. Inter-

| TABLE 2 |
| Sample of Edeh Scale of Interpersonal Problem Situations (ESIPS) |

Instructions:
I will tell you about a problem that a person needs to solve. Then, I will ask you to tell me how you can solve the problem. After that, I will give you 4 different ways to solve the same problem. Then, I will ask you to choose one way to solve the problem.

1. You are talking to your friend. Somebody interrupts you without saying, “excuse me.” You do not like anybody to interrupt you. State how you can solve this problem.
   - Let me give you 4 ways to solve the same problem.
   1. Tell the person, “Excuse me, let me finish talking and I will listen to you.”
   2. Ignore the person.
   3. Tell the person, “Excuse me, I am talking.”
   4. Ask your friend/mother what to do. Which way would you choose in solving the problem?

2. You are playing a basketball game. Your friend came in the middle of the game. Your friend wants to join in the game. State how you can solve this problem.
   - Let me give you 4 other ways to solve the same problem.
   1. Tell your friend, “No, we are in the middle of a game.”
   2. Ask the players, “May my friend join the game at the end of this one?” Then tell the friend that s/he will join after the present game.
   3. Ignore your friend.
   4. Ask the players, “What should I do?” Which way would you choose in solving the problem?

3. Your friends make fun of another child. Your friends want you to join them. You do not like to make fun of anybody. State how you can solve this problem.
   - Let me give you 4 other ways to solve the same problem.
   1. Ask your teacher (mother or brother/sister) what to do.
   2. Ignore your friends.
   3. Tell your friends, “No, let us not make fun of him/her.”
   4. Tell your friends, “No, I do not like to make fun of anybody.” Which way would you choose in solving the problem?

Reproduced from Edeh and Hickson (2002)
scorer reliability (by two independently scorers) was obtained by dividing the number of agreements by the total of agreements and disagreements multiplied by 100. The percents of interscorer reliability for self-generated responses were: African-American = 93.9%, Euro-American = 96.4%, and Nigerian = 89.8% (p. 10).

Procedure

Training of the Examiner

Two examiners who did not participate in the training sessions were used by the researcher to collect posttest and three months follow-up data for the three treatment groups in order to avoid any bias during data collection. The researcher and those who helped with posttest and three months follow-up data collection are referred to as the “examiners.” Prior to participation in the data collection, the examiners participated in a two-hour training given by the researcher to familiarize them with Edeh Scale of Interpersonal Problem Situations and also to make sure they understand what was expected of them. Examiners were instructed in the methods by which the problem solving interview was to be conducted. Examiners participated in mock interviews as part of their training.

Data Collection

Before the training began, all participants were pretested, the posttest was done one week after all training sessions were completed. Follow up data were collected three months after the posttest was completed to examine the maintenance of the skills learned during the training. The pretest, posttest, and three months follow up data collection followed the same scripted protocol.

During the pretest, posttest, and three months follow up, all participants were interviewed individually in a quiet testing room provided by the individual school and within the school building to avoid distractions. Before the interview and after a brief greeting, each participant was told that the purpose of the interview was to determine how the student would solve a given problem. Interviewers followed a scripted protocol provided in Edeh and Hickson’s study:

The interviewer slowly read an interpersonal problem situation from Edeh Scale of Interpersonal Problem Situations and asked the participant to, “State how you can solve this problem.” The interviewer wrote each participant’s responses in the space provided for each problem situation. Although there were no probes during the testing, the interviewer always asked, “Are you finished?” before proceeding to the next step of the interview. When a session was finished, the interviewer thanked the participant and said, “This session is finished.” This format was followed for pretest, posttest, and follow up sessions (Edeh & Hickson, 2002, pp. 10–11).

Training Sessions

The two experimental groups (interest-based and traditional methods) each received a total of 10 training sessions. Each session was conducted in a small group of 4 or 5 participants. The pretest, posttest, and three months follow up sessions were not included as training sessions. Training was done by the researcher.

Interest-based materials were used in the training of participants in the interest-based group, but not for participants in the traditional group. Participants in the control group did not participate in the training at all. They only participated in the pretest, posttest, and three months follow up data collection when participants in the experimental groups were assessed.

Participants in both experimental groups (interest-based and traditional) were taught the steps of problem solving in the following order:

What is the original state of a situation (or the problem)?
What is the goal (or what you want)?
What are the obstacles (or goal blockers)?
Generate alternative solutions (or how many ways can you solve this problem)?
Select the best alternative to solve this problem (or which way would you use to solve this problem?).
Evaluation of the result (Did the alternative you selected help you reach your goal?).
Training of both groups was identical; both groups were taught using the same content in the same sequential order. Role-playing and modeling were utilized with both groups when appropriate to help them understand the steps of problem solving in a given situation. Role-playing also created an opportunity for students to imitate concepts of the role. There was, however, one major difference between the two groups. Though both training groups were encouraged to actively participate in interactive training, the interest-based group’s active participation included more physical activities since the participants were using their interests in the role-playing. Conversely, the traditional group’s active participation was more verbal and the participants’ physical movement was limited.

The first training session was done with the interest-based group to insure that the same format was followed with the traditional group.

Results
Means and standard deviations (SDs) of participants’ pretest, posttest, and three months follow-up scores by treatment groups, ethnicity and gender are presented in Tables 3 and 4. A 3 × 2 ANOVA for pretest scores fail to reveal any significant differences among the treatment groups and gender within the treatment.

Table 3

<table>
<thead>
<tr>
<th>Treatment</th>
<th>Pretest Male</th>
<th>Pretest Female</th>
<th>Posttest Male</th>
<th>Posttest Female</th>
<th>Follow-up Male</th>
<th>Follow-up Female</th>
</tr>
</thead>
<tbody>
<tr>
<td>Interest-Based</td>
<td>3.25 1.42</td>
<td>2.41 1.31</td>
<td>7.16 1.64</td>
<td>6.26 1.80</td>
<td>5.75 1.71</td>
<td>5.50 1.28</td>
</tr>
<tr>
<td>Traditional</td>
<td>3.09 2.02</td>
<td>2.84 1.99</td>
<td>4.55 2.06</td>
<td>4.84 2.07</td>
<td>3.27 1.67</td>
<td>4.46 2.36</td>
</tr>
<tr>
<td>Control</td>
<td>3.00 1.58</td>
<td>2.45 1.12</td>
<td>2.76 1.42</td>
<td>2.81 1.07</td>
<td>2.92 1.03</td>
<td>2.54 0.93</td>
</tr>
</tbody>
</table>

Note. There were 24 participants in each treatment group, 12 males and 12 females.

Maximum score = 10. Means for all males (pre) was 3.11 (SD = 1.6) and females, 2.58 (1.5). 11 years in school. Means for all males (post) was 4.77 (SD = 2.4) and females, 5.00 (2.4). Means for all males (follow-up) was 3.97 (SD = 1.9) and females, 4.30 (2.0).
analysis of covariance included the three months follow-up scores of self-generated independent problem solving responses as the dependent variables and the pretest scores of self-generated independent problem solving responses as covariates.

**Independent Problem Solving Performance**

The 3 (treatment groups) × 2 (gender) analysis of covariance (ANCOVA) on posttest scores yielded a significant treatment group main effects for independent problem solving responses $F(2, 65) = 62.353, p < .000$. A separate 3 (treatment groups) × 2 (gender) ANCOVA on three months follow-up scores revealed a significant treatment group maintenance of independent problem solving responses $F(2, 65) = 32.382, p < .000$.

Helmert contrast coefficients were used to further analyze the significant method differences for the three training groups. Overall, the participants in the interest-based group generated more independent problem solving responses $F(2, 65) = 31.188, p < .000$ on posttest and $F(2, 65) = 17.895, p < .000$ on three months follow-up than the participants in the traditional and control groups. Comparisons among the estimated marginal means indicated that the participants in the traditional group differed significantly for self-generated independent problem solving responses in both posttest and three months follow-up than the participants in the control group.

### TABLE 4
Means and Standard Deviations (SDs) of Self-generated Independent Responses of Participants’ Pretest, Posttest, and Follow-up Scores by Group and Gender

<table>
<thead>
<tr>
<th>Group</th>
<th>Pretest</th>
<th>Posttest</th>
<th>Follow-up</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Male</td>
<td>Female</td>
<td>Male</td>
</tr>
<tr>
<td>African American</td>
<td>2.83</td>
<td>1.58</td>
<td>2.08</td>
</tr>
<tr>
<td>European American</td>
<td>2.66</td>
<td>1.37</td>
<td>2.50</td>
</tr>
<tr>
<td>Nigerian</td>
<td>3.83</td>
<td>1.80</td>
<td>3.16</td>
</tr>
</tbody>
</table>

**Note.** There were 24 participants in each culture group, 12 males and 12 females. Maximum score = 10.

### TABLE 5
Summary of Pearson Correlations between Participants’ pretest and posttest of Independent Problem Solving Scores within each Treatment Group and Overall

<table>
<thead>
<tr>
<th>Treatment</th>
<th>Pretest Independent Scores</th>
<th>Posttest Independent Scores</th>
<th>Three Months Follow-up</th>
</tr>
</thead>
<tbody>
<tr>
<td>Interest-Based Method (n = 24)</td>
<td>Pretest</td>
<td>.563**</td>
<td>.774**</td>
</tr>
<tr>
<td>Traditional Method (n = 24)</td>
<td>Pretest</td>
<td>.699**</td>
<td>.613**</td>
</tr>
<tr>
<td>Control Group (n = 24)</td>
<td>Pretest</td>
<td>.237</td>
<td>.355</td>
</tr>
<tr>
<td>Overall (N = 72)</td>
<td>Pretest</td>
<td>.439**</td>
<td>.452**</td>
</tr>
</tbody>
</table>

** p < .01
There were no significant differences between males and females and no significant interactions between gender and training conditions on their independent problem solving performance.

Discussion

The main findings of the study are discussed in terms of training effects, three months follow-up gains and curriculum implications.

Training Effects

Performance differences were evident in participants’ self-generated independent problem solving responses after participating in the training. Results of this study indicated that students who participated in the interest-based instruction, which was based on students identified interests, generated significantly higher posttest responses than those who participated in either the traditional-based instruction or the control group. Students who participated in the traditional-based instruction generated more independent responses than those in the control group. These findings support Dewey’s theoretical concepts of when educators recognize students’ interests in educational environment and incorporate those interests in teaching, the students’ performance would improve (1938). Performance of the participants in the interest-based group is in alignment with Scribner and Cole’s (1981) suggestion that the availability of appropriate tools may structure how an individual tends to remember information. Scribner and Cole also stated that appropriate tools may structure how someone handles cognitive opportunities when they arise. Therefore, students from different cultural backgrounds with mental retardation may need to be taught using materials congruent with their own interests to improve their problem solving performance.

Three Months Follow-up Gains

Performance differences were evident for three months follow-up responses among the treatment groups. The participants in the interest-based group produced higher independent problem solving responses during the three months follow-up than those in either traditional or control groups. The maintenance of treatment gains in the present study is very important because some social skills training in the past seemed to lack this maintenance component (Gresham, et. al., 2001). Interest-based method uses participants’ actual interests in training, it utilizes strategies for maintenance which would be more likely to generalize to real-life behavior than will social-skills training, which teaches the content of effective responses to specific problem situations.

It is important to note that the independent problem solving responses of the participants in interest-based during three months follow-up is higher than the responses of participants in traditional group during posttest (see Figure 1). In other words, three months after the training, which included some treatment gain loss, the participants in interest-based group scored higher than those in traditional group during posttest when there was no treatment gain loss.

Cultural and Gender Differences

Though there were no significant cultural differences in independent problem solving performance after the training, there were significant differences during the pretest responses (see Figure 2). Similar to the earlier study without training, Edeh and Hickson (2002) found significant cultural differences. In that study, Nigerian students performed better on independent problem solving than both African American and European American students. However, after the training in the current study, the cultural advantages and disadvantages were minimized.

Similar trends exist with performance differences between males and females. Though there were no significant differences between males and females after the training in the current study, there were significant differences between males and females in the pretest scores before the training (see Figure 3). It is therefore appropriate to suggest that some of the performance deficits of the female participants during the pretest of this study (and in the earlier study) may reflect the self fulfilling prophecy the society has where females are
Figure 1. Level of participants' performance by treatment groups.

Figure 2. Level of participants' performance by cultural groups.
expected to be less independent than males (TenHouten, 1971). However, when trained with relevant materials, the significant differences between males and females seem to diminish.

**Curriculum Implications**

The literature review for this study shows that the professionals agree that there is a great need for developing independent problem solving competency among individuals with mental retardation in order to have them effectively engage in social interpersonal problems they face daily. It is also evident from the literature that while social skill training is popular, the benefit of such training has not had a significant effect on the problem solving competency among this population. Knowing the importance of the social skills to individuals with mental retardation, the professionals need to review the current and past ineffective training methods and approaches for future training.

Results of the current study suggest that the professionals in the field need to think outside of the usual box and include the interests of individuals with mental retardation in the training process. As Dewey (1938) pointed out, “the traditional curriculum undoubtedly entailed rigid regimentation and a discipline that ignored the capacities and interests of child nature” (p. 10). An interest-based method is a training that allows for students’ input. This process allows for incorporation and infusion of diverse interests into the curriculum and the training materials.

Another important curriculum implication is the potential of interest-based method to reduce any cultural biases in the classroom and allow for greater equality of participation on the part of the students. This reduction comes about because students are grouped by interests and students’ interests tend to be cross-cultural. If, for instance, European American and African American students differ in cultural backgrounds, they can meet on their common ground: love of soccer, and thus lessen what many perceived as the Eurocentric teaching styles in the classrooms. In a multicultural context, with our current understanding, it is not practical to design curricula that cater to the different cultural backgrounds of all students that exist in each class-
room. However, an interest-based method in the classroom would allow for the incorporation and infusion of diverse cultures into the curriculum as well as other interest differences based on gender or social class.

The main purpose of education is to train and prepare young individuals for the future by providing them with needed skills and information to be successful in life. While some of the performance deficits in the social interpersonal problem solving among individuals with mental retardation can be explained by cognitive limitations, the major deficits come from the methods and materials used in the training process.

People find common ground when they have the same or similar interests. Therefore, the interest-based method would not only improve the performance of the population perceived to be disadvantaged, but it may also minimize any biases that may exist in the type of current training received by these individuals in the educational system.

References


