Journal of Policy and Practice in Intellectual Disabilities
Volume 5 Number 2 pp 96–104 June 2008

Effects of a Parent Training Program on the Interactive Skills of Parents of Children with Autism in China

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Abstract This study evaluated the effects of a parent training program on the interactive skills of parents of children with autism in the People's Republic of China. Twenty-seven families of children with autism in a northeastern city of China were randomly assigned to either the training or the control group. Parents received a total of 20 h of training in a format that included both group and individual sessions. Parents' interactive skills during free play with their children with autism were examined using videotaped observations at their homes and analyzed using the Maternal Behavior Rating Scales. One-way analysis of covariance indicated that following the training, parents in the training group, compared with those in the control group, were more sensitive to their children's interests, responded to their children's behavior more appropriately, were more accepting of their children and their behavior, showed more enjoyment of interacting with their children, and expressed more warmth toward their children throughout the free play interactions. More research is needed to investigate whether parental responsiveness and affect promote more active engagement by their children in their interactions.

Keywords: autism, intellectual disabilities, parent interactive skills, parent training, parent–child interaction

BACKGROUND

National statistics reported that there are approximately 380 million children under the age 14 in mainland China (Huang, 2003). Using a prevalence rate reported in the west, this should translate into potentially 300,000–500,000 children in China with autism (Tao, 2000). Yet it was not until 1982 that the first published report on autism in China appeared in the *Journal of Medical Science*. An extensive search in the Chinese literature on autism in medicine, public health, and special education only revealed about 100 articles (Liu, 2003) with the majority of these published by medical doctors focusing on the clinical symptoms, genetic characteristics, and epidemiology of autism.

More recently, China has enacted major legislation that called for education for all children, including those with disabilities, with first in 1986, the China Compulsory Education Law, and then in 1990, the Law of People's Republic of China on the Protection of Persons with Disabilities. Yet, at the present time, because of severe shortage of resources, neither of these laws mandate that educational services and supports be provided to students with more significant intellectual disabilities (such as autism) and unfortunately, the majority of the responsibility for educating these children still falls on families and community.

Received July 28, 2006; accepted January 15, 2007
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Since the 1980s, education has been provided for increasing numbers of students with mild intellectual disabilities and sensory impairment in China. However, the education opportunities for children with more severe disabilities such as autism have been largely inadequate. Children with more severe disabilities have long been kept out of the Chinese public school system, in both general and special education (Deng, Poon-McBrayer, & Farnsworth, 2001). In response, many special education programs in China have been established apart from public education by medical personnel and parents, including programs for children with autism (Yang & Wang, 1994). These programs are usually of short duration (several weeks to several months) and are often the only opportunity students will have for schooling. Too often, parents and families become the primary or only teacher that the students will have. Therefore, support and training for families and parents is imperative (McCabe, 2003; McCabe & Tian, 2002).

The lack of educational services to China's children and youth with severe disabilities was vividly demonstrated in a 2001 survey conducted by the National Federation of People with Disabilities, the Ministry of Public Health, and the Ministry of Public Security. The purpose of the survey was to understand the prevalence of young children with mental illness and their rehabilitation status (Yang, 2003). Out of a sample of 60,124 children ages between birth and 6, only 61 were formally diagnosed with mental illness, primarily with autism. Among these children, 50 were boys and 11 were girls, indicating a male to female ratio of 5:1.

The results from the 2001 survey also indicated that the demand for rehabilitation services greatly exceeded the supply with parents stating that more than 50% of these children with disabilities did not receive any type of intervention. Among those children who received services, the most common form of intervention was "parents-as-teachers" (73.33%). The most requested intervention service was parent training followed by direct rehabilitative services. Liu (2003) suggests that parent training is a cost-effective form of intervention and also makes an argument for further studies to expand and improve China's existing parent training system.

There is only one large-scale study reported in the literature, which analyzed 1,180 cases of people with autism treated at the Mental Health Institute of Beijing University, across a span of 15 years from 1986 to 2001 (Liu, 2003). One thousand one hundred and eighty individuals with autism attended the clinic from all provinces and regions in China (except Taiwan and Tibet), with a male to female ratio of 9.63:1. This sex difference is much higher than the 5:1 ratio typically reported in studies in Europe and the U.S. (Autism Society of America, 1996; Scott, Clark, & Brady, 2000). It can be speculated that the higher ratio of males to females in China might be the result of traditional beliefs and practices, and that parents would be more likely to have their sons examined by a doctor if they suspected any illness (Tao, 2000). Also, there have been reports about the imbalance of male to female ratio within the general population; that is, the reported sex ratio at birth reached 117.0 boys per 100 girls in 1997 (China Internet Information Center, 2002), in contrast to the normal value of about 106, which some critiques believe to be the unexpected effect of the single-child policy that has been enforced since 1980.

Another group of doctors from Fu Jian Province conducted a longitudinal study on 31 (24 male and 7 female) children with autism seen in their clinic from 1991 to 2000, (Lin, Luo, Chen, Cheng, & Chen, 2000). Parents of these children reported that having a child with autism negatively affected their lives especially their own career advancement. Families were routinely challenged with lack of school placements for their child with autism and with lack of services and support for parents. Among the 31 cases, 15 children were excluded from special or regular schools and five were locked in the house when parents were away at work. Many parents had to take a long-term leave of absence to stay home and take care of their children. Lin and his colleagues also suggest that there is a dire need for more schools for children with autism and more support for their families in China (Lin et al., 2000).

Research in the United States has demonstrated the importance of family involvement and training in the education of children with autism. Specific studies on effective practices in educating children with autism stress the importance of parent training, which enables parents to provide consistent and effective education to their children in all settings (Kaiser, Hancock, & Nietfield, 2000; Koegel, Koegel, & Carter, 1999; Lovaas, 1987; Schopler, 1987; Sheinkopf & Siegel, 1998). It should be noted that the purpose of these parent training programs in the United States and other developed countries is supplemental to their children's education. Unlike in China, parents are not however viewed as the primary service providers for their own children with autism and these children typically receive educational and therapeutic services from professionally trained personnel in schools. However, parent training programs in China carry a drastically different purpose. These training programs must prepare parents to become the primary service provider due to the limited opportunities for these children to receive any therapeutic or educational services and supports.

Given the above, the purpose of this study was to implement and evaluate the impact of a comprehensive parent training program for teaching children with autism in the People's Republic of China. Specifically, this study looked at the effects of parent training on parents' interactive skills.

METHOD

Parent Participants

Announcement of the current study was advertised in a local newspaper and on the Web site of Shenyang Institute of Psychology in Shenyang. Thirty-nine families of children with autism from a large city in northeastern China met the criteria to participate in this study. The criteria for sample selection were that (1) each child must have had a formal diagnosis of autism by professionals or agencies not affiliated with this project; and (2) the age of the child must be under 10. If the child met the selection criteria, parental consent for entering this study was sought.

Written consent was obtained from thirty-four families initially. Families were randomly assigned to either the training or the control group. After the commencement of the study, two families dropped out of the training group and five dropped out of the control group, leaving 15 families remaining in the training group and 12 in the control group. One of the families in the training group, after completing the entire training program, dropped out during the posttest data collection phase because of a prescheduled family vacation.

Throughout the study, each family was asked to send one and the same parent for the entire training duration. The term "parent" was defined broadly in this study; it included not only the biological mother and father, but also a grandparent or another extended family member. In both the training and control groups, three families sent a grandparent instead of a parent. In one case, a paternal aunt also represented the child's parents in the control group. With the exception of two fathers in the control group, the rest of the participants were females.

Prior to the onset of this parent training program, 33% ($n = 27$) of parents in both the training and control groups reported no previous training on autism. The other two-thirds of the parents had received some type of training from one of the two educational service centers in the local area in the past, or were receiving services from them while simultaneously enrolled in this study. Some of the trainings reported by parents included the topics of behavior management, language instruction, and applied behavior analysis. Some parents also reported that they had sought information related to autism on the Internet, from books, and from TV shows.

For this sample, the average family annual income ranged between US$3,000 and $4,500. The World Bank estimated that the gross national annual income per capita in China for 2003

TABLE 1
Means, standard deviations (SD) and *t*-test results for parents' age, educational levels and family annual income

	Training ($n = 15$)		Control ($n = 12$)			
Treatment groups	**Mean**	**SD**	**Mean**	**SD**	**df**	***t***
Biological father age (year)[a]	34.53	2.53	34.92	3.90	25	–0.31
Biological father education levels	3.2	1.42	2.75	1.22	25	0.87
Biological mother age (years)[a]	33.4	3.11	33.5	3.50	25	–0.30
Biological mother education levels	3.13	1.36	2.83	1.11	25	0.62
Participating parents education levels[b]	3.0	1.25	2.75	0.87	25	0.87
Previous parent training	0.67	0.49	0.67	0.49	25	0.00
Familiarity with applied behavior analysis	1.73	1.44	1.18	1.17	25	0.93
Family annual income[c]	4.13	1.30	4.08	1.08	25	0.11

$^{*}p < 0.05$, $^{**}p < 0.01$, $^{***}p < 0.001$.
[a]Not all biological fathers and mothers participated in this study.
[b]Participants' educational levels: 1 < High School, 2 = High School, 3 = Associate Degree, 4 = Bachelor's Degree, 5 = Master's Degree.
[c]Family annual income: 1 < \$750; 2 = \$750–\$1,500; 3 = \$1,500–\$3,000; 4 = \$3,000–\$4,500; 5 = \$4,500–\$7,500; 6 = \$7,500–\$15,000; 7 > \$15,000.

was US\$1,100. Table 1 is a summary of parents' demographic information.

Child Participants

All participating children were evaluated by the same team of professionals at the Shenyang Institute of Psychology prior to the launch of the project. The Psychoeducational profile–revised (PEP–R; Schopler, Reichler, Bashford, Lansing, & Marcus, 1990) and Childhood Autism Rating Scale (CARS; Schopler, Reichler, & Renner, 1988) were administered to all participating children for two purposes: (1) to establish a baseline of their functional levels in all developmental domains, such as imitation, perception, fine motor, gross motor, eye-hand integration, cognitive performance, and language; and (2) to confirm their diagnosis of autism. Both PEP–R and CARS have been empirically validated in China (Liu et al., 2002; Shek, Tsang, Lam, Yang, & Cheung, 2005).

The children's average age was 67.3 months (approximately $5^1/_2$ years) in the training group and 69.3 months in the control group. The youngest child in this study was 3 years old and the oldest was 9 years and 8 months. The average overall PEP–R score for the children in the training group was 34.9 and 45.8 for the control group. The mean average CARS scores for the training group children were 35.9 and 37.8 for the control group. The two groups were comparable prior to the intervention.

There were two girls in each of the two treatment groups, the rest of the children were boys. In the training group, two young children attended regular day care and two older children attended regular elementary schools. One boy attended a school for children with an intellectual disability. The rest of the 10 children did not have an educational placement outside of their own homes. In the control group, three young children attended regular day care. Two children attended a school for children with intellectual disabilities. The rest of the seven children in the control group stayed at home with their parents.

Figure 1 is the summary of the participating children's educational placements. The means, ranges, and standard deviations of participating children's age and their performances on PEP–R and CARS are summarized in Table 2.

Parent Education

The training content was based on empirically validated best practices documented in the developed countries with the emphasis on principles and strategies derived from applied

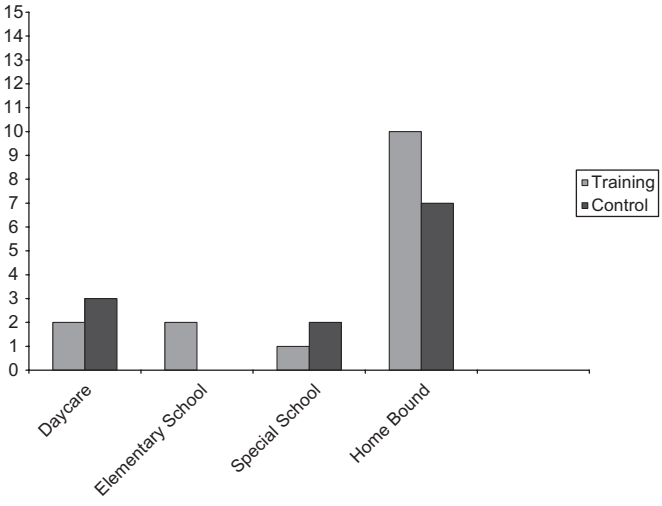

FIGURE 1
Children's educational placements.

TABLE 2
Means, ranges, and standard deviations (SD) of participating children's age and pretest scores on the PEP-R and CARS

	Training $n = 15$		Control $n = 12$	
Treatment groups	**Mean**	**SD**	**Mean**	**SD**
Age (months)	67.27 (36–116)	23.91	69.25 (42–102)	20.78
PEP-R (months)	34.93 (8–89)	22.25	45.75 (15–72)	17.69
CARS	35.87 (26–44)	5.59	37.75 (28–47)	5.28

$^{*}p < 0.05$, $^{**}p < 0.01$, $^{***}p < 0.001$.
PEP-R, Psychoeducational profile–revised; CARS, Childhood autism rating scale.

behavior analysis (e.g., Anderson, Avery, DiPietro, Edwards, & Christian, 1987; Lovaas, 1987; McEachin, Smith, & Lovaas, 1993; Smith, 1999), Treatment and Education of Autistic and Related Communication Handicapped Children (e.g., Panerai, Ferrante, & Zingale, 2002; Schopler, Mesibov, & Hearsey, 1995), and naturalistic teaching (e.g., McGee, Almedia, Sulzer-Azaroff, & Feldman, 1992; McGee, Morrier, & Daly, 1999).

Training sessions took place for a total of 20 h across a span of four weeks; training consisted of 16 h of group training and 4 h of individual home visits. Parent education group sessions were conducted by this researcher in a conference room at the Shenyang Institute of Psychology once a week in the morning for four weeks. Each group session was 4 h long. Various training methods were used, including lectures, handouts, videotaped instruction, role play, in situ prompts, performance feedback, live modeling, and group discussions. During these group training sessions, only parents were invited to attend. In other words, no children were present during group parent training. In addition to weekly group training, parents were visited by this researcher at home once a week for up to 2 h. The purpose of the individual home visit was to observe the parent–child interaction in the natural environment and assist parents in applying the intervention strategies acquired during group training with their child at home.

The parent education curriculum consisted of four lessons. In the first training session, parents received an overview of autism spectrum disorders, including their symptoms, etiology, and various treatment approaches. Common misconceptions were also discussed. During the second lesson, parents learned basic principles of behavior, such as positive reinforcement, differential reinforcement, shaping, extinction, errorless teaching, etc. Strategies on how to select functional reinforcers to motivate their children were shared with parents. The emphasis was placed on increasing parents' positive feedback following child's compliant behavior, corrective feedback following child's incorrect behavior, verbal praise, and decreasing parents' negative verbal responses, such as scolding or verbal reprimands. During the third lesson, the naturalistic teaching approach was discussed with parents. Parents learned different strategies to engage their children in play activities, how to read their children's cues and follow their children's interests and to decrease frequency of instructions during play activities. Various response prompts and how to provide prompts to children were also discussed. In the final session, the discussion focused on how to conduct functional assessment of maladaptive behaviors and positively teach alternative behaviors. Parents were taught how to observe and record problem behaviors. Parents were encouraged to record their child's behavior at home after the training. The importance of routines and schedules for children was also discussed with parents.

Procedure

Parents were randomly assigned to either the training group or the control group. While the first group of 15 parents received intervention, the second group of 12 served as the control for the first group. The control group received identical intervention at the completion of the study.

One week prior to training, parents' interactive skills data were gathered using videotaped observation of parent and child interactions in their homes. Parents were asked to engage their children in free play activities using any toys available at home. The videotaped observation was 5–7 min.

Post-intervention data collection took place one week following completion of the four-week group training sessions and individual home visits. The same procedures and measures that were used for the initial data collection were used again at the posttest phase for both the training and control groups.

Instrument

Parent and child were videotaped playing together for 5–7 min before and after the parent training program in their own homes. Parents were instructed to select an activity that they normally would choose to engage their children in during play at home. From these videotaped sessions, the first 5 min of data were coded for all participants. Each child and parent utterance was transcribed in Chinese by the researcher. Parent interactive skills were coded from the videotaped records according to the Maternal Behavior Rating Scale (MBRS; Mahoney, 1999; Mahoney, Powell, & Finger, 1986). Previous research has indicated that this scale assesses parenting characteristics that affect children's engagement such as their initiation and play and is sensitive to the effects of parent-mediated interventions (Mahoney & Perales, 2003; Mahoney & Powell, 1988; Mahoney, Boyce, Fewell, Spiker, & Wheeden, 1998).

The MBRS assesses using a 5-point Likert scale, 12 items, and 4 dimensions of parent interactive style: responsiveness, affect, achievement orientation, and directiveness. The *responsiveness* dimension examines the extent to which the parent seems aware of and understands the child's activity or play interests, the appropriateness of the parent's responses to the child's behavior, and the parent's ability to engage the child in the play interaction. The *affect* dimension assesses the extent to which the parent approves of the child and the child's behavior, the parent's enjoyment in interacting with the child, the tendency of the parent to

TABLE 3
Means and standard deviations (SD) for parents' interactive skills as demonstrated by the pretest and posttest scores on the Maternal Behavior Rating Scale (MBRS)

	Responsiveness		Affect		Achievement		Directiveness	
MBRS components	**M**	**SD**	**M**	**SD**	**M**	**SD**	**M**	**SD**
Pretest								
Training	3.48	0.88	2.27	0.67	2.80	0.68	3.47	0.64
Control ($n = 11$[a])	3.60	0.96	2.36	0.03	2.91	1.16	3.27	0.68
Posttest								
Training ($n = 14$[b])	4.08*	0.75	2.80***	0.61	3.32	0.54	3.54	0.57
Control	3.36	0.84	2.17	1.04	3.32	0.64	3.64	0.55

*$p < 0.05$, **$p < 0.01$, ***$p < 0.001$.
[a]Data were not available from one of the families in the control group during pretest phase.
[b]Data were not available for one of the families in the training group during posttest phase. However, the family completed the parent training program. They were absent only during the posttest data collection phase.

express and react emotionally toward the child, and the demonstration of warmth to a child revealed by the parent through physical touch and verbal endearments. The *achievement orientation* dimension assesses the extent to which the parent fosters sensorimotor and cognitive development whether through play, instruction, training, or sensory stimulation. The *directiveness* dimension measures the frequency and intensity in which the parent requests, commands, hints, or attempts to direct the child's immediate behavior. It also examines the parent's rate of behavior, ranging from the parent being inactive to rapid fire behavior which does not allow the child time to respond.

The scores on the MBRS range from 1 to 5. Higher scores on the MBRS reflect higher levels of parent behaviors in each of the four dimensions. Scores obtained by the researcher were used in the data analysis.

Interrater reliability The researcher scored all the pretests and posttests of the MBRS. A second transcriber, a graduate research assistant who is also a native speaker of Chinese from Teachers College, Columbia University, verified all transcripts. The differences between this researcher and the verifying transcriber were resolved before the data were analyzed. The research assistant independently scored 33% of the pretests and posttests of the MBRS. A comparison of the coded data sheets was made on a dimension-to-dimension basis. An agreement was defined as the two raters' scores for a dimension being within 0.5 point of each other (on the 5-point scale). Reliability was calculated by the following formula: the number of agreements divided by the number of agreements plus disagreements and multiplied by 100. The resulting reliability calculations yielded an average percentage agreement score of 89% for the pretest and 91.75% for the posttest (ranging from 78–100%).

RESULTS

Parents' posttest performance on the MBRS for the two groups was compared using a one-way (training vs. control) analysis of covariance (ANCOVA) to test for differences between groups, with posttest scores as the dependent variable and the pretest scores as the covariate. Table 3 is the summary of the means and standard deviations from pretest and posttest. Figure 2 is the group comparison of the means of parents' posttest performance on the MBRS. The ANCOVA results are summarized in Table 4. The analyses indicated that the parents in the training group (Mean = 4.08), compared with those in the control group (Mean = 3.36), scored significantly higher on the *responsiveness* dimension of MBRS during posttest, with a maximum score of 5, $F_{1,24} = 6.70$, $p < 0.05$. The effect size is $E_s = 0.91$. These differences were not observed during pretest. Parents in the training group were more sensitive to their children's interests, responded to children's behaviors more appropriately, and were more effective in engaging their children in play interactions than parents in the control group.

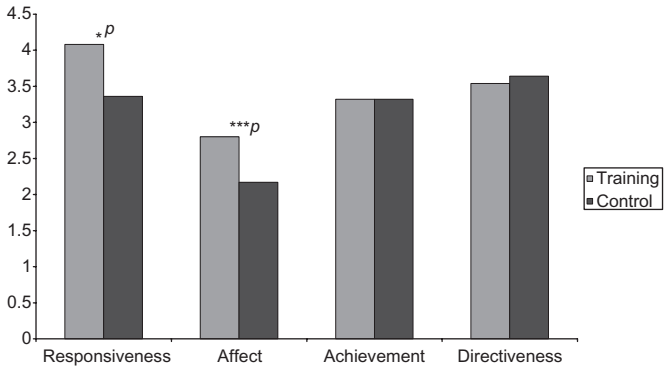

FIGURE 2
Group comparison of the means of parent posttest performance on the MBRS. *$p < 0.05$, **$p < 0.01$, ***$p < 0.001$.

TABLE 4
One-way analysis of covariance results on parents' interactive skills posttest performances on the responsiveness, affect, achievement orientation, and directiveness dimensions of the maternal behavior rating scales with pretest scores as the covariate

Source	SS	df	*F*	Effect size
Responsiveness				
Covariate	4.95	1	13.17***	
Group	2.52	1	6.70*	0.91
Error	8.27	22		
Corrected total	15.43	24		
Affect				
Covariate	11.58	1	60.87***	
Group	2.55	1	13.42***	0.75
Error	4.19	22		
Corrected total	17.60	24		
Achievement				
Covariate	3.07	1	13.86***	
Group	0.03	1	0.12	0.0
Error	4.87	22		
Corrected total	7.94	24		
Directiveness				
Covariate	2.35	1	10.51**	
Group	0.19	1	0.84	−0.18
Error	4.93	22		
Corrected total	7.34	24		

*$p < 0.05$, **$p < 0.01$, ***$p < 0.001$.

Parents in the training group (Mean = 2.80) compared with those in the control group (Mean = 2.17) also scored significantly higher on the dimension of *affect* of the MBRS, with a maximum score of 5, $F_{1,24} = 13.42$, $p = 0.001$. The effect size is $E_s = 0.75$. Parents in the training group compared with those in the control group were more accepting of their children, their children's behavior, showed more enjoyment interacting with their children, and expressed more warmth toward their children throughout the free play interactions. There were no significant group differences during posttest on the dimensions of *achievement orientation* and *defectiveness*.

Descriptive analysis of free play activities chosen by parents before the training revealed that both training and control group parents used a lot of physical activities to keep their children engaged, 41% and 25%, respectively. On several occasions, there were two or more activities observed within one session. Physical activities during pretest included jumping on a trampoline, playing basketball, therapy ball, and scooter board. Some parents also engaged in a morning exercise routine (e.g., jumping jacks or marching in place), riding a bicycle and playing with a Velcro ball and bat during the free play session. Free play activities observed during pretest by both groups are shown in Figure 3.

A descriptive analysis of free play activities chosen by parents during posttest was also performed. Physical activities during posttest included playing with a basketball, walking on a balance beam, doing morning exercises routines, blowing up a balloon, playing with a therapy ball, and playing with a hula hoop. Figure 4 presents the free activities chosen by parents during the posttest. It should be noted that in the training group, only one parent (6.7%) selected physical activity (such as playing with a basketball, jumping on the trampoline, etc.) as a free play activity compared with seven (41%) reported during pretest. There is a clear descending trend in the training group in selection of physical activities. In the control group, seven physical activities (46.7%) were chosen as free play compared with the three (25%) reported during pretest. This represents an ascending trend in the control group. Parents in the training group appeared to have learned

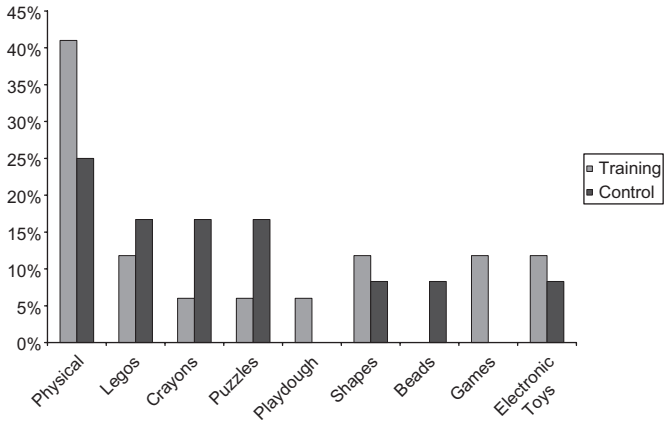

FIGURE 3
Descriptive analysis of free play activities chosen by parents during pretest.

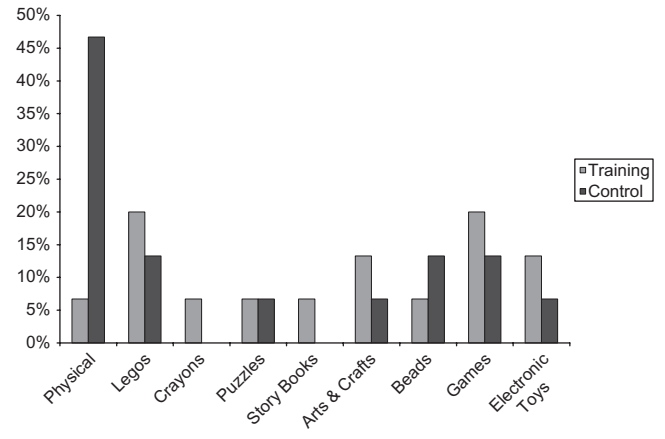

FIGURE 4
Descriptive analysis of free play activities chosen by parents during posttest.

strategies to engage their children in free play with a wider variety of toys rather than relying on physical activities than those in the control group.

DISCUSSION

Analyses from the current study demonstrated that following training, parents in the training group compared with those in the control group scored significantly higher on the responsiveness and affect dimensions of their interactive skills. The effect size comparisons for the *responsiveness* and *affect* dimensions indicate that the magnitude of the differences between the group means is substantively meaningful. Both effect sizes can be described as large (>0.08), according to Cohen (1988). This suggests that the parent training program produced not only statistically significant differences between the training and control group but also meaningful differences.

Pretest data showed that parents of children with autism were not always responsive to their children's behavior, sometimes were overly critical of their children or children's behavior, and there were more parent-initiated and parent-directed interactions. These findings are consistent with literature on parent–child interaction with children with disabilities in the United States. Dawson and colleagues reported that mothers of children with autism displayed fewer smiles and were less likely to smile in response to their children's smiles when compared with mothers of typically developing children (Dawson, Hill, Spencer, Galpert, & Watson, 1990). These results suggested that the affective behavior of children with autism had potential negative effects on the behavior of others. Lemanek, Stone, and Fishel (1993) found that children with autism demonstrated less compliance and more avoidance than children in the non-autistic group. Kasari, Sigman, Mundy, and Yirmiya (1988), and Lemanek et al. (1993) reported that parents of children with autism tended to use more attention-getting behaviors, increase their physical proximity, and use more nonverbal prompts than parents in the non-autistic group. Tannock (1998) noted that high frequencies of control behaviors were found for mothers of children with Down syndrome. These mothers produced more turns and used greater topic control. Tannock speculated that mothers of children with Down syndrome primarily used control behaviors to support and encourage their children to participate in the interaction.

Limitations

Several limitations of this study should be considered when interpreting the results. First, the data were based on a single and brief (5 min) observation of parent–child interaction. The behaviors observed might not be the true representation of the parent–child interactions, rather a specific state (e.g., fatigue). Second, the training duration is very short. One factor that has been reported in parent training literature that is associated with consistent changes in parent behavior is the length of time required to complete the intervention (Hancock, Kaiser, & Delaney, 2002; Kaiser, Hancock, & Hester, 1998). Some studies reported that approximately six to eight months were required to complete the parent training (24 1-h one-to-one sessions). In the current study, parent training was provided for four weeks (20 h of both group and individual sessions). A lot of information was shared with the parents and most of the concepts were new to them. Some parents noted that they needed more time to digest and practice the new skills, and become comfortable at using them at home. Third, this study did not directly investigate the children's behaviors in response to specific parental behaviors, such as whether parental responsiveness and affect promoted more active engagement by their children in their interactions. Several studies suggest that children's early cognitive, language, and social development are related to parent interactive characteristics such as sensitivity, responsiveness, directiveness, achievement orientation, warmth, and enjoyment (e.g., Dawson et al., 1990; Doussard-Roosevelt, Joe, Bazhenova, & Porges, 2003; Kasari et al., 1988; Kim & Mahoney, 2004; Mahoney et al., 1998). In the current study, after the training, parents were more responsive and showed a more positive affect in their interactions with their children. Parents offered choices, followed their children's interests more, and expressed positive feelings toward their children. Analyses of children's behaviors in relation to parents' interactive skills would lend more confidence to the results of this study. More studies are needed to demonstrate if gains made by parents produced measurable gains in their children's development, such as in the areas of communication, social-emotional, and adaptive behavior.

Cultural Considerations

Some may argue that the intervention presented in this study is based on the values and customs of western middle-class Caucasian culture. How does this fit into the Chinese culture? The researcher attempts to offer some personal observations as well as suggestions. First, the 27 parents from the current study were very receptive to the intervention presented during parent training. They were open to the strategies and eagerly applied them with their children at home as indicated by the results of the data analyses. Although these strategies may have been developed in a different cultural environment, they appear to address the needs of these Chinese families. Second, because the information in parent training program was so new to the Chinese families, it is premature to conclude if the cultural differences are overlooked or spontaneously modified by the parents. Third, why spend time and limited resources on "reinventing the wheel" when the best practices and evidence-based parent training curricular are available from the developed countries? When more indigenous Chinese colleagues do intervention research, the data will tell us more about whether this type of intervention is culturally sensitive and effective. At that time, we probably will see more culturally specific adaptations and modifications. At the present time, very few empirical studies are done by educators in China on autism treatment; most of the studies reported in peer-reviewed journals are conducted by medical doctors and their emphasis has been largely on the clinical symptoms and epidemiology of autism. More educational and behavioral research is needed to address the above cultural concerns.

ACKNOWLEDGMENTS

The author would like to express her deepest gratitude to the following individuals for their invaluable support and feedback in the preparation of this manuscript: Gary Levenson, Craig Michaels, Fredda Brown, and Elizabeth Erwin.

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