

EVALUATION OF EFFECTIVENESS OF PIVOTAL RESPONSE TREATMENT IN DECREASING COMMUNICATION AND BEHAVIORAL PROBLEMS IN AUTISTIC CHILDREN

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ABSTRACT

This study was performed with the purpose of evaluating effectiveness of pivotal response treatment on decreasing communication and behavioral problems in autistic children in the city of Ilam. This study was experimental with pre-test and post-test design with a control group. Statistical population included all autistic children in rehabilitation and education clinics of children with autism in the city of Ilam who had been referred for treatment. Among them 20 were randomly selected and were placed in two groups of 10 individuals, experimental and control. Data gathering instrument was the autism treatment evaluation checklist of Rimland and Edelson (2000). Analysis of data showed that pivotal response treatment at a meaningful level increases communication, sociability, cognitive awareness and physical and behavioral health of the experimental group. From this result, it can be inferred that pivotal response treatment decreases communication and behavior problems in autistic children.

KEYWORDS: Autism, Communication and behavioral Problems, Pivotal Response Treatment.

INTRODUCTION

Autism is a neurologic disorder that presents itself in the early years of childhood. This disorder in autistic patients leads to the mind being unable to function appropriately regarding social behaviors and communication skills and disturbs the child in learning communication and interaction with others in a social way (Fombonne, 2003). Autistic children have problems regarding verbal and nonverbal communication, social behaviors and playing and they harbor cliché like and repetitive behaviors (Volkmar and Cohen, 2005, cited in Anan et al, 2008). Currently, autism is diagnosed in one out of every 150 children (Center for Disease Control and Prevention, 2007, cited in Nefdt et al, 2010). Among treatment modalities for autism that parents can implement well is the pivotal response treatment (PRT). Kugle (2006, cited in Minjares, 2010) believes that one of the main components of this method is teaching parents and considers parents the principal executors in the PRT model. The importance of the presence of the parents is because they learn this treatment modality well and rapidly and it is implementable in the natural home environment (Schreibman & Kugle, 2005, cited in Brookman-Frazee et al, 2009; Nefdt et al, 2010, Minjares et al, 2010).

Vismara and colleagues (2009) also in a study taught this method to 8 parents during 12 sessions, one hour a week. The study shows that the parents learned this method well and improvement was also seen in the children. The results of the study included large number of words expressed for the first time. Minjares and colleagues (2010) performed a study where the PRT method was taught to parents of autistic children in the age range of 2-6 years old, for a period of 10 weeks. The results of this study showed that parents learned this treatment modality well and performed it. Additionally, it was shown that the verbal performance of children improved. Nefdt and colleagues (2010) note effectiveness of the self-guiding learning program (which is an introduction to teaching the PRT method to parents) and in their study, showed the usefulness of teaching the PRT treatment method to parents of children with autism. Recently, Coolican and colleagues (2010) also performed a study in which they taught this method to parents in waiting list for acquiring treatment services for their children. This teaching which is brief and requires small number of hours, 6 sessions, one hour each week again demonstrates the effectiveness of teaching the PRT method. The purpose of this study was evaluation of effectiveness of PRT in decreasing communication and behavior problems of autistic children in the city of Ilam.

MATERIALS AND METHODS

Study design included pre-test, post-test with control group. Statistical population of the study included all autistic children in rehabilitation and education clinics of autistic children in the city of Ilam who had been referred for treatment. Among them, 20 individuals were randomly selected and placed in two groups of 10 individuals, experimental and control. The PRT treatment modality was implemented on the experimental group for 3 months and subsequently comparison with the control group was performed. After a follow-up period of 7 weeks, the two groups were tested for a third time. Data was analyzed using the SPSS 16 software and descriptive (mean and standard deviation) and inferential statistics with multivariate analysis of covariance (MANCOVA). Significance level of the statistical test was selected at 0/05.

Instrument

Autism Treatment Evaluation Checklist: Rimland and Edelson (2000) believe that the big problem of research related to autism is lack of a reliable tool for evaluation of treatment trend. Scales such as GARS or CARS cannot determine effectiveness of treatment. As a result, they designed a scale that can show the effectiveness or lack of effectiveness of treatment for autism. This scale includes 77 items each of which is scored by a three choiced scale correct, almost correct and incorrect with scores of 0, 1 and 2 respectively. In some items, scoring is in different order. This tool evaluates four areas: speech/language/communication with 14 questions and sociability with 20 questions, sensory/cognitive awareness with 18 items and physical and behavioral health with 25 questions. As a result, by using this instrument, four scores are attained from the subscales and an overall score for the total scale. In the study by Rimland and Edelson (2000) at the autism research center with 1358 questionnaire responses, the reliability of each of the subscales and the total scale were 0/92, 0/84, 0/87, 0/80 and 0/94 respectively. The reliability of this instrument has been calculated using the Cronbach's alpha method to be 0/83. The level of reliability of the questionnaire was obtained by Jarusiewicz in 2002 to be acceptable and equal to 0/83. In Iran, reliability of the instrument has been evaluated by Pour Etemad and Khoshabi (2004) where the reliability using the Cronbach's alpha method was equal to 0/83 and the reliability of the four subscales of this test was found to be 0/87, 0/70, 0/60 and 0/85 respectively.

RESULTS

Before intervention and to gain assurance of equal conditions for the experimental and control groups and assurance of effectiveness of the intervention method on communication and behavioral problems, the two groups were compared with each other and the results showed that meaningful difference between the two groups at $P < 0/001$ level did not exist. The lack of meaningful difference between the two groups of experiment and control in the pretest means that the two groups before implementation of the experimental variable on variables evaluated (communication, sociability, cognitive awareness and physical and behavioral health) had almost equal conditions and previous conditions of the participants did not affect the study results. In Table 1, mean and standard deviation of the variables of communication, sociability, cognitive awareness and physical and behavioral health have been shown.

Table 1: Mean and standard deviation of the experimental and control groups in the pre and post tests of the variables of communication, sociability, cognitive awareness and physical and behavioral health

Variable	Groups	Pre-Test		Post-Test	
		Mean	Standard deviation	Mean	Standard deviation
Communication	Experiment	12/60	2/31	2/70	1/89
	Control	12/80	1/93	12/50	2/30
Sociability	Experiment	13/40	2/22	19/40	3/31
	Control	14/50	2/45	12/70	1/83
Cognitive Awareness	Experiment	14/00	3/33	17/80	2/46
	Control	12/70	2/54	12/80	2/53
Physical and Behavioral Health	Experiment	15/50	2/96	20/40	4/29
	Control	16/40	2/83	16/00	1/82

As shown in Table 1, between the mean and standard deviation of the scores of variable of communication, sociability, cognitive awareness and physical and behavioral health in the two experimental and control groups in the pre-test and post-test difference is noted. Before analysis of the results in the correlation, preconditions for use of analysis of covariance was made assured of and in all variables of the study the Levene test was not meaningful at a 0/05 significance level. As a result, the assumption of equality of variance was made assured of and use of analysis of covariance was permitted.

Table 2: Results of MANCOVA analysis on the mean of post test scores of communication, sociability, cognitive awareness and physical and behavioral health with pretest control

Name of test	Value	F	Df of hypothesis	Df of error	Meaningful level
Pillai's trace	0/84	20/81	4	15	0/001
Wilks' Lamda	0/15	20/81	4	15	0/001
Hotelling effect	5/55	20/81	4	15	0/001
Roy's greatest root	5/55	20/81	4	15	0/001

Scores of communication, sociability, cognitive awareness and physical and behavioral health was compared between the two experimental and control groups using the analysis of covariance statistical method. Results of implementation of this method have been shown in Table 2 which shows that meaningful difference exists between the experimental and control groups. These results show that PRT leads to decreased communication and behavioral problems in autistic children.

Table 3: Results of univariate analysis of covariance on mean scores of the post test of communication, sociability, cognitive awareness and physical and behavioral health in the experimental and control groups with pretest control

	Source of change	Sum of squares	Df	Mean squares	F	Significance level
Communication	pretest	21/00	1	21/00	6/08	0/02
	group	404/14	1	404/14	117/05	0/001
	error	58/69	17	3/45		
Sociability	pretest	0/004	1	0/004	0/05	0/98
	group	224/45	1	224/45	29/69	0/001
	error	128/50	17	7/56		
Cognitive awareness	pretest	12/46	1	12/46	2/12	0/05
	group	73/49	1	73/49	12/49	0/003
	error	100/03	17	5/88		
Physical and behavioral health	pretest	34/33	1	34/33	3/43	0/05
	group	113/75	1	113/75	11/93	0/003
	error	162/08	17	9/53		

As shown in Table 3, results of one way analysis of covariance show that the PRT intervention has meaningful effect on communication, sociability, cognitive awareness and physical and behavioral health. In other words the PRT intervention at a meaningful level increases communication (F=117/05, P=0/001), sociability (F=29/69, P=0/001), cognitive awareness (F=12/49, P=0/003) and physical and behavioral health (F=11/93, P=0/003) in autistic children.

Table 4: Results of univariate analysis of covariance in the context of MANCOVA on the mean post test scores of communication, sociability, cognitive awareness and physical and behavioral health of the experimental and control groups

Dependent variable	Sum of squares	Df	Mean squares	F	Significance level
Communication	396/05	1	396/05	89/44	0/001
Sociability	224/45	1	224/45	31/44	0/001
Cognitive awareness	92/45	1	92/45	14/79	0/001
physical and behavioral health	96/80	1	96/80	8/87	0/008

CONCLUSION

This study was performed with the purpose of evaluating the effectiveness of pivotal response treatment in decreasing communication and behavioral problems of autistic children. The results of the analysis showed that PRT at a meaningful level increases communication, sociability, cognitive awareness and physical and behavioral health in the experimental group. From this result, it can be inferred that PRT decreases communication and behavioral problems in autistic children. The results of this study agree with research by Vismara and colleagues (2009), Minjares and colleagues (2010), Nefdt and colleagues (2010) and Coolican and colleagues (2010).

In a study by Humphries (2003), it was shown that after conclusion of intervention based on PRT, children with autism showed increased gravitation and attention towards tools and stimulants in their surrounding environment. Additionally, these children showed significant progress in demonstration of imitation skills. Among the advantages of the PRT method is ability to implement this method in learning schools, even though it is better implemented by individuals (such as parents, therapist, special education teacher or general education teacher) who regularly work with the child and know him or her well. PRT is one of the intervention methods dependent on principles of behavior and motivation that includes motivational strategies such as strengthening free choice, activity and help from previous leanings for acquiring new ones. It shows that autistic children will reacquire responsiveness and interaction with others. For example, a study showed that refraining from social activities in autistic children decreases when they initiate an activity themselves. When refraining from activities decreases, they seek increased time in their environment and as a result, increased opportunities for learning result. Therefore, PRT is a collection of techniques that increase motivation, speech and verbal relations and leads to improved relationship with others (Coolican et al, 2010). The small number of participants, lack of follow-up for evaluating effectiveness of intervention in the long run and limited number of sessions were of limitations of this study. As a result, generalization of the findings needs to be done with caution. Therefore, it is suggested that future studies in both genders and using more therapeutic sessions and follow-up be performed to increase ability to generalize the results.

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