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ABSTRACT

This study examines the influence of a role-taking training program on role-taking, altruism and competition in children. During a 12-week period (30 minutes a day, four days a week) 96 3- to 9-year-old children were enrolled in a social perspective-taking training program at school. A control group of 96 subjects attended a regular school program. The training consisted of the following aspects: (1) helping children learn to recognize various feelings in themselves and others and to understand and predict what emotions might result from specific classroom events; (2) role-playing, (3) practice in concepts of perspective, (4) practice in play strategy. Before and after the training the subjects were tested individually on nine role-taking tasks. The 4- to 9-year-old children were also tested in controlled situations on altruism and competition. Analysis of covariance with mental age and the pretest role-taking score as covariables revealed that, in comparison with the control group, the 6- and 7-year-old children in the experimental group increased their total role-taking ability significantly. For the 3-, 4-, 5- and 8-year-olds, there were significant differences only on some role-taking subtests. Chi-square tests on the posttest scores for altruism and competition did not reveal any main or interaction effects on both variables. However, there was a trend on the posttest for children in the experimental group to help more than children in the control group. (Author/MS)

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Stimulering van de sociale ontwikkeling in het onderwijs

The effect of a social perspective-taking training on role-taking ability and social interaction in preschool and elementary school children.

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THE EFFECT OF A SOCIAL PERSPECTIVE-TAKING TRAINING ON ROLE-TAKING ABILITY AND SOCIAL INTERACTION IN PRESCHOOL AND ELEMENTARY SCHOOL CHILDREN [1]

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Abstract

During a 12-week treatment period, 30 minutes a day, 4 days a week, 96 3- to 9-year-old children were enrolled in a social perspective-taking training at school. A control group of 96 subjects had a regular school program. The training consisted of the following aspects, (a) recognition, making explicit, interpretation and prediction of reactions and personal attributes, (b) role-playing, (c) practice in concepts of perspective, (d) practice in play strategy. Before and after the training the subjects were tested individually on 9 role-taking tasks. The 4- to 9-year-old children were also tested in controlled situations on altruism and competition. Analysis of covariance with mental age and the pretest role-taking score as covariables revealed that, compared with the control group, the 6- and 7-year-old children in the experimental group increased their total role-taking ability significantly. For the 3-, 4-, 5- and 8-year-olds, there were significant differences only on some role-taking subtests. Chi-square tests on the posttest scores for altruism and competition did not reveal any main or interaction effects on both variables. There was however a trend for the experimental group to help more on the posttest, compared with the control group.

Various studies have shown that the role-taking skill of children increases under the influence of a program to stimulate role-taking (Chanler, 1973; Chandler, Greenspan & Barenboim, 1974; Ianotti, 1975; van Lieshout, Leckie & Smits-van Sonsbeek, 1975; O'Connor, 1975). It is difficult to integrate the results of these studies since different forms of role-taking have been investigated and different sorts of training have been given. Furthermore, these studies differ ecologically with respect to the person who gives the training and the place where the training is given. In some studies the experimenter carries out the training in a laboratory setting (Chandler, 1973; Chandler et al., 1974: Ianotti, 1975), while in others, a teacher trains the children in a school setting (van Lieshout et al., 1975).

It is usually assumed that social behavior is mediated by role-taking skill (Chandler, 1973; Flavell, Botkin, Fry, Wright & Jarvis, 1968; Hartup, 1970). However, little research has been done on the relation between role-taking and forms of social behavior. In a few correlational studies the relation between role-taking and altruism has been investigated (Ianotti, 1975; Leckie, 1975; Olejnik, 1975; Rubin & Schneider, 1974). However, correlational studies do not provide a clear picture of antecedent-consequent relations. Leckie's research (1975) examined which forms of role-taking are necessary but not sufficient for certain forms of altruistic behavior.

This paper examines the influence which a role-taking training program has upon role-taking and upon altruism and competition.

Method

Subjects

The study involved 192 Dutch children, from the social-economic middleclass. There were six age groups, 3-, 4-, 5-, 6-, 7- and 8-year-olds. Within each age level 8 boys and 8 girls, selected from one class, received a social perspective-taking training (the experimental group), while the control group - also consisting of 8 boys and 8 girls selected from another class - received no training. The other children in the experimental class also received training. The three year olds attended a nursery school five half-days a week, the four and five year olds attended kindergarten five days a week. The 6- to 8-year-olds were drawn from grades 1 - 3. The schools were randomly assigned to the experimental and control condition.

Procedure

The experimental design is set up according to the "non-equivalent control group design" (Campbell & Stanley, 1963). The study consisted of three phases: pretest, training, posttest.

Pretest. The subjects in the experimental and control groups were individually tested with nine Role Taking Tests (RTT) and a verbal intelligence test, the Peabody Picture Vocabulary Test (PPVT). The children were also observed in standardized situations for altruistic and competitive behavior. Psychology students, who were specially trained, served as experimenters. They were not aware of the objectives of the study. The tests were administered in the order described below. The observations were done in random order.

The role-taking tests were the following.

1. perceptual role-taking: These tasks were adapted from Flavell et al. (1968). The subject had to identify the visual perspective of the

experimenter. Cards with pictures, cubes with pictures, and displays of wooden blocks were used in this task. Answers were scored on a scale with egocentric performance receiving the lowest score and a decentered answer receiving the highest score.

2. role behavior of family members: This task is adapted from Emmerich (1959). The experimenter showed the subject a drawing in which a man, a woman, a boy and a girl are portrayed. The subject had to categorize 10 statements according to these four roles; for example, Who says: I am the mother? The subject scored either 0 or 1 for each incorrect or correct answer, respectively.

3. gifts: This task is taken from Flavell et al. (1968). The subject had to choose a gift for a man, a woman, a boy and a girl from six drawings in which gifts are represented. For each incorrect or correct answer, the subject scored either a 0 or a 1, respectively.

4. empathy: This test is an adaption of a test used by Feshbach & Roe (1968) and by Borke (1971). The experimenter showed the subject four drawings of faces which express a particular emotion (happy, angry, afraid and sad), which the child must identify. Then the experimenter told the subject six stories in succession, in which something happens to a child. After every story, the subject was asked to select the picture which corresponds with the emotions of the child in the story. The subject scored either a 0 or a 1, for each incorrect or correct answer, respectively.

5. emotions and causes: In this task, adapted from Flavell et al. (1968) and Chandler (1973), the child was represented with three cartoon stories. In each story, something happens to the principal person, which evokes certain emotions in him. The subject was asked to identify the feelings of the principal person. In the middle of the story, a

new person appears, who is not aware of the preceding event. Certain characteristics or behaviors of this new person remind the story's principal person of the preceding event; this reminder evokes an emotional reaction in the principal person, for example, he begins to cry. First the subject was asked for the antecedents of the emotional reaction of the principal person. Answers were scored on a 4-point scale with the highest score for correctly relating the emotions to the antecedents.

6. other's viewpoint on emotions: Then the subject was asked what the new person thinks, seeing the main person's reaction. Answers were scored on a 4-point scale, with egocentric performance receiving the lowest score and a decentered answer receiving the highest score.

7. recursive thinking: This task is derived from Miller, Kessel & Flavell (1970) and consists of 12 line drawings representing talking and thinking like those used in comic strips, specifically, thinking about contiguous people, thinking about action (talking), thinking about someone's thinking, and thinking about someone who thinks about someone else's thinking. The subject had to describe which thinking relation is depicted each time. The subject scored either a 0 or a 1, for each incorrect or correct answer.

8. spontaneous referential communication: These tasks are taken from Krauss & Glucksberg (1968). The experimenter and subject sit on opposite sides of a screen; both have identical sets of five non-sense figures. The subject had to make clear to the experimenter which figure he had in his hand, so that the experimenter could find this new figure among his own figures. The score was the sum of all the characteristics per drawing which the subject mentioned.

9. requested referential communication: Following the description of a

figure by the subject, the experimenter said that he had not found the picture yet and asked additional information. The subject received 0 points when he did not give any answer, 1 point when he repeated an earlier mentioned characteristic, 2 points when he modified an already mentioned characteristic, and 3 points when he described totally new characteristics.

Altruism: Helping behavior with regard to the experimenter (she dropped several blocks) and voluntary, anonymous giving behavior with regard to sick children were observed. The subject received a 0 score when he did not help and a score of 1 for helping behavior, a score of 0 when he did not give and a score of 1 for giving behavior.

Competition: This task is taken from Heckhausen & Roelofsen (1962). Experimenter and subject competed with each other in a tower building game. Each had a platform in front of him on which a pole stood and 13 separate rings, which can be slipped onto the pole. There was a guard built into the platform in such a way that only one ring can be slipped onto the pole at a time. The instructions were to build a tower. According to a fixed schedule, the experimenter manipulated who wins and looses. After a trial effort, a maximum of 15 attempts were allowed. After each attempt the experimenter asked the child if he wanted to continue. The dependent variable was the number of games which the subject wished to play.

There were no observations for altruistic and competitive behavior done among the three year olds.

Training. During the twelve weeks following the pretest, the experimental groups received a training. The teacher presented a program specially developed for this training at least 30 minutes a day, 4 days a week, to the entire group in the classroom. Four versions of

the program were developed, adapted to the different age groups, one for 3-, 4-, and 5-year-olds, one for 6-year-olds, one for 7-year-olds and one for 8-year-olds. The role-taking training consisted of the following aspects: (1) recognition, making explicit, interpretation, and prediction of emotions and personal attributes, (2) role-playing, (3) practice in concepts of perspective, (4) practice in play strategy.

ad 1. In the first sessions, the training focused on recognition of emotions. The training was done with pictures which depicted six emotions, that is, happy, content, angry, afraid, shy, and sad. The children were asked to match situations portrayed in pictures with each of these emotions. In various exercises, the children were asked to express these feelings in pantomime. For example, each child in the group had a picture of one of the six facial expressions. The instructions were to imitate this expression and then to look for other children in the group with the same facial expression. Also emotions were made explicit in reference to specific incidents in the classroom, for example, when a child was sad because he had lost something. The teacher then let the other children describe the emotions of the child and give suggestions for the solution of the problem. Interpersonal relations in stories, slides, and puppet shows were analyzed in the group. The children were asked to describe the antecedents or the events leading up to a particular mood. Then the children were asked to place themselves in the perspective of persons who entered the story later, who were not aware of the preceding events. In the nursery school and kindergarten groups, guessing games were played. The teacher called the name of a child, and in a later stage, named certain personal attributes such as characteristics of a child's appear-

ance, and the children were instructed to indicate who the teacher had in mind. Later a blind-folded child was instructed to feel another child and guess who it was.

ad 3. In the role-playing, interactions related to specific professions were portrayed. In a later stage, the children acted out a story as it was being told. Older children heard the beginning of a story, then acted out an ending, followed by a discussion in the group.

ad 3. The training focused on the following concepts of perspective: in front - behind, inside - outside, on top of - under, and left - right. After the children had learned these concepts, they were trained in games in which the subject - object and subject - subject relation varied.

ad 4. In group games, the children were taught to place themselves in the other's strategy of thinking, to anticipate it, and to determine his own strategy based on that of the other. Concepts such as cooperation and taking turns were the part of this training. In the group games, rules of play were presented and the children were further asked to develop and evaluate their own rules.

During this period the control group participated in the normal school program, without special emphasis on stimulating role-taking skill. The teachers were aware that their classes served as part of a control group in a study investigating the stimulation of social development.

Posttest. Both groups were tested with the same role-taking test used in the pretest. They were also observed for altruistic and competitive behavior in the same standardized situations. The number of subjects who dropped out of the experiment due to moving was 8%.

Analyses and results

Role-taking

The intercorrelations between the separate role-taking tests were all significant (coefficients varied between .15 and .64, $p < .05$, N = 192). Analyses of covariance were applied to the total and the separate role-taking posttests, with the role-taking pretest and verbal intelligence as covariables. As factors, age (3-, 4-, 5-, 6-, 7-, and 8-year-olds), condition (experimental, control), and sex (male, female), were included in the analyses of covariance. The results of the analyses of covariance are given in Table 1.

Insert Table 1 about here

The estimated averages of the role-taking posttests (after elimination of the role-taking pretest and verbal intelligence), specified according to age and condition are presented in Table 2.

Insert Table 2 about here

In the analysis on the total role-taking score, in addition to the age and condition main effects, the interaction effect age x condition appeared significant. Calculation of t-ratios revealed that on the differences between the experimental and control groups for the 6- and 7-year-olds were significant, the experimental group scored higher for both age levels, in comparison with the control group (t = 3.02 and 1.79 resp., $p < .05$). For the 3-, 4-, 5-, and 8-year-olds there were no significant differences.

Examining the effects of the program on the separate subtests significant condition effects appear on the subtests 'perceptual role-

taking', 'emotions and causes', and 'other's viewpoint on emotions', but no interaction effects for age x condition. All age groups contributed to this condition effect, except the following: 3- and 4-year-olds on 'perceptual role-taking', 4-year-olds on 'emotions and causes', and 3-year-olds on 'other's viewpoint on emotions'.

The subtest 'role behavior of family members' shows both a significant condition main effect (the control group scored significant higher, compared with the experimental group), and an age x condition interaction effect, which is caused by the higher score of the 4-year-olds in the control group, compared to the 4-year-olds in the experimental group.

The interaction effect age x condition is significant for the subtest 'empathy'; the 3-year-olds in the experimental group scores higher in comparison with the 3-year-olds in the control group (t = 3.83, $p < .05$).

On the subtests 'recursive thinking' and 'requested referential communication' the condition effect and interaction effect age x condition are significant. The 3-, 5-, and 8-year-olds in the experimental group score higher on the subtest 'recursive thinking' in comparison with the control group (t = 6.16, 2.44 and 1.80, resp., $p < .05$). Compared with the control group, the 6-, and 7-year-olds in the experimental group score higher on the subtest 'requested referential communication' (t = 3.82 and 4.56, resp., $p < .05$).

On the subtest 'spontaneous referential communication', the interaction effect for age x condition is significant. The 8-year-olds in the experimental group score higher, compared with the 8-year-olds in the control group (t = 2.72, $p < .05$).

Altruism and competition

Testing the effects of the training program on altruism and competition did not reveal any main or interaction effects on both variables. Table 3 and 4 present the percentages of subjects, specified for age and condition, who showed helping and giving behavior respectively at pre- and posttest.

Insert Table 3 and 4 about here

The experimental group however, did help consistently more on the posttest (Table 3), compared with the control group.
The percentages of subjects who completed the competition task, specified for age and condition, at pre- and posttest are presented in Table 5.

Insert Table 5 about here

Discussion

The results show that the total role-taking skill of 6- and 7-year-olds in the experimental groups increased significantly in comparison to the control groups. However, the effect of the program on the total role-taking skill was not demonstrated for 3-, 4-, 5-, and 8-year-olds. In earlier research in connection with this project, the effect of perspective-taking training was demonstrated with 3- and 4-year-olds, but not with 5-year-olds (van Lieshout et al., 1975).

Examining the results of the effects of the program on the separate subtests, it appears that the experimental group, at nearly every

age level, scores higher on the subtests 'perceptual role-taking', 'emotions and causes', and 'viewpoint of the other', in comparison with the control group. As has been reported earlier, different versions of the program have been constructed for 3-, 4-, and 5-year-olds, for 6-year-olds, for 7-year-olds, and for 8-year-olds. The skills, which are measured by means of the tests mentioned above, are included explicitly in the training program.

The inconsistent results regarding the conceptual role-taking tests, which includes 'recursive thinking' and 'spontaneous and requested referential communication' can possibly be attributed to the difference in emphasis on these skills in the various versions of the program.

Since the experimental groups came from classes with permanent teachers, it is also possible that the different teachers emphasized specific aspects of the program. An analysis of the contents of the various versions of the program, is needed before further conclusions can be drawn.

The training program appears to have no significant effect on altruistic (helping and giving) and competitive behavior of the subjects. Compared with the control group, however, the experimental group did help consistently more. The fact that this effect is not significant is probably due to the weak power of the Chi-square test. The assumption that an increased role-taking skill would lead to changes in social behavior, such as altruism and competition, was only partially supported in our study. Furthermore, the correlations between role-taking skill and these aspects of social interactive behavior are lower than those found by other researchers. Only the correlation between the total role-taking score and helping behavior was significant

(r = .26, p < .001).

Using an ordering-theoretic method (Bart & Airasian, 1974), Leckie (1975) was able to establish a non-linear, hierarchical developmental course for different levels of role-taking skills with this same sample. He was able to indicate which role-taking skills were conditions for other role-taking skills and which skills developed independently of one another. Furthermore, it was possible, using this model, to indicate which role-taking skills were conditions for the appearance of different forms of prosocial behavior (helping, giving). On the basis of this hierarchical developmental model, it is possible to confirm the assumption that role-taking skill is a condition for social behavior, despite the absence of significant effects of the training program and despite the low or not significant correlation coefficients.

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Footnote 4

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TABLE 1

Analysis of Covariance on the RTT Posttest Scores with two Covariables (RTT Pretest and Verbal Intelligence)

Source	Variable	MS	df	F
Age (A)	Role-taking Total	399.87	5	7.841^{xx}
	Perceptual role-taking	40.82	5	5.580^{xx}
	Role behavior of family members	2.08	5	2.277^{x}
	Gifts	3.57	5	6.189^{xx}
	Empathy	2.20	5	1.714
	Emotions and causes	3.61	5	3.014^{xx}
	Other's viewpoint on emotions	6.29	5	1.649
	Recursive thinking	14.19	5	7.303^{xx}
	Spontaneous referential communication	16.71	5	5.335^{xx}
	Requested referential communication	146.44	5	13.804^{xx}
Condition (B)	Role-taking Total	203.24	1	3.985^{x}
	Perceptual role-taking	20.55	1	4.040^{x}
	Role behavior of family members	4.16	1	4.558^{x}
	Gifts	0.03	1	0.060
	Empathy	1.20	1	0.935
	Emotions and causes	8.48	1	7.084^{xx}
	Other's viewpoint on emotions	48.38	1	12.686^{xx}
	Recursive thinking	14.66	1	7.546^{xx}
	Spontaneous referential communication	2.67	1	0.851
	Requested referential communication	43.69	1	4.119^{xx}

TABLE 1 (Continued)

Source	Variable	MS	df	F
Sex (C)	Role-taking Total	18.53	1	0.363
	Perceptual role-taking	12.00	1	1.641
	Role behavior of family members	7.17	1	7.859^{xx}
	Gifts	0.05	1	0.089
	Empathy	0.14	1	0.108
	Emotions and causes	0.08	1	0.066
	Other's viewpoint on emotions	0.33	1	0.086
	Recursive thinking	1.39	1	0.717
	Spontaneous referential communication	4.44	1	1.418
	Requested referential communication	17.85	1	1.683
A x B	Role-taking Total	143.08	5	2.806^{x}
	Perceptual role-taking	8.23	5	1.125
	Role behavior of family members	5.72	5	6.273^{xx}
	Gifts	0.58	5	0.999
	Empathy	4.91	5	3.825^{xx}
	Emotions and causes	2.52	5	2.108
	Other's viewpoint on emotions	5.46	5	1.431
	Recursive thinking	16.50	5	8.493^{xx}
	Spontaneous referential communication	15.79	5	5.041^{xx}
	Requested referential communication	79.51	5	7.495^{xx}

TABLE 1 (Continued)

Source	Variable	MS	df	F
A x C	Role-taking Total	86.96	5	1.705
	Perceptual role-taking	4.73	5	0.646
	Role behavior of family members	1.16	5	1.270
	Gifts	0.77	5	1.333
	Empathy	0.11	5	0.084
	Emotions and causes	2.45	5	2.050
	Other's viewpoint on emotions	3.94	5	1.033
	Recursive thinking	2.15	5	1.109
	Spontaneous referential communication	5.89	5	1.880
	Requested referential communication	11.96	5	1.128
B x C	Role-taking Total	37.78	1	0.741
	Perceptual role-taking	16.16	1	2.210
	Role behavior of family members	0.62	1	0.679
	Gifts	1.62	1	2.811
	Empathy	3.03	1	1.055
	Emotions and causes	1.26	1	1.055
	Other's viewpoint on emotions	2.32	1	0.608
	Recursive thinking	0.38	1	0.195
	Spontaneous referential communication	25.42	1	8.118^{xx}
	Requested referential communication	21.93	1	2.067

TABLE 1 (Continued)

Source	Variable	MS	df	F
A x B x C	Role-taking Total	49.82	5	0.977
	Perceptual role-taking	9.61	5	1.314
	Role behavior of family members	0.80	5	0.879
	Gifts	0.60	5	1.047
	Empathy	1.92	5	1.495
	Emotions and causes	1.92	5	1.604
	Other's viewpoint on emotions	2.17	5	0.570
	Recursive thinking	3.57	5	1.836
	Spontaneous referential communication	6.18	5	1.972
	Requested referential communication	9.73	5	0.917
Within groups	Role-taking Total	51.00	150	
	Perceptual role-taking	7.31	150	
	Role behavior of family members	0.91	150	
	Gifts	0.58	150	
	Empathy	1.28	150	
	Emotions and causes	1.20	150	
	Other's viewpoint on emotions	1.20	150	
	Recursive thinking	1.94	150	
	Spontaneous referential communication	3.13	150	
	Requested referential communication	10.61	150	

xx $p < 0.01$

x $p < 0.05$

TABLE 2

Means of the Role-taking Posttest, after elimination of two Covariables (RTT Pretest and Verbal Intelligence) specified for Age and Condition

	3 year		4 year		5 year	
Variable	Exp.[a] (n=15)	Contr. (n=11)	Exp. (n=16)	Contr. (n=16)	Exp. (n=15)	Contr. (n=13)
Role-taking Total	51.80	55.71	55.29	57.81	55.96	55.63
Perceptual role-taking	12.96	12.99	10.71	11.42	13.01	11.99
Role behavior of family members	9.56	9.10	7.65	9.73	8.49	8.89
Gifts	2.48	2.09	3.23	3.58	3.66	3.48
Empathy	4.81	3.09	3.79	4.66	4.15	3.87
Emotions and causes	5.65	4.49	5.80	6.31	6.06	5.78
Other's viewpoint on emotions	2.67	2.99	5.21	3.00	3.79	2.82
Recursive thinking	4.39	1.00	3.93	3.98	5.10	3.96
Spontaneous referential communication	7.22	6.35	5.48	7.00	5.72	5.62
Requested referential communication	8.25	9.98	8.87	8.84	11.42	10.80

[a] Exp. = experimental group; Contr. = control group

TABLE 2 (Continued)

Variable	6 year		7 year		8 year	
	Exp.[a] (n=16)	Contr. (n=12)	Exp. (n=16)	Contr. (n=15)	Exp. (n=15)	Contr. (n=16)
Role-taking Total	56.60	48.05	61.32	56.75	66.46	63.78
Perceptual role-taking	14.23	13.27	16.53	14.56	17.16	15.27
Role behavior of family members	9.24	9.46	9.59	9.18	9.20	9.35
Gifts	3.73	3.87	3.71	3.46	3.43	3.58
Empathy	4.03	4.26	4.92	4.63	4.99	5.15
Emotions and causes	5.77	4.68	5.59	5.28	5.75	5.32
Other's viewpoint on emotions	4.76	2.88	4.79	4.11	5.50	4.24
Recursive thinking	2.64	3.25	3.22	4.37	4.96	4.07
Spontaneous referential communication	5.89	6.09	6.72	9.24	8.47	6.74
Requested referential communication	6.20	1.46	7.02	1.68	6.05	8.86

[a] Exp. = experimental group; Contr. = control group

TABLE 3

Percentages of Subjects, who show Helping Behavior, specified for Age and Condition at Pre and Posttest

		Pretest	Posttest
4 year	exp.[a]	0	6
	contr.	0	0
5 year	exp.	31	25
	contr.	19	0
6 year	exp.	19	12
	contr.	19	7
7 year	exp.	44	6
	contr.	31	0
8 year	exp.	44	20
	contr.	44	0

[a] exp. = experimental group; contr. = control group

TABLE 4

Percentages of Subjects, who show Giving Behavior, specified for Age and Condition at Pre and Posttest

		Pretest	Posttest
4 year	exp.[a]	38	25
	contr.	31	6
5 year	exp.	38	27
	contr.	13	17
6 year	exp.	38	31
	contr.	13	67
7 year	exp.	56	75
	contr.	50	67
8 year	exp.	98	67
	contr.	69	88

[a] exp. = experimental group; contr. = control group

TABLE 5

Percentages of Subjects, who complete the competition task, specified for Age and Condition at Pre and Posttest.

		Pretest	Posttest
4 year	exp.[a]	0	7
	contr.	6	0
5 year	exp.	19	33
	contr.	6	25
6 year	exp.	31	38
	contr.	31	42
7 year	exp.	25	50
	contr.	19	47
8 year	exp.	62	67
	contr.	56	44

[a] exp. = experimental group; contr. = control group