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A LONGITUDINAL STUDY ON DEVELOPMENT OF KINDERGARTEN CHILDREN (I)

— OPERATIONAL STRUCTURAL DEVELOPMENT AND SOCIALIZATION —

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Kindergarten children's operational structural development and socialization were followed up for 5 years. 30 *S*s were given conservation tests and classified into 3 groups of A, B and C according to their operational development. General intellectual development, intellectual structure and ability of social judgment of the 3 groups were compared. At the end of the kindergarten year Gr. A, most advanced in operational development, reached the stage of concrete operation, B was in the transitional stage and C was in the pre-operational stage. Gr. A showed relatively well-balanced intellectual structure, while B and C showed the similar structure of memory-dominant and nonverbal types. After B reached the stage of concrete operation A and B made similar pattern of progression in intellectual and social development. Gr. C still remained in the transitional stage at the end of the 2nd grade and regressed in social judgement. Theoretically coordination of views and values among individuals based on mutual respect is prerequisite for development of social judgment. It was found that Gr. C's regression in social judgment was due to delay in operational development and it was also suggested that their general delay in development was related with their poor interactions in the peer group.

PROBREM

Piaget (1947, 1964) viewed mental development as socialization of intelligence. The young child in the pre-operational stage, as well as the infant in the sensory-motor stage, can not yet distinguish his point of view from that of others through failure to coordinate or "group" the points of view. Thought in the preoperational stage shows egocentricity resulting from a centering of thought depending on one's action, while thought in the stage at which grouping of formal operations are constructed is characterized by descenterlization. The grouping is by its nature a co-ordination of view points, and operational grouping, Piaget (1947) said, presupposes social life. "Logic requires common rules or norms; it is a morality of thinking imposed and sanctioned by others."

Thus Piaget stressed the social nature of thought in the formal operation. He, however, did not mention much about the social elements which effect the intellectual development. He (1970c) brought up four factors of mental development, maturation,

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experience of the physical environment, the action of social environment, and equilibration, or self regulation. The second and third factors can not account for the sequential character of development; the first one is not sufficient by itself. And the fourth factor of equilibration needs to be added to classical three factors.

According to Piaget, the developmental stages follow the same sequential order in any environment, and the child's cultural and educational environment only accelerate or retard the stages in their average chronological age. Thus he (1970d) distinguished universal, general social interactions common to every environment from cultural and educational transmission specific to that environment in which the child lives. Needless to say, he was interested in the former which effects the invariant sequence of the stages.

With regards to affective-motivational development, Piaget (1963) thought it is paralleled to cognitive development. At around age 7, the child becomes capable of collaboration and cooperation with others, through which he coordinates the values of different individuals based on mutual respect and develops feeling of empathy. Social and individual coordination of the values engenders a morality of cooperation and personal autonomy. Thus, moral development is viewed as development of a value system. And will works as a regulator in coordination of values, just like operation does in cognitive development.

Recently some researchers have tried to apply cognitive developmental approach to socialization. Kohlberg (1968, 1969), for example, standing on the interactionist point of view, thinks cognitive and affectional development are parallel aspects of the structural transformations undergone in development. All the basic processes involved in "physical" cognitions and developmental changes in these cognitions are also basic to social development. The primary meaning of the word "social", in cognitive-developmental theory of society (Kohlberg 1969), is the distinctively human structuring of action and thought by role-taking. Thus according to Kohlberg, social development is fundamentally a process of the restructuring of modes of role-taking.

Kohlberg (1969) expresses dissatisfaction with the fact that for the past generation, socialization research has consisted primarily of naturalistic cross-sectional studies correlating individual and cultural differences in parental practices with differences in children's motivational behavior. And he insists that enduring products of socialization must be conceived in terms of cognitive structural changes with "natural" course or sequences of development rather than in terms of learning of cultural patterns. Thus, Kohlberg's main concern is the situational generality and role-taking in general.

The present author basically agrees to the view of the interactionists that universal aspects of development should be explained. But it is difficult to deliver educational method from their theory, especially when focussing on social development. It is possible to distinguish theoretically universal, general social interactions from those specific to the child's culture, and forms from the content. In every day life,

however, there are no universal, general interactions separated from specific, culturally defined interactions. From the educational point of view, the problem is how to make the child experience universality and generality through a specific interaction; in the other words, how to let a specific interaction mediate the universal interaction.

In this regards a few problems will be raised.

(1) Piaget (1970c) distinguished three types of physical experiences; simple exercise, physical experience and logicomathematical experience. If the organization of moral values that characterizes middle childhood is viewed as the logic of values or of actions among individuals (1964), social experiences also can be distinguished into three types; simple interaction, social experience and logico-social experience — tentatively called so —. The social experience is one which is traditionally called social perception, through which properties of a person are extracted. The logico-social experience is one with which one aquires the properties of interpersonal relations through reflexive abstract. Through this experience a child becomes able to abstract the laws of social interactions. Without this experience organization of moral values will be impossible.

(2) Piaget thought that logic constitutes the system of relationships which permit the coordination of points of view among different individuals, as well as those among the successive percepts or intuitions of the same individual. With respect to affectivity, the same system of social and individual coordination engenders a morality of cooperation and personal autonomy. Thus, Piaget did not seem to give precedence to either of social or individual coordinations. Since all human conduct is both social and individual, it would be meaningless to ask which is most preceding. But from educational point of view for one in the middle childhood, the socialized discuusion, or externalized reflection, is easier than reflection, or internalized discussion. Furthermore, Piaget did not distingushed clearly the coordination between a child and an adult from that of his peers. Coordination of views and values among individuals of a peer group interaction would be easier for one in the middle childhood. The reason is that when being with adults, the child's unilateral respect for the parent and teachers adds to his egocentric confusion of his own perspective with that of adults, thus preventing him from coordinating views based on mutual respect. Although mutual respect becomes diffrentiated from unilateral respect, logico-social experience in peer social interactions would facilitate moral development in middle childhood.

(3) Kohlberg has tried to explain social development by equilibration and role-taking. But from the author's observation of kindergarten children it was found that some other mechanisms of internalization and learning by reinforcement worked in acquiring the knowledge of norms and rules. Piaget (1970) said that what is taught is effectively assimilated only when it gives rise to an active reconstruction by the child. For some reason, reconstruction or reinvention by the child is delayed, and then internalized norms or isolated learned behavior become dominated in his social

interactions. The child's social behavior would be thought to reflect the heteronomous stage of moral development at which external obedience is predominated. However, the problem is that the more the internalized norms or learned behavior become dominated, the more difficult the reconstruction seems to be. The author thinks that delays in reconstruction in middle childhood occur when there is not enough coordination of views and values of individuals in peer social interactions.

The aim of this paper is to be a first step of the study, to identify the problem described in No. (3), and to recognize how intellectual and social development are related with operational structural development on one hand and with the peer interactions on the other hand. In the next step the solution of the problems described in (1) and (2) will be tried through educational practice. It seems to the author that social interactions are not "natural" nor general. And in educational practice some organization of social interactions can be seen.

Method

Subjects: 30 kindergarten children 15 boys and 15 girls, in Akita City, Japan. (The numbers of the *S*s differ in each test because some moved away and some were absent during the research period.)

Period: For 5 years from April, 1974 to March, 1979 (3 years in kindergarten (K) and 2 years elementary school (E1 and E2)

1. Conservation test

(1) 1st test was given in March 1977, at the end of the kindergarten year with an average age of the *S*s being 6.5 years (77.83 mos.)

1) Elementary number conservation Materials; 10 white *go* stones and 10 black *go* stones. Task description; 1st situation: The experimenter (*E*) laid out a row of 10 white *go* stones, and paired off black stones and white ones, and then made sure that the *S* appreciated the numerical equivalence of the two rows. The *E* modified the lay-out by spacing out the stones in one of the rows, so that they formed a longer row. The *S* was asked, "Are there as many of white ones as black ones or are'n there ? Or are there more ? How do you know ?" 2nd situation: Having collected all the stones, the *E* arranged 10 white ones in a circle. Having paired off the stones as before, the *E* made the circle of black ones smaller by pushing the stones closer together and asked the same questions as in the 1st situation.

2) Conservation of quantity of matter Materials; two balls of molding clay (diameter approximately 5 cm). Task description; 1st situation: the *E* asked the *S* to make sure that the two balls were made of the same amount of modeling clay. The *E* molded one of the balls into the shape of sausage and asked. "Let's pretend they are made of pastry. Is there the same amount to eat in the ball as in the sausage, or is there more in the ball or more in the sausage.... How do you know ?" 2nd situation: The *E* flattended one of the balls into the shape of a biscuit and made the same questions as above.

(2) 2nd test, the same test as the 1st one, was given to the *S*s who were classified in the categories of Intermediate and Nonconservation from the 1st test, in March 1978 at the end of E1.

(3) 3rd test, conservation of weight, was given to 24 *S*s (all except those who had moved away) in March 1979 at the end of E2. Materials: two balls of modeling clay and scales with two pans. Task description: First of all, the *E* checked to see that the *S* understood how to use the scales; the *S* was asked to use it to help make the two balls of modeling clay weigh the same. The *S* was asked to predict, 'If one of the balls is molded into the shape of a snake, is there the same amount of clay in the ball or, more in the snake.... How do you know ?" Then one of the balls was squeshed and pulled into the shape of a snake; during remolding a piece of clay was subtracted inconspicuously (This procedure was similar to that taken by Smedslund (1961)). Then the *E* went to put the ball in one pan and the snake in the other, and asked, "Do you think that the snake weighs the same as the ball, or does it weigh more, or less than the ball ? How do you know ?"

With those *S*s who could not predict correctly the procedure of subtraction was omitted.

2. The Ushijima Intelligence and Personality Test for Young Children

This test consists of 15 subtests as seen in Table 1 and assesses the child development from three aspects of the intellectual, social and affective. The reason for choosing this test is that it offers the possibility for a comparison of the *S*s' mental development with that of general population. Furthermore it also allows us to figure out the types of the intellectual structure of the *S*s and to evaluate the efficiency of the different functions underlying the achievement of the different subtests.

1st administration; the whole test was given in March 1977 at the end of K. year.

2nd administration; 5 subtests of judgment and reasoning shown in Table 4 were given in March 1978 at the end of E1.

3rd administration; The same subtests as in the 2nd administration were given in March 1979 at the end of E2.

3. Observation of the peer interactions in play and sociometric tests.

Observation was made average once a week about 1 hour at each time for 3 years from 1974 to 1977 at the kindergarten. The *S*s' play and interactions were recorded descriptively and average once a month they were videotaped.

Sociometric tests on choosing friends to play with were given in March 1977, 1978 and 1979.

4. Procedures of analysis

In order to clarify how the child's intellectual and social development are related to his operational structure and social interactions in the peer group, the following procedures were taken. (1) The *S*s were divided into 3 groups based on the

results of the conservation tests. (2) The intellectual structure of the 3 groups were compared. (3) Social judgment, content, form and its progression with ages, of the 3 groups were compared. (4) Social interactions in play and results of sociometric tests of the 3 groups were compared.

Results

1. Conservation tests

The aim of this paper is not to clarify the mechanisms or the process of acquisition of conservation in specific area, so that the detailes of the test results will be omitted. The *S*s were classified into the following 3 major categories according to their answers in tasks of each test. Conservation (C) category: All answers are correct for all tasks. Intermediate (Int) category: Some correct answers are given to the conservation questions. Nonconservation (NC) category: All answers are incorrect for all tasks.

Fig. 1 shows the ratio of the 3 categories in each test. The 2nd test was given to only those who were classified in Int and NC from the 1st test, so the ratio of C category at E1 was obtained by adding the results of the 1st and 2nd tests.

On the 3rd test at E2, 21 out of 24 *S*s predicted correctly, and all of them were shocked and surprised at finding the snake was lighter than the ball. However, except for 3, the rest rapidly modified their previous prediction and explanation, and said "Because the shape is changed". The other 3 resisted changing their prediction saying "Is there anything wrong with the scales or.... ?", though they did not reach the correct inference, "A piece must have been taken away". These 3 were classified into C category.

The *S*s were divided into 3 groups of A, B and C, mainly based on the classification of the 1st test, taking the results of the 2nd and 3rd tests into consideration. Since Int. category included both of those whose reasoning was still fairly closed to NC and those

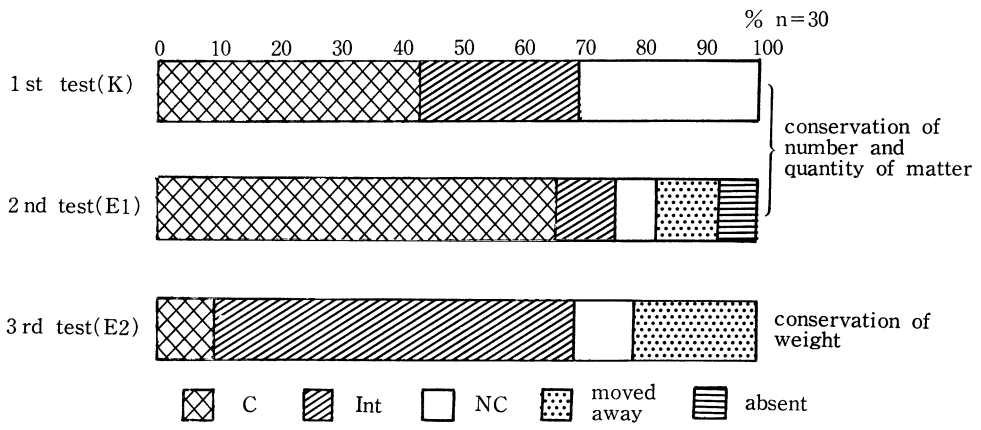

Fig. 1. Ratio of 3 categories in each conservation test

whose reasoning was clearly more advanced, the process of acquiring conservation had to be carefully observed. (Fig. 2)

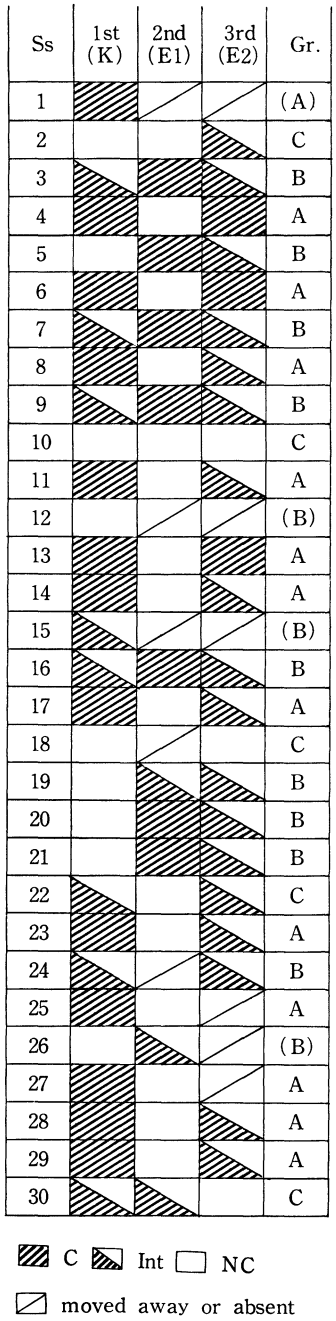

Fig. 2. Results of conservation tests by subjects

Gr. A was most advanced in operational structural development. They were viewed as having reached the first level of the stage of concrete operation at the end of the kindergarten year. Gr. B was in the transitional stage at that time, but by the end of E1 they reached the stage of concrete operation. Gr. C still remained in the transitional stage at the end of E2 and their operational structure seems to be unstable.

2. The Ushijima Intelligence and Personality Test for Young Children

The results of the 1st administrated test are shown in Table 1, 2 and 3. Characteristically in this groups of *S*s a relatively small variance and relatively high standard scores are seen. In terms of intellectual structure, the memory-dominant pattern in Type I and the nonverbal pattern in Type II are somewhat predominated.

Table 4 shows the mean scores on 5 subtests of judgment and reasoning for 3 years. General progression is seen at E1 but at E2 progression is seen only in the area of reasoning.

Comparing 3 groups (Table 5 and 6) the means of the total scores and standard scores are decreasing slightly from A to C. In terms of the intellectual structure (Table 6), Gr. A shows prevalence of the well-balanced pattern in both types, while B and C show prevalence of the memory-dominant pattern in Type I and the nonverbal pattern in Type II.

Concerning the subtests of judgement and reasoning (Table 7) all groups showed increment in the mean scores of the reasoning subtests at E1 and E2 but on the judgment subtests such a consitent tendency was not seen. At E1 all groups showed progress in the mean scores on the 3 subtests, while at E2 Gr. A and C showed little progress and even some regress on the mean scores. Only Gr. B made favorable progression on all subtests.

Here some consideration on the nature of the

Table 1. Raw scores on the subtests in The Ushijima Intelligence and Personality Test for Young Children

Subtests	M.	S.D.
A memory-blocks	8.97	1.91
B memory-number	6.60	1.23
C memory-sentences	6.93	0.89
D judgement-picture completion	3.87	0.81
E verbal-description	9.13	3.22
F judgement-definition	8.63	1.68
Ga judgement-difference	7.20	2.06
Gb judgement-similarity	5.07	1.63
H judgement-practical	6.20	1.11
I verbal-vocaburary	7.93	3.37
J reasoning-numbering	6.43	0.67
K reasoning-caluculation	4.17	1.49
L reasoning-verbal	3.37	1.14
M production-block design	8.27	1.09
N production-manfigure drawing	17.50	3.37
Total scores	144.0	10.60
Standard scores	58.9	6.17
C.A. (mos)	77.83	4.67
M.A. (mos)	92.87	11.48

Table 2. Distribution of standard scores

level	m (15)		f (15)		total (30)	
	N	%	N	%	N	%
−3(~25)	0	0	0	0	0	0
−2(26~35)	0	0	0	0	0	0
−1(36~45)	0	0	0	0	0	0
0(46~55)	4	26.67	6	40.00	10	33.33
+1(56~65)	7	46.67	7	46.67	14	46.67
+2(66~75)	4	26.67	2	13.33	6	20.00
+3(76~)	0	0	0	0	0	0

subtests and quality of the *S*s' responses is needed. On the reasoning subtests the *S*s are asked to solve simple arithmetic problems with 4 rules (K), or choose one element out of given 2 or 3 elements. Items of the judgement subtests, both of concept formation (Ga, Gb) and practical judgment (H), demand meaningufl and emotionally relevant activation, selection, and organization of the facts and relationships known to the *S*s.

In the subtests of H, K, and L the correct answer on each itme obtains a score of 1, while in the subtest of Ga and Gb, concept formation, the responses are scored either 3, 2, 1 or 0. Although scoring norms on these subtests are somewhat vague, responses on a high abstract conceptual level merit a raw score of 3; these on a lower conceptual level or those including 2 or more good difinitions on a concrete-perceptual level a socre of 2; those on a concrete perceptual level a score of 1; failure a score of 0.

At the 1st administration most of the responses are on a concrete-perceptual level with some referring to a function. These obtained a score of 1 or 2. At E1 and E2

Table 3. Ratio of intellectual structure

(1) Type I Memory-Judgement-Reasoning

Types	m (15)		f (15)		total (30)	
	N	%	N	%	N	%
Balanced	10	66.67	4	26.67	14	46.67
Memory-dominant	3	20.00	8	53.33	11	36.67
Judgement-dominant	1	6.67	0	0	1	3.33
Reasoning-dominant	0	0	0	0	0	0
Memory-judgement	0	0	2	13.33	2	6.67
Memory-reasoning	1	6.67	1	6.67	2	6.67
Judgement-reasoning	0	0	0	0	0	0

(2) Type II Verbal-Nonverbal-Numerical

Types	m (15)		f (15)		total (30)	
	N	%	N	%	N	%
Balanced	9	60.00	9	60.00	18	60.00
Verbal	2	13.33	0	0	2	6.67
Nonverbal	3	20.00	4	26.67	7	23.33
Numerical	1	6.67	0	0	1	3.33
Verbal-nonverbal	0	0	2	13.33	2	6.67
Verbal-numerical	0	0	0	0	0	0
Nonverbal-numerical	0	0	0	0	0	0

Table 4. Scores on the subtests of judgement and reasoning

Subtests	K (30)		E1 (25)		E2 (24)		comparison	
	M	S.D.	M	S.D.	M	S.D.	K & E1	E1 & E2
Ga judgement-difference	7.20	2.06	8.92	1.41	9.46	2.24	**	
Gb judgement-similarity	5.07	1.63	7.96	1.73	7.83	1.73	**	
H judgement-practical	6.00	1.41	7.20	1.41	7.21	1.41	*	
K reasoning-calculation	4.17	1.49	6.96	1.41	8.63	1.00	**	**
L reasoning-verbal	3.37	1.14	5.44	1.41	7.00	1.00	**	**
Total scores	25.93	4.36	36.32	4.47	40.04	4.69	**	*

** $p<0.001$ * $p<0.01$

the responses which were scored 2 increased, but there were few of those which were scored 3. For the child to be capable of giving responses which obtain a score of 3 his operational development is needed to reach the 2nd level of the stage of concrete operation. Even Gr. A has not reached this level. Little increment in raw scores at E2 would be thus interpreted.

3. Responses on the social judgment subtest

Table 8 shows the percentage of those who passed on each item of the judgment-practical subtest to all *S*s. Fig. 3. shows the same ratio by groups. On the first 4 items almost all *S*s, and on the last one few, answered correctly. These items are

Table 5. Raw scores on the subtests of the whole test by groups

Subtests	A (13)		B (12)		C (5)		comparison		
	M	S.D.	M	S.D.	M	S.D.	A:B	A:C	B:C
A memory-blocks	8.54	1.69	9.75	1.36	8.2	2.71			
B memory-number	6.62	1.27	6.67	1.25	6.4	1.02			
C memory-sentences	7.15	0.77	6.83	0.98	6.6	0.8			
D judgement-picture completion	4.08	0.83	3.83	0.55	3.4	1.02			
E verbal-description	8.69	4.08	9.46	2.72	8.4	3.83			
F judgement-definition	8.62	2.56	8.25	1.53	8.8	1.17			
Ga judgement-difference	8.15	1.70	6.92	1.89	5.4	1.86		*	
Gb judgement-similarity	5.54	1.74	4.83	1.67	4.4	0.49			
H judgement-social	6.23	1.19	5.91	1.26	5.6	1.36			
I verbal-vocaburary	9.31	3.31	7.17	3.44	5.2	2.93		*	
J reasoning-numbering	6.54	0.74	6.5	0.5	6.0	0.63			
K reasoning-calculation	4.62	1.73	4.25	1.09	2.8	8.98			*
L reasoning-verbal	4.0	0.79	2.67	0.85	3.4	1.50	**		
M production-blockdesign	8.69	0.81	8.08	1.18	7.6	1.02		*	
N production-manfigure drawing	18.15	3.68	16.58	2.90	18.0	3.10			
Total scores	119.39	10.76	111.33	8.79	105.2	5.91		*	
Standard scores	60.59	6.93	58.08	6.07	56.6	3.38			
C.A. (mos.)	80.23		77.59		74.20				

Table 6. Ratio of types in intellectual structure by groups

(1) Type I Memory-Judgement-Reasoning

Types	A(13)		B (12)		C (5)	
	N	%	N	%	N	%
Balanced	8	61.54	4	33.33	2	40.0
Memory-dominant	2	15.38	7	58.33	2	40.0
Judgement-dominant	0	0	1	8.33	0	0
Reasoning-dominant	0	0	0	0	0	0
Memory-judgement	1	7.69	0	0	1	20.0
Memory-reasoning	2	15.38	0	0	0	0
Judgement-reasoning	0	0	0	0	0	0

(2) Type II Verbal-Nonverbal-Numerical

Types	A (13)		B (12)		C (5)	
	N	%	N	%	N	%
Balanced	8	61.54	9	75.00	1	20.0
Verbal	1	7.69	0	0	1	20.0
Nonverbal	2	15.38	3	25.00	2	40.0
Numerical	1	7.69	0	0	0	0
Verbal-nonverbal	1	7.69	0	0	1	20.0
Verbal-numerical	0	0	0	0	0	0
Nonverbal-numerical	0	0	0	0	0	0

Table 7. Scores on the subtests of judgment and reasoning by groups

	K			E1			E2		
Subtests	A(13)	B(12)	C (5)	A(12)	B(10)	C (3)	A(10)	B (9)	C (5)
Ga judgment-difference	8.15	6.92	5.40	9.17	8.70	8.67	9.80	10.11	7.60
Gb judgment-similarity	5.54	4.83	4.40	8.25	8.10	6.33	8.00	8.67	6.00
H judgment-practical	6.23	5.92	5.60	7.67	7.00	6.00	7.60	7.78	5.40
K reasoning-calculation	4.62	4.25	3.60	6.92	7.00	7.00	8.80	8.78	8.40
L reasoning-verbal	4.00	2.67	3.40	5.83	5.20	5.00	7.10	7.00	6.80
Total scres	28.54	24.58	22.40	37.42	33.00	33.00	41.30	42.11	33.80

Table 8. Ratio of Ss who passed on each item of the judgment-practical subtest

item	K	E1	E2
1	100.0	100.0	100.0
2	100.0	100.0	100.0
3	86.67	96.0	100.0
4	100.0	100.0	100.0
5	73.33	84.0	87.5
6	40.0	56.0	66.67
7	63.33	76.0	50.0
8	6.67	48.0	41.67
9	30.0	60.0	70.83
10	0	0	4.17

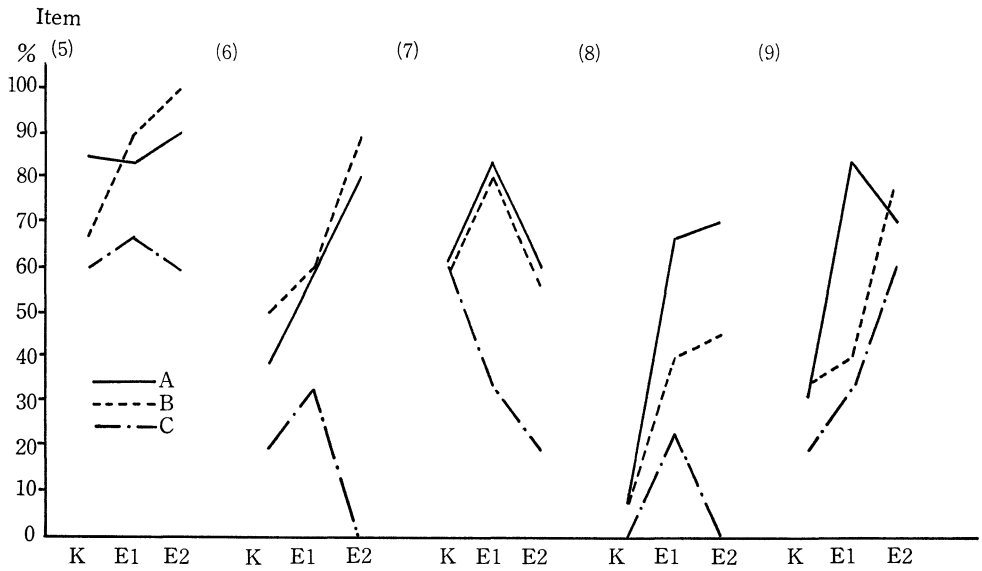

Fig. 3. Ratio of *S*s who passed on each item of the judgment practical subtest

omitted in Fig. 3. Gr. A and B show a similar increasing pattern on all items except No. 7. Gr. C shows a different pattern with decrease at E2 on all items except No. 9. Thus variance between Gr. A and B, and C is smallest at the kindergarten level and largest at E2.

In terms of the content, Gr. C showed more aggressive, impulsive responses such as, "I'd step back on his foot" or "I'd shout" (No. 7), description of habitual behavior such as, "I'd walk across with a right arm up" or repetition of social norms and rules such as, "I'd cross the street when a traffic light turns green.", I'd go at a Cross walk." (No. 6).

4. Observation of interactions in play and sociometric tests

The results of observation of the peer interactions in play and sociometric tests will be described briefly without quantification of the data.

The boys of Gr. A played in a somewhat closed group by themselves, though occasionally the boys of B joined. Their play was generally structured and lasted relatively long. Some of them assumed leadership roles, but they were rather hard to be contented with. The girls of Gr. A played in groups of 2 or 3 members which were rather closed..

The boys of Gr. B mostly played around the group of the boys of A. They played well and seldom took leadership roles in play.. The girls of B played also in groups of 2 or 3 members, but the members were changed once in a while and occasionally they joined the children of A.

The boys of Gr. C played alone or with each other, rather isolated from the others, but seemed to be content with playing by themsevles. When joining the other boys' play, they seemed to be tensed and just obeyed the others' directions. One girl played by herself and seldom associated with the girls of the other groups. Another girl often stood outside watching the others' play. The 3rd one played with the girls of A and B, and tried to take a leadership role but her directions were not organized to structure the play.

Thus, generally the *S*s did not seem to constitute a well structured play group. The children of A and B were occasionally associated and most of them interacted with each other more or less. Those of C, with exception of one girl, had few peer interactions, though they did not appear to be abnormal nor deviate.

Discussion

The *S*s were divided into 3 groups based on the results of conservation tests which were thought to reflect operational development. At the end of the kindergarten Gr. A had already reached the first level of the stage of concrete operation and had relatively well balanced intellectual structure, while B, who were in the transitional stage and C, who were in the pre-operational stage, had similar intellectual structure of memory-dominant, and nonverbal types. Gr. B, however, reached the concrete operational stage at E1, and then A and B showed the similar pattern of progression during E1 and

E2. Gr. C still remained in the transitional stage at E2 and their ability of judgment, especially in social judgment made little progress and even regress at E2.

At the kindergarten level the variance in the scores of the social judgment subtest among 3 groups was small but at E2 it became largest. Here some consideration will be given to Gr. C's delay in the operational structural development and regression in social judgment.

On item 7 of the judgment-practical subtest not only the children of C but also some of A and B regressed. At E2 most of those who failed on this item overlooked "accidentally', intention of the action and gave aggressive, impulsive responses. At the kindergaten year some gave no answers, some lost the standpoint from where they have to answer, but there were few of aggressive impulsive responses.

According to Piaget the young child in the heteronomous stage of moral development dose not think much of intentionality, motivational aspect of the act. How can we interpret this finding ?

At the kindergarten some social norms and rules indispensable for every day life are taught by the teacher. The child in the preoperational stage owing to his unilateral respect for the teacher and egocentric confusion of his own perspective with that of the teacher, acts just as the teacher taught. Those who are advanced in operational development assimilate what has been taught and reconstruct their inner structure. However those who are retarded in operational development internalize it by identification with the teacher or just memorize them as the rules to obey. At the elementary school the teacher's social pressure is generally weaker, and the child has to act on his own judgment. In the child on the first level of the stage of concrete operation reconstruction might not have been completed. Thus on some occasions impulsive or habitual behavior would appear. Regression seen in some of Gr. A and B would be thus interpreted.

On the other hand in Gr. C whose operational development is delayed, internalized norms and learned cultural rules appear to be juxtaposed without organization. Such given rules are just applicable to specific situations, and more rules and norms are needed for the child to adjust to new situations. This is supported by finding that their intellectual structure is of a memory-dominant type.

Good judgment is the efficient utilization of knolwedge as a manner tuned to the whole situation. The information possessed and relationships known must be so structured as to meet the situation's requirement (Rapaport 1968). The children in C would be poor in ability for proper selection (Rapaport) and will (Piaget) due to lack of the organization of experience and delay of reconstruction.

Furthermore Rapaport (1968) mentioned that information can be learned and retained, but the balance of varied factors that go into good comprehension and judgment can not be taught and can be acquired progressively only by prototype and interpersonal experience. In this paper social interactions of the peer group were not quantified, but general correlation of *S*s responses on the social judgment subtest and

social interactions suggests that development of social judgment presupposes the social interaction. As mentioned earlier, Piaget did not give detailes of social experience, and Rapaport also did not explain interpersonal experience.

Here we are going back to *S*s responses in the test again. On item 6 of the judgment practical subtest the children of C and some of A and B just described the traffic rules and habitual behavior, without mentioning the essential point of judgment in this situation, "watching carefully whether cars have stopped". For the child to be capable of making such judgment, the drivers' actions and his own actions must be coordinated; the child has to realize that when cars are coming, people stop and wait, and when people are crossing, cars stop and wait. The child does not acquire this knowledge by mere grasp of information or internalization of norms. Coordination of individuals' actions and abstraction of the laws in social interactions based on mutual respect helps him aquire such knowledge.

Piaget and other researchers who stand on interactionistic view are generally concerned with an individual's development. Social development as well as cognitive development, will be attained being correspondent with the structural level of the reciprocal value system which the whole peer group have attained by coordination of values of members. If, as Rapaport mentioned, a proper emotional orientation brings to consciousness and to execution, out of the multiplicity of logical possibilities, an action that is labeled as good judgment, appropriate emotinal orientation, or reciprocal value system, of the peer group is the prerequistite for development of social judgment.

From this point of view the whole group of *S*s' does not appeare to be a well organized play group with a reciprocal value system and appropriate emotional orientation. Regression in social judgment seen in some of *S*s should be interpreted partly from this point of view.

Conclusion

Piaget and Kohlberg thought that cognitive development and social, affective-motivatinal, development are the parallel aspects of structural transformation. Finding that those who were delayed in operational structural development showed the delay in both intellectual and social development is in the same line with theirs. It shows, however, that it is not so simple from the educational point of view. It is true that development will not be attained by accumulation of culturally taught information and bahavior, and the author agrees to that. Equilibration is the essential factor to explain development, but such mechanisms of internalization of norms and learning by reinforcement bring about the child's behavioral change, and often the teacher preceives it as development. Generally such information is assimilated by the child through equilibration but in some cases as those in C, it prevents the child from reconstructing the structure.

Interactionints are generally concerned with an individual's development and deal equilibration functioning in an individual. However, because cognitive and social

development presupposes coordination of views and values among individuals, delay in development, both cognitive and social, should be viewed not only as an intra-individual problem but also as an inter-individual problem.

It is not so easy for the child to experience general social interaction through a specific interaction, because in social interactions an individual tends to be emotionally involved with each other and bound by the specific nature of a given situation. Social interactions in actual life are not general nor are they natural. From the educational point of view the peer social interactions should be organized for the child to be able to coordinate views and values of each other.

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