Development of a Simple Inventory of Maternal Rearing Attitudes toward Their Preschool Children

—By Restructuring of the Revised Taken Diagnostic Test of the Parent-child Relationship—

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Abstract

To develop a simple inventory of maternal rearing attitudes toward preschool children (SMRA), the 50 questions of the revised Taken diagnostic test of the parent-child relationship were restructured in this study. This study consisted of three steps, i.e., (1) restructuring the 50 questions of the revised Taken test, (2) reliability analysis and (3) validity analysis of SMRA.

In the first step, the subjects were 1153 mothers with preschoolers from four to 42 months old. The 50 items were analyzed by principal components (PC) in the factor analysis procedure. As a result, two significant factors emerged. One consisted of six items that indicated "rejection," while the other consisted of six items that indicated "protection."

In the second step, the 12 items were analyzed by PC for 89 mothers with preschoolers. As a result, 10 items emerged from the 12 items. Reliability analysis of the two factors was performed by the test-retest method. Both factors showed good a correlation between the test and retest, indicating sufficient reliability for psychological examination of these factors.

In the third step, coefficients of correlation between the two significant SMRA factors and four subscales of MS-form rearing attitude questionnaires were analyzed using Spearman rank order correlation. The subjects were 51 mothers with two-year-old children. One set of SMRA results correlated well with an MS subscale that indicated "rejection," while the other set of SMRA results correlated well with two MS subscales that indicated "protection." Therefore, it was confirmed that the SMRA was capable of estimating two maternal rearing attitudes toward preschool children, i.e., "Rejection" and "Dotage." In addition, the decrease in questions compared to the original Taken test may decrease the burden for subjects.

Key words: Mother, Preschool children, Rearing attitudes, Inventory, "Taken" diagnostic test for parent-child relationship

Introduction

On all general medical and psychological examinations, conditions for standardization is one of the conditions of use. To estimate specific child-rearing attitudes of parents, the Taken diagnostic test of the parent-child relationship (original Taken test)¹⁾ was standardized for parents and school children from

grades four through nine in 1958. Therefore, this age-range is an indispensable condition for using the original Taken test.

There are some psychosomatic medical reports that followed the conditions of use of the original Taken test. Mishima et al.²⁾ reported that mothers of asthmatic children showed a more protective attitude toward their children than mothers of healthy children. Mihara³⁾ reported that parents of asthmatic children showed a more rejecting attitude toward their children than parents of healthy children. In addition, Ishiyama⁴⁾ reported that mothers of children with chronic diseases showed a more protective attitude and did not show more controlling attitudes than mothers of healthy children. These reports indicated that estimation of the child-rearing attitude of parents by the original Taken

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test had validity in psychosomatic medicine.

However, Akasaka et al.⁵⁾ reported that the attitude of a mother of a five-year-old child with asthma was more controlling, submissive and protective. This fact, therefore, indicated that the original Taken test was able to estimate the attitudes of mothers of preschool children as well^{6,7)}.

However, several questions on the original Taken test were difficult for mothers of preschool children. Accordingly, Sakuta et al.⁸⁾ deleted items unsuitable for these mothers from the original Taken test. They reported that the mother-child interaction was between the rearing attitude of the mothers and the personality of the three-year-old child using the revised Taken test. Miyahara et al.⁹⁾ also reported correlation between the rearing attitudes of mothers and physical growth of their babies and infants using the revised Taken test. These reports suggested that the revised Taken test was able to estimate the attitudes of mothers with preschool children.

However, these studies did not demonstrate that the subscale structure of the revised Taken test was identical to the structure of the original Taken test. Therefore, Akasaka et al.¹⁰⁾ restandardized the criteria for evaluating the original Taken test, and they found that the gender of the child and parent and the age of the child influenced the score on the original Taken test. These facts suggested that subscale structure of the revised Taken test had changed. Thus, the subscale must be restructured.

A repeatable test is indispensable in the observation of many recuperating patients. There are 100 questions on the original Taken test, which is not a small number. For a repeated test, these items may increase the burden for the subjects. Moreover, several questions items on the original Taken test are similar in character. Thus, it is possible that these similar items can be combined into one question.

Accordingly, to develop a simple inventory of maternal rearing attitudes toward their preschool children (SMRA), this study restructured the revised Taken test. In addition, the reliability and validity of the SMRA were investigated.

Furthermore, in this study, "factor" indicates a cluster of questions extracted by factor analysis and "subscale" indicates a cluster of questions from previously standardized questionnaires.

Materials and Methods

1. Restructuring the 50 questions of the revised Taken test

Subjects: Between April and October 1992, 1290 mothers with preschoolers undergoing medical examinations in a city in Japan responded to questionnaires. Subjects completed the questionnaire during the medical examination given to preschoolers; four, 10, 18 and 42 months old. If subjects did not finish answering the questionnaire, they were able to take it home and return it by post. Postage and preaddressed envelopes were provided. As a result, 1153 completed questionnaires were received, representing an 89.4% response rate. Of the 1153 respondents, 286 were mothers with four-month-old babies, 281 were mothers with 10-month-old babies, 277 were mothers with 18-month-old babies and 309 were mothers with 42-month-old toddlers. In addition, the mean ages in each age group were 134.0 days in the four-month-old group, 332.0 days in the 10-month-old group, 563.3 days in the 18-months-old group and 1289.1 days in the 42-month-old group.

Questionnaire: Fifty questions based on the revised Taken test

were used in this investigation. The number of items on the revised Taken test was 50, one-half of that on the original Taken test, but scoring of the revised Taken test was similar to that of the original Taken test because the composition of the subscales and style of responses were the same. Subjects, therefore, chose from three responses: Yes (usually), Yes (sometimes) or No, for each question. A subject was given two points for "Yes (usually)," one point for "Yes (sometimes)" and zero points for "No."

Statistical Analysis: Responses from the fifty revised Taken items from 1153 mothers were initially analyzed by principal components analysis (PC)¹¹⁾. Factors extracted by this method were then rotated orthogonally through the Varimax procedure¹¹⁾. After the number of extracted factors was determined, the items in the extracted factors were analyzed by PC and rotated through the Varimax procedure a second time. Finally, to investigate the reliability of each factor, alpha coefficients* of internal consistency were calculated.

The alpha coefficient* can be computed using the following formula¹²⁾:

$$\text{alpha coefficient} = \frac{\overline{\text{kcov}} / \overline{\text{var}}}{1 + (k-1) \overline{\text{kcov}} / \overline{\text{var}}}$$

where k is the number of items in the scale, $\overline{\text{cov}}$ is the average covariance between items, and $\overline{\text{var}}$ is the average variance of items.

The chain of analysis was performed using statistical software packages (SPSS Release 4.0 for Convex UNIX and SPSS/PC+ V3.0J)¹¹⁾.

2. Reliability of SMRA

Subjects: Between December 1994 and February 1995, the first test-retest survey was performed for 97 mothers with preschool children. These mothers participated in several programs run by two public health centers in the central and western areas of Shizuoka Prefecture, Japan. The first survey was a collecting survey and was performed at the sites participating in these programs. As a result, 89 completed SMRA questionnaires were received, representing a 91.8% (89/97) response rate. The mean age of mothers was 32.3 (SD=3.8) years old, ranging from 23 to 43, and the mean age of children was 3.6 (SD=1.7), ranging from zero to six.

One month after the first survey, the second survey of the test-retest cycle was performed by mail survey of these 89 subjects. As a result, 69 completed SMRA questionnaires were received, representing a 77.5% (69/89) response rate. The mean age of mothers was 32.4 (SD=4.0) years old, ranging from 23 to 43, and the mean age of the children was 3.6 (SD=1.7), ranging from zero to six.

Questionnaire: In study of the restructured 50 questions of the revised Taken test, 12 questions emerged. On the original Taken test, each subscale included 10 questions. In addition, the original test adopted the three-rank order method. Thus, the scores of each subscale on the original test ranged from zero to 20. However, six items were included in each factor of the SMRA. If the SMRA adopted the three-rank order method, the score range of the SMRA would be smaller than that of the original test, that is, the error of estimation would be enlarged. For this reason, the five-rank order method were adopted (always, 5 points; usually, 4 points; sometimes, 3 points; rarely, 2 points; never, 1 point). In addition, the 12 items of the SMRA were

restructured a second time, because it was thought that those items were changed in the factor structure of the SMRA. The reliability of the restructured SMRA, then, was analyzed by the test-retest method. This method is capable of assessing reproducibility of results obtained by questionnaires.

Factor Analysis: Twelve items extracted in study 1 for 89 mothers were analyzed by PC. Factors extracted by PC were then rotated orthogonally through the Varimax procedure. After the number of extracted factors was determined, the chain analysis was performed for a second time. These analyses were performed using a statistical software package (SPSS/PC+ V3.0J)¹¹⁾.

Reliability Analysis: The alpha coefficients for 89 mothers in the first test survey were calculated using a statistical software package (SPSS/PC+ V3.0J)¹¹⁾. On reliability analysis by test-retest, the coefficients of correlation between the first and second surveys of the test-retest for extracted factors were calculated by Spearman rank order correlation. Reliability analysis was performed using a statistical software package (STATISTICA/Mac)¹³⁾.

3. Validity of SMRA

Subjects: Between December 1994 and May 1996, 51 mothers with two-year-old children who took part in a program set up by a public health center in Shizuoka Prefecture, Japan completed the SMRA questionnaire. All mothers and their children were in good health. Subjects completed the SMRA at the program site. As a result, 51 completed SMRA questionnaires were received, representing a 100% response rate. The mean age of the mothers was 30.4 (SD=3.4) years old.

Questionnaire: The validity of the SMRA was analyzed by calculating the regression coefficient of Spearman between the two factors of SMRA and four subscales of the MS-form Rearing Attitude Questionnaire (MS)¹⁴⁾. It was previously indicated that the MS was valid for mothers with preschool children¹⁴⁾.

The MS consisted of four subscales. One of the subscales indicated rejection, and was related to four subscales on the original Taken test, i.e., negative refusal, positive refusal, strictness and expectation. Two of the others, i.e., anxiety and maternal immaturity, related to two subscales on the original Taken test, i.e., blind love and blind obedience.

Statistical Analysis: In the third step, analysis was performed using a statistical software package (STATISTICA)¹³⁾.

Results

1. Restructuring the 50 items of the revised Taken test

First, the 50 items of the revised Taken test were analyzed by PC and the Varimax procedure. The results along with the numbers and the names of each item are shown in Table 1. Two factors with eigenvalues greater than one emerged. If, in general, an eigenvalue of a factor extracted from some items is one or more, the factor is explained as a valid factor for those items. Six of the 50 items on the revised Taken were loaded on the first factor with values of 0.50 or greater. This solution showed an 11.9% variance. The first factor was comprised of items of three subscales in the original Taken test, i.e., 1) positive refusal, 2) negative refusal and 3) strictness. The first factor indicated a maternal attitude of "rejection."

Five of the 50 items on the revised Taken were loaded on the second factor with values of 0.50 or greater. This solution showed a 6.6% variance. The second factor was composed of the

items of two subscales on the original Taken test, i.e., 1) blind love and 2) blind obedience. However, "blind love-7" was considered part of the second factor so as to match the number of items in the first factor. The second factor indicated a maternal attitude of "Dotage."

After the number of extracted factors was determined, the items in the extracted factors were analyzed by PC and rotated through the Varimax procedure. The results are shown in Table 2. Because all of the twelve items were loaded with values of 0.40 or greater, it was confirmed that the extracted factors consisted of these items.

The results of reliability analysis are also shown in Table 2. For the first factor, the alpha coefficient was 0.7349 and for the second, 0.6434. These figures indicated the reliability of the factors as subscales of a psychological examination¹⁵⁾. Therefore, the SMRA consisted of those 12 questions.

2. Reliability of SMRA

The results of the factor analysis for the 12 extracted items are indicated in Table 3. Five of the 12 items on the SMRA were loaded on the first factor with values of 0.60 or greater. This solution showed a 26.7% variance. The first factor of SMRA indicated a maternal attitude of "Rejection."

Five of the 12 items on the SMRA were loaded on the second factor with values of 0.50 or greater. This solution showed a 21.4% variance. The second factor of SMRA indicated a maternal attitude of "Dotage."

Alpha coefficients of the two factors are also shown in Table 3. The alpha coefficients of these two factors were 0.60 or greater.

Reliability coefficients determined by the test-retest method are shown in Table 4. Although the coefficients were barely smaller than the alpha coefficients, for both factors of SMRA, there was good correlation between the test and retest. Thus, the reliabilities of SMRA factors were confirmed.

3. Validity of SMRA

Spearman rank order correlation between the first factor of SMRA and the four subscales of MS are shown in Table 5. The first factor of the SMRA correlated well with the rejection subscale on MS ($r=.41$, $p<.01$). Therefore, it was established that the first factor of the SMRA was useful for estimating the maternal rearing attitude of rejection toward preschool children.

Second, Spearman rank order correlation between the second factor of the SMRA and four subscales of MS are also shown in Table 4. The second factor of the SMRA correlated well with two MS subscales, i.e., anxiety ($r=.66$, $p<.001$) and control ($r=.46$, $p<.001$). Therefore, it was established that the second factor of the SMRA was useful for estimating the maternal rearing attitude of protection toward preschool children.

Discussion

Five items for the first factor and five items for the second factor in the present study were useful for estimating the maternal rearing attitudes of rejection and protection toward their preschool children.

Although both coefficients of reliability, i.e., alpha and test-retest, were good values as a psychological subscale, the coefficients determined by test-retest were lower than the alpha coefficients.

Table 1 Results of initial principal components analysis and Varimax procedure for the revised Taken test. Rectangles in this table indicate the items adapted for subsequent.

In the original Taken test Subscales & No.	Factor loading	
	1st	2nd
Negative rejection		
1. You don't talk to your child.	.4305	-.0489
2. You grumble about your child's faults.	<u>.5549</u>	-.0440
4. You disagree with your child.	.3122	.0261
5. You feel that your child is unwanted.	.3231	-.0993
9. You feel uneasy about your child's faults.	<u>.5377</u>	.0308
Positive rejection		
1. When you scold your child, you inflict corporal punishment on him/her.	<u>.5792</u>	-.1850
6. When you go out, your child is left in the house alone.	.1475	.0176
8. You call your child abusive names.	<u>.5197</u>	-.0159
9. You don't play together with your child.	.1424	.0174
10. You vent your temper on your child.	<u>.6089</u>	-.1195
Strictness		
2. You compel your child to your will.	.4158	.0906
3. You forbid your child's actions.	.4990	.0168
7. You present your child with toys.	.3907	.1699
8. When your child does not obey, you scold him/her.	<u>.6605</u>	.0174
9. Somebody in your family controls your child.	.3713	.0631
Expectation		
3. You compare your child with other children.	.3852	.2106
5. You soothe your child with praise.	.2263	.3032
7. You take pains to prepare a good environment for your child.	.0297	.2010
8. Your child's future takes precedence for all his/her life.	.0292	.1864
9. You feel that your child does not display his/her ability.	.4089	.0665
10. You educate your child even if when he/she is playing.	.3562	.1016
Interference		
1. You take care of your child more than he/she needs.	.4760	.1240
2. You are very severe with your child's eating habits.	.3445	.1290
7. You interfere in your child's action.	.3825	.1150
8. You pick out good TV programs for your child.	.2922	.1836
Anxiety		
1. You are more anxious about your child's illnesses than necessary.	.0379	.4703
3. You are anxious that your child's actions are dangerous.	.1464	.3993
8. You cover your child's fault unconsciously.	.1745	.3432
9. You take care of your child's well being.	.1646	.1817
10. You feel that your childcare is not sufficient.	.3337	.2929
Blind love		
3. You are overfond of your child.	-.0273	<u>.6011</u>
5. You pay dearly for your child's well being.	-.0744	<u>.5532</u>
6. You do not scold your child, but always praise him/her.	.0343	<u>.5689</u>
7. Without your child, you feel incomplete.	.0541	<u>.4947</u>
8. Even if your child has gotten rid of his/her cold, you take care of him/her as long as you like.	-.2223	.4098
Blind obedience		
2. You brag about your child.	-.1155	<u>.5420</u>
3. You accept your child's mischief.	-.0681	.3335
6. You exempt your child from education.	.0984	.3182
8. It is hard to scold your child.	.1091	.3464
10. The happiness of your child is your first consideration.	-.0077	<u>.5062</u>
Inconsistency		
1. Your feeling changes about how to educate your child.	.4284	.1476
2. You scold and praise your child for the same action.	.4449	.0786
3. After you give your child a severe scolding, you praise him/her.	.2477	.3429
4. You always indulge your child, but at times severely scold.	.3244	.2672
7. Your attitude changes in the presence of others.	.3355	.2258
Disagreement		
1. One parent is stern toward the child, but the other indulges him/her.	.1633	.2229
2. One parent leaves the child alone, but the other interferes with him/her.	.1958	.2249
3. While a parent scolds the child, the other prohibits the partner's action.	.0966	.2516
4. You are dissatisfied with your husband's attitude toward your child.	.3287	.1101
5. Your child takes after you/your husband.	.3461	.1231
Eigenvalue	5.9445	3.3064
% of variance	11.9	6.6
Cumulative %	11.9	18.5

"Subscales" and "No." of each category indicate the names of subscales and the numbers on the original Taken test for the parent-child relationship.

Table 2 Results of final PC analysis and Varimax procedure and reliability analysis for the extracted factors.

Items	Factor loading	
	1st	2nd
Rejection		
1. You grumble about your child's faults.	.6210	-.0332
2. You feel uneasy about your child's faults.	.6256	.0355
3. When you scold your child, you inflict corporal punishment on him/her.	.6776	-.1228
4. You call your child abusive names.	.6344	.0219
5. You vent your temper on your child.	.6756	-.0693
6. When your child does not obey, you scold him/her.	.6927	.0255
Dotage		
7. You are overfond of your child.	.0205	.7230
8. You pay dearly for your child's well being.	-.0321	.6684
9. You do not scold your child, but always praise him/her.	-.1988	.4510
10. Without your child, you feel incomplete.	-.0609	.6505
11. You brag about your child.	.0723	.5098
12. The happiness of your child is your first consideration.	.0293	.5960
Eigenvalue	2.6949	2.1654
% of variance	22.5	18.0
Cumulative %	22.5	40.5
Alpha coefficient	.7349	.6434

Table 3 Results of PC analysis and Varimax procedure and reliability analysis for the extracted factors from the 12 questions.

Items	Factor loading	
	1st	2nd
Rejection		
1. You grumble about your child's faults.	-	-
2. You feel uneasy about your child's faults.	.6031	.1316
3. When you scold your child, you inflict corporal punishment on him/her.	.7687	.1352
4. You call your child abusive names.	.6855	-.0934
5. You vent your temper on your child.	.6657	-.0990
6. When your child does not obey, you scold him/her.	.7799	.0604
Dotage		
7. You are overfond of your child.	-.0592	.7230
8. You pay dearly for your child's well being.	-.0991	.5914
9. You do not scold your child, but always praise him/her.	-	-
10. Without your child, you feel incomplete.	-.0111	.7463
11. You brag about your child.	.1736	.5651
12. The happiness of your child is your first consideration.	.1620	.7734
Eigenvalue	2.6667	2.1445
% of variance	26.7	21.4
Cumulative %	26.7	48.1
Alpha coefficient	.7575	.6931

Table 4 Reliability coefficients of two factors by the test-retest method.

	Spearman's R
First factor (n=68)	.61***
Second factor (n=69)	.56***

***p<.001

Table 5 Correlation between two factors of SMRA and four subscales of MS.

	1st factor Spearman's R	2nd factor Spearman's R
MS-form		
rejection (n=51)	.41**	.20
anxiety (n=51)	.15	.66***
maternal immaturity (n=51)	.13	.23
control (n=51)	.09	.46***

***p<.001 **p<.01

cients. However, there are reports that the parental rearing attitude is affected by the age of the children. Akasaka et al.¹⁰⁾ indicated that the parental rearing attitudes toward elementary school children were not the same as those toward junior high school children. In addition, Miyahara et al.⁹⁾ reported changes in

maternal rearing attitudes toward children from zero to three years old. They showed that there are significant differences in

several attitudes between mothers of four-month-old children and those of ten-month-old children. These reports, thus, suggested that the child age influences rearing attitudes of parents. In the present study, the interval between the first survey and the second survey was one month. This time period in babies and infants caused considerable development and growth of mind and body. Therefore, it was thought that the reliability demonstrated by the test-retest method was affected by the age of subjects' children only. In other words, it was suggested that the reproducibilities of the two subscales on the SMRA were sufficient as a subscale of psychological examinations.

The conceptual validity of the SMRA was evidenced by Symonds' report¹⁶⁾ about the relationship between parental child-rearing attitudes and children's personalities. The original Taken test originated from that report. According to that study, two rearing attitudes, "rejection" and "acceptance," divided all parental attitudes into two categories on a broad scale. The rejection described by Symonds consisted of three attitudes; rejection, cruelty and neglect, and the substance of this description fit the first factor of the SMRA. In the same way, acceptance as described by Symonds consisted of three attitudes; acceptance, overprotection and indulgence, and this fit the second factor of SMRA.

Concurrent validity of the SMRA was evidenced by analyzing the correlation between the two factors on the SMRA and

four subscales of the MS. In addition, the justification for the MS was previously evidenced by comparison with the original Taken test. Accordingly, the SMRA was a rearing attitudes inventory that retained the character of the original Taken test.

Conclusion

In conclusion, as a result of a chain analysis of the 50 items on the revised Taken test, it was demonstrated that 10 items extracted from the 50 were capable of assessing two maternal rearing attitudes toward their preschool children. One indicated "Rejection" and the other "Dotage." In addition, the number of items was decreased to one-tenth of that of the original 100 questions, which may curtail the response time required to complete the questionnaire and decrease the burden on subjects. Although this was the first study to restructure the original or revised Taken test, the exact criteria for estimation of the new test remain unclear. Standardizing these criteria thus requires further research.

Acknowledgments

I am very grateful to Prof. A Kitamura and Ms. M Kita (Master of Education), Nara University of Education, and Ms. T Takai and Ms. C Ito (public health nurse) and the other members of the Public Health Center for their supports.

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(Received May 16, 1996/ Accepted Apr. 15, 1997)