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child development and childcare in Japan

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ABSTRACT

With increasing numbers of women joining the workforce, there is a need for quality childcare. This project, conducted in Japan and using a large number of participants, sought to standardize an evaluation scale to measure the development of children. The development of children under six years of age ($N = 22,819$) who are enrolled in childcare programs was evaluated by childcare professionals. Percentiles were calculated (10th, 50th, and 90th percentile points) for each item (total 192) of six developmental subscales (gross motor, fine motor, social competence, communication, vocabulary, and intelligence development). The results supported the validity of this scale in measuring child development in Japan.

KEYWORDS *child development, childcare, Japan*

Introduction

The increased number of working mothers in Japan has led to the dramatic expansion of center-based child care. High-quality center-based care is essential to provide a safe, nurturing and comfortable environment for children whose parents are employed for lengthy working hours (Anme and Segal, 2004).

Quality of care must be considered if the effects of early childcare are to be understood (National Institute of Child Health and Human Development [NICHD], 1999a, 1999b). Children from higher-quality centers have been found to be less anxious and have less problematic transitions to school. However, in a longitudinal study, such positive effects of high quality center care facilities were not

discernible among all children sampled at age 13 years (Anderson, 1992). NICHD (2001, 2002a) further found that while the quality of maternal caregiving was the strongest predictor of development, the quality of nonmaternal caregiving was also associated with children's development. Contrary to the NICHD's expectations, family risk factors were the strongest predictors of behavior problems, prosocial behavior, and language skills in another longitudinal study, and there was limited evidence that child care experiences moderated the negative associations between family risk and the child outcomes under investigation (NICHD, 2002b).

A 2003 issue of *Child Development* (Volume 47[4]) was devoted to articles assessing the correlation between child care and child development. The NICHD (2003) and Langlois and Liben (2003) identified three conclusions: 1) the cumulative quantity of child care during the first four years of life predicted some problematic behaviors of children between ages four and a half and five years, but these behaviors were correlated with reports by parents and teachers, not with observed behaviors and were usually low to moderate, not large; 2) maternal sensitivity and family income were stronger predictors than quantity of care; and 3) the problem behaviors indicated were not at clinical levels.

Watamura et al. (2003) reported on some physiological correlates of child-care, suggesting that toddlers in non-parental care may experience more stress by the afternoon hours than do those who are in maternal care, yet, the effects of non-parental care may be mitigated by the quality of peer interaction they experience. A decade ago, Lamb (1996) reviewed the literature on the effects of non-parental care on children and found that evidence was inconclusive and that non-parental care does not necessarily have either positive or detrimental effects on infants and children. It is the quality of the relationship between the care provider and the child that substantially affects development. The findings of three different studies, one in Australia, another in Israel, and a third in the United States, were discussed by Love et al. (2003) highlighting that quality of care, rather than quantity, was a better predictor of children's outcomes, and in fact, when children are in non-parental childcare, parents compensate by increasing the intensity and amount of attention they devote to their children when they are together (Ahnert and Lamb, 2003). On a different note, Crockenberg (2003) suggests that is not only the quality and quantity of care a child receives (either parental or non-parental) but also a child's temperament and gender, including its tolerance for stress, that influence its development.

As the literature citations indicate, much of the study of child development in light of center-based childcare has occurred in Western countries. Less is known about it in other countries such as Japan. Furthermore, traditionally, in Western countries, children are placed in non-parental care for between eight and 10 hours during the workday. Despite the need for childcare for children after 6:00 pm,

there are few, if any, facilities that provide this service in most nations. Japan has responded to the need of working mothers, many of whom work long hours or during the night-time hours, by establishing governmentally authorized night care facilities. This formalization of center-based night care is rare in nations outside Japan. Even in Japan, few studies have assessed the influence of center-based care on child development (Anme, 1998). This study sought to evaluate and standardize measurement scales that assess child development in Japan using large sample of participants in center-based care.

Methods

Setting and sample

All authorized child daycare centers across Japan participated in the study. Centers unauthorized by the government were excluded as they often do not cooperate with external investigators. This research was implemented in compliance with the guidelines determined by the Japanese Government through the National Epidemiology Ethical Standards that protect human subject participation in research. The potential participants were all service providers and children in the authorized child daycare facilities. Following parental consent, service providers were invited to participate in evaluating the development of each child in their care in the facility. The return rate was 96.6 percent for response on children between the ages of nought to six years. Children with disabilities were excluded from this analysis as the needs and outcome measures of the children with disabilities differed substantially from those of children without disabilities. The final usable set of responses was 22,819, sufficiently large to provide some meaningful findings.

Table 1 provides demographic information on the children. The gender and age (in months) composition of the child population indicates that the distribution of boys, 11,606 (50.86%), and girls, 11,030 (48.34%), was fairly even. Only 3.26 percent of the children was under 12 months of age, 12.28 percent was 72 months or older.

Of the children evaluated, 55.07 percent had siblings, and 62.25 percent lived in a nuclear family. One third (33.61%) of the children was in daily childcare for 11+ hours.

Overview of measures

Childcare professionals evaluated children's social competence, communication, and development in vocabulary/motor/intelligence for each child using developmental items as identified in the evaluation chart (see manual in the Appendix).

table 1 Demographic information *N* = 22,819

Variable	N	%
Gender		
male	11,606	50.86
female	11,030	48.34
missing	183	0.80
Age in months		
0–11	742	3.26
12–23	2922	12.81
24–35	3775	16.54
36–47	4274	18.74
48–59	4222	18.51
60–71	4079	17.87
72–84	2742	12.28
Siblings		
One or more	12,568	55.07
None	10,251	44.93
Structure of family		
nuclear	14,888	65.25
single (mother)	3581	15.69
single (father)	215	0.94
extended	4131	18.10
other	4	0.02
Length of time in child care		
<11 hours	15,150	66.39
11+ hours	7669	33.61

The social competence subscale includes items such as ‘Drinks from a cup unassisted’ at 11 months and ‘Dresses unassisted’ at 56 months. The communication subscale includes items such as ‘Laughs when tickled’ at four months, ‘Plays house and family roles’ at 36 months, etc. The vocabulary subscale includes ‘Imitates definite speech sounds’ at 12 months, and ‘Repeats short stories’ at 60 months, etc. The motor subscale includes ‘Takes 2–3 steps unassisted’ at 14 months, ‘Attempts to draw a cross’ at 45 months, etc. The intelligence subscale includes ‘Is able to identify eyes, mouth, nose etc.’ at 21 months and can ‘count to three’ at 45 months.

All childcare professionals, already qualified in child development, were provided with a minimum of eight hours of training to translate children’s development into the measures indicated on the child development scale. These service providers in the center-based childcare facilities also evaluated the health and disabilities of the children based on guidance provided by physicians.

Results

Deviation from developmental norms was examined by using evaluating age appropriate behavior. Tables 2–7 identify, respectively gross motor development, fine motor development, development of social competence, development of communication, vocabulary development, and development of intelligence.

The 10th, 50th, and 90th percentile points were used as milestone makers of development. Each table (Tables 2–7) indicates what percentage of the children was able to emit a certain behavior at a particular age. For example, if one is to take the first item in Table 2, ‘Can turn head from side to side when supine’, moving across the row, the results indicate that 10 percent of children aged 0 months can do this, 50 percent of children at age two months can turn their heads, and 90 percent of five-month-old children can accomplish this.

table 2 Gross motor development

	(month)			
	Age in months	10th percentile	50th percentile	90th percentile
Can turn head from side to side when supine	1	0	2	5
Lifts head briefly from bed when lying prone	2	0	2	5
Holds head parallel to the bed briefly, then holds it up	3	1	2	7
When held in sitting position, holds up head	4	2	4	7
Rolls from side to abdomen	5	3	5	7
Rolls from back to abdomen	6	3	6	7
When prone, turns self using hands and feet	7	4	7	12
Sits steadily when unsupported	8	5	9	12
Stands holding onto furniture	9	7	10	16
Pulls self to standing position and stands holding onto furniture	10	10	11	21
Cruises or walks holding onto furniture	11	10	11	19
Can stand up from sitting position without help	12	10	12	19
Takes 2–3 steps by self	14	11	13	19
Walks with shoes	16	12	15	18
Can run steadily for 10 meters	18	14	18	24
Goes up stairs one step at a time without handrail	21	15	19	24
Kicks a ball forward	24	15	20	25
Hops with both feet	27	18	23	33
Goes up stairs using alternate feet	30	21	27	37
Stands and spins on heel	33	23	29	37

(Continued)

table 2 (Continued)

	(month)			
	Age in months	10th percentile	50th percentile	90th percentile
Stands on one foot for a few seconds	36	27	33	43
Does a somersault	39	27	33	43
Rides tricycle	42	30	38	48
Can long jump	45	33	40	48
Hops on one foot several times	48	35	45	56
Rides on a swing	52	40	47	60
Skips and hops on alternate feet	56	42	51	63
Stands on one foot for 5 seconds	60	42	53	67
On a swing in motion, alternates standing/ sitting positions	66	46	57	77
Stands on one foot for 10 seconds	72	46	60	<84
Jumps rope by self	78	50	61	<84
Bounces a ball under a leg	84	50	63	<84

table 3 Fine motor development

Item	(month)			
	Age in months	10th percentile	50th percentile	90th percentile
Sucks fingers	2	0	1	7
Tries to grasp items that touch cheeks	3	0	2	7
Clenches hand around rattle	4	4	4	7
Shakes rattle placed in hand	5	3	5	7
Able to grasp objects voluntarily	6	3	6	7
Transfers objects from one hand to the other	7	3	7	19
Uses thumb and index finger in pincer grasp	8	5	9	16
Beats a drum purposely	9	7	10	16
Screws lid on and off	10	10	11	19
Pushes a toy car	11	10	11	19
Scrawls on paper	12	10	12	19
Takes out a cube in a cup	14	11	13	19
Builds a two-block tower	16	12	15	19
Pours water from one cup to another without spilling	18	14	18	24
Draws circles repeatedly	21	15	19	24
Places blocks next to each other	24	15	20	28

(Continued)

table 3 (Continued)

Item	(month)			
	Age in months	10th percentile	50th percentile	90th percentile
Using hands, hangs from an iron bar for a few seconds	27	18	23	33
Imitates writing in a straight line	30	21	27	37
Imitates drawing a circle	33	23	29	37
Successfully uses scissors to cut paper	36	27	33	43
Fastens a 0.4 inch sized button successfully	39	27	33	43
Catches ball	42	30	38	48
Attempts to draw a cross	45	33	40	53
Successfully uses scissors to cut out a line	48	35	45	56
Catches a bouncing ball	52	40	47	60
Makes a paper plane under the guidance of an adult	56	42	51	63
Draws a picture of person with 3 identifiable body parts	60	42	53	67
Decides how to make better paper planes	66	46	57	77
Draws a picture of person with 6 identifiable body parts	72	46	60	<84
Draws a picture using paints and brush	78	50	61	<84
Makes a paper plane or a paper crane by origami	84	50	64	<84

table 4 Social competence development

	(month)			
	Age in months	10th percentile	50th percentile	90th percentile
Shows displeasure when head (face) is covered	3	0	2	9
Drinks liquid from a spoon	4	1	5	9
Shows excitement with entire body squeals, or breathes heavily in reaction to toys	5	3	6	9
Eats food, such as cracker by self	6	5	7	9
Drinks with a cup	7	3	7	12
Hates to wipe face when tries to wipe face	8	3	7	19
Brings a cup to the mouth with both hands	9	5	11	19
Expresses feelings without crying	10	10	12	19
Drinks from a cup by self	11	10	12	19

(Continued)

table 4 (Continued)

	(month)			
	Age in months	10th percentile	50th percentile	90th percentile
Tries to eat with a spoon	12	11	13	19
Peels off candy wrappers	14	12	15	19
Tries to wipe lips	16	12	16	19
Tries to assist adults in putting on pants	18	12	16	19
Drinks liquid through a straw	21	13	16	23
Informs others of the need to use the toilet	24	17	22	28
Takes off pants by self	27	18	22	28
Eats alone without spilling	30	20	25	33
Puts shoes on by self	33	21	27	34
Takes off jacket by self	36	15	28	36
Washes and wipes face by self	39	23	29	40
Washes and wipes hands	42	23	29	41
Blows nose	45	28	38	53
Washes body by self.	48	33	43	53
Crosses the road with awareness of signal lights	52	34	45	55
Dresses by self	56	34	45	56
Almost able to dress self in readiness for leaving the house	60	38	51	64
Dries body after bathing	66	39	55	72
Able to dress self completely in readiness to leave the house	72	42	57	<84
Wrings out wet towel	78	45	57	<84
Ties a ribbon in a bow	84	43	57	<84

table 5 Communication development

	(month)			
	Age in months	10th percentile	50th percentile	90th percentile
Communication development				
Watches parent's face intently as parent talks to infant	3	0	1	4
Laughs when tickle a child	4	0	4	7
Smiles at a person	5	0	4	7
Reacts at image of self in mirror	6	3	6	12
Recognizes differences in friendly and angry expressions	7	4	7	12
Smiles or talking at images in the mirror	8	5	8	12

(Continued)

table 5 (Continued)

	(month)			
	Age in months	10th percentile	50th percentile	90th percentile
Communication development				
Expresses displeasure when object is taken away	9	5	9	12
Imitates simple acts and noises	10	7	10	18
Recognizes parents; begins to fear strangers	11	7	10	18
When parents leave, tries to follow	12	8	11	18
Repeats actions that attract attention and cause laughter	14	11	14	19
Can prepare simple meals, such as cold cereal and milk	16	12	15	19
Asks for help	18	12	16	19
Holds hands with friends	21	13	16	22
Plays alone even parent is not nearby	24	13	17	24
Imitates answering the phone	27	14	24	36
Tells adults about quarrels	30	18	27	41
Tends to take care of younger ones	33	20	32	43
Plays house and family roles	36	26	33	45
Asks for permission.	39	27	33	45
Borrows or lends a toy	42	27	36	48
Able to await turn in a group	45	27	39	53
Tells adults where to go	48	24	45	56
Makes decisions using the "rock-paper-scissors" game	52	38	46	57
Builds sand castles cooperatively with others	56	38	48	60
Takes a role in a simple game with someone's help	60	40	53	67
Takes change from the cashier	66	45	59	80
Takes a role in a simple game by self	72	45	60	<84
Plays 'Old Maid'	78	50	63	<84
Anticipates what a friend wants	84	50	66	<84

As indicated in Tables 2–7, all items are ranked in order of difficulty. Results of this large-scale sample suggest that, in Japan, the month listed in the 90th percentile may be the average age at which most children generally accomplish that developmental task. Hence, from Table 2 (gross motor development scale), the age at which a child is usually able to 'turn its head from side to side when supine should be 5 months'. At age 67 months, children, on average, are 'able to stand on one foot for 5 seconds' (Table 2). At age 28 months, children are usually able to 'inform others of the need to use the toilet' (Table 4, social competence scale).

table 6 Vocabulary development

Vocabulary development	(month)			
	Age in months	10th percentile	50th percentile	90th percentile
Vocalizes, other than crying	3	0	2	7
Laughs aloud	4	0	4	7
Coos	5	2	5	9
Vocalizes in response to familiar voices	6	3	6	19
Vocalizes to toys	7	4	6	19
Makes sounds beginning with consonants m, b, or p	8	6	8	19
Makes sounds beginning with consonants t, d, or ch	9	6	9	19
Produces vowel sounds and actively chained syllables	10	6	10	19
Begins to imitate sounds	11	10	13	19
Imitates definite speech sounds	12	12	15	25
Says two words, such as 'dad, mama'	14	13	16	28
Says three words	16	14	17	28
Can identify one object by name in a picture book	18	14	18	28
Can identify three objects by name in a picture book	21	17	21	28
Speaks a simple sentence using two words	24	19	23	34
Shows emotion through words (beautiful, nice, cute, etc.)	27	20	25	36
Gives own first name and family name	30	24	28	41
Can repeat a two-number sequence	33	25	30	43
Can repeat a two-word sequence	36	25	31	46
Has simple conversations with children of same age	39	27	33	48
Can repeat three simple sentences(1/3)	42	32	38	56
Can repeat three simple sentences(2/3)	45	34	42	60
Can produce parents' names and address successfully	48	40	48	66
Can repeat a four-number sequence	52	40	48	67
Repeats a simple sentence after adult	56	43	53	67
Repeats short stories	60	45	57	70
Can successfully play a word-chain game	66	48	58	79
Tells a story voluntarily	72	48	60	<84
Reads <i>hiragana</i> (the Japanese cursive syllabary) books	78	50	66	<84
Not to use baby talk	84	50	66	<84

table 7 Intelligence development

	(month)			
	Age in months	10th percentile	50th percentile	90th percentile
Becomes quiet on hearing a voice	3	0	2	7
Tries to locate voices by turning head to side	4	0	4	7
Recognizes the difference between the mother's and others' voices	5	2	5	7
Smiles when finds person	6	2	5	9
Understands parent's feeling from the tone	7	4	6	12
Locates voices by turning head to side and looking in same direction	8	4	7	12
Recognizes the difference between familiar and stranger voices	9	4	8	12
Responds to word 'no'	10	7	10	14
Reacts to greetings by waving hands	11	7	10	14
Understands simple verbal commands (1/3)	12	10	12	19
Understands simple verbal commands (3/3)	14	11	14	19
Can follow simple commands in succession	16	13	15	23
Asks adult to read for child	18	13	16	24
Is able to identify eyes, mouth, ears, hands, foot, stomach	21	15	19	28
Understand the meaning of 'one more' and 'little bit'	24	17	22	34
Is able to identify the eyes, hair, teeth, tongue, belly button, nails	27	20	25	36
Understands the meaning of big and small	30	23	27	37
Understands the meaning of long and short	33	25	31	43
Names four or more colors	36	27	33	43
Understands the meaning of high and low	39	27	34	45
Understands the concept of numbers (up to 2)	42	30	36	50
Understands the concept of numbers (up to 3)	45	32	40	53
Understands the concept of uses	48	34	45	56
Understands the concept of numbers (up to 5)	52	37	46	60
Can differentiate the right from the left	56	42	50	66
Understands the feelings of hungry, tired and cold	60	42	55	67
Can understand riddles	66	45	57	72
Comprehends analogies, such as 'If ice is cold, fire is . . .'	72	45	57	<84
Plays a card game of concentration	78	47	60	<84
Is able to tell time	84	47	63	<84

Discussion

Center-based care is unique in Japan, reflecting the increase in the number of parents who work late into the night (Anme and Segal, 2003). This investigation explored child development in center-based care in Japan, with a large sample of participants with an aim to both establish and empirically assess developmental norms and to standardize evaluation measures in the country. standardize evaluation measures in the country. All care centers in this study had passed governmental standards and attempted to ensure that the natural circadian rhythms for children, such as sleeping, eating, and playing, were well maintained.

This is the first nationwide study that seeks to standardize an instrument to measure child development in Japan. Most importantly, the findings may identify average among children in the Japan of the 21st century. It is necessary, however, to note the selectivity of the sample that is drawn from governmentally authorized daycare centers in Japan which may provide more stimulation and resources for children to develop than may facilities that are not so regulated. Nevertheless, while different samples may evidence divergent results, and while additional follow-up research with the current sample will investigate less obvious effects of childcare that may emerge later in development, this project, with its large sample size of 22,819 subjects, achieved its general purpose of identifying some developmental averages in Japan and providing standardized measures to evaluate them.

Appendix

Reference 1 Manual for Child Development Chart

- This chart provides direction to evaluate children's development and progress. The evaluator must know the child very well.
- The leftmost column includes age ranges, from one month (0:01) at the bottom of the chart, to seven years (7:00) at the top. Successive columns identify six subscales of development (gross motor, fine motor, social competence, communication, vocabulary, and intelligence).
- Begin by identifying the child's age in the leftmost column.
- Moving right in the row to the first subscale at age appropriate level, indicate if child evidences a particular behavior by entering a 'O'. If this behavior is not evidenced, enter an 'X'.
- Begin by identifying evidenced behaviors from bottom of the age appropriate point on the list for the first subscale, and moving up. When you have entered 3 'X' marks in succession, please stop making additional entries upward for that subscale.
- Using the same subscale (the first), begin responding again at the age appropriate point and, this time, move downward. If you are able to place 3 'O' marks in session, please stop making additional entries.
- Repeat this process of each subscale, moving systematically to the right.
- Each subscale should end with should have 3 'Xs' and 3 'Os'.

Please respond to the following items using the 'X' or 'O' as appropriate

I. Gross motor development

1. Can turn head from side to side when supine.
2. Lifts head briefly from bed when lying prone.
3. Holds head parallel to the bed briefly, then holds it up.
4. When held in sitting position, holds up head.
5. Rolls from side to abdomen.
6. Rolls from back to abdomen.
7. When prone, turns self using hands and feet.
8. Sits steadily when unsupported.
9. Stands holding onto furniture.
10. Pulls self to standing position and stands holding onto furniture.
11. Cruises or walks holding onto furniture.
12. Can stand up from sitting position without help.
13. Takes 2-3 steps without assistance.
14. Walks with shoes.
15. Can run steadily for 10 meters.
16. Goes up stairs one step at a time without handrail.
17. Kicks a ball forward.
18. Jumps with both feet.
19. Goes up stairs using alternate feet.
20. Stands and spins on heel (unnecessary to complete 360 degrees).
21. Stands on one foot for a few seconds.
22. Does a somersault.
23. Rides tricycle.
24. Can long jump.
25. Hops on one foot several times.
26. Rides on a swing.
27. Skips and hops on alternate feet.
28. Stands on one foot for 5 seconds.
29. On a swing in motion, changes from standing/sitting position to sitting /standing.
(If child afraid to do so, please mark 'x')
30. Stands on one foot for 10 seconds.
31. Jumps rope unassisted.
32. Bounces a ball under one leg.

II. Fine motor development

1. Grasps when contact is made with fingers.
2. Sucks fingers.
3. Tries to grasp items that touch cheeks.
4. Clenches hand around rattle.
5. Shakes rattle placed in hand.
6. Able to grasp objects voluntarily.
7. Transfers objects from one hand to the other.
8. Uses thumb and index finger in pincer grasp.

9. Beats a drum purposefully.
10. Screws lid on and off.
11. Pushes a toy car.
12. Scrawls on paper.
13. Takes out a cube from a cup.
14. Builds a two-block tower.
15. Pours water from one cup to another without spilling.
16. Draws circles repeatedly.
17. Places blocks next to each other.
18. Using hands, hangs from an iron bar for a few seconds.
19. Imitates writing in a straight line.
20. Imitates drawing a circle.
21. Successfully uses scissors to cut paper.
22. Fastens a 0.4 inch sized button successfully.
23. Catches ball.
24. Attempts to draw a cross.
25. Successfully uses scissors to cut along a line.
26. Catches a bouncing ball.
27. Makes a paper plane under the guidance of an adult.
28. Draws a picture of person with three identifiable parts to the body.
29. Decides how to make a better paper plane.
30. Draws a picture of person with six identifiable parts to the body . . .
31. Draws a picture using paints and brush.
32. Makes a paper plane or a paper crane using origami.

III. Social competence development

1. Turns head toward the breast or feeding bottle when hungry.
2. Evidences satiation after feeding (spits out nipple, turns face away).
3. Shows displeasure when head (face) is covered.
4. Drinks liquid from a spoon.
5. Shows excitement with entire body, squeals, or breathes heavily in reaction to toys.
6. Eats food, such as cracker, unassisted.
7. Drinks from a cup.
8. Dislikes having face wiped.
9. Brings a cup to the mouth with both hands.
10. Expresses feelings without crying.
11. Drinks from a cup unassisted.
12. Tries to eat with a spoon.
13. Peels candy wrappers.
14. Tries to wipe lips.
15. Tries to spread legs to allow adult to easily dress with pants.
16. Drinks liquid through a straw.
17. Informs others of the need to use the toilet.
18. Takes off pants unassisted.
19. Eats unassisted without spilling.
20. Puts shoes on unassisted (no-string shoes).

21. Takes off jacket unassisted.
22. Washes and wipes face unassisted.
23. Washes and wipes hands.
24. Blows nose.
25. Washes body unassisted (not necessarily all parts of body).
26. Crosses the road according to makes a clear distinction between colors of signals.
27. Dresses unassisted.
28. Dresses almost satisfactorily to go out.
29. Dries body after bathing.
30. Dresses adequately to go out.
31. Wrings out wet towel.
32. Ties a ribbon in a bow.

IV. Communication development

1. Stops crying when held.
2. Stares at human face.
3. Watches parent's face intently as parent talks to infant.
4. Laughs when tickled.
5. Smiles at a person.
6. Reacts at image of self in mirror.
7. Recognizes the difference between friendly and angry expressions.
8. Smiles or talks to images in the mirror.
9. Expresses displeasure when object is taken away.
10. Imitates simple acts and noises.
11. Recognizes parents; begins to fear strangers.
12. When parents leave, tries to follow.
13. Repeats actions that attract attention and cause laughter.
14. Can prepare simple meals, such as putting together cold cereal and milk.
15. Asks for help.
16. Holds hands with friends.
17. Plays alone even if parent is not nearby.
18. Imitates answering the phone.
19. Tells adults about quarrels.
20. Tends to take care of younger children.
21. Plays house and family roles.
22. Asks for permission.
23. Borrows or lends a toy.
24. Able to await turn in a group.
25. Tells adults where to go.
26. Makes decisions using the 'rock-paper-scissors' method.
27. Makes a sand mountain cooperatively with two or more people in the sandbox.
28. Takes a role in a simple game with someone's help.
29. Takes change from the cashier.
30. Takes a role in a simple game by self.
31. Plays old maid (understands the rules thoroughly).
32. Anticipates what a friend wants.

V. Vocabulary development

1. Cries loudly.
2. Cries in a variety of tones.
3. Vocalizes, other than crying.
4. Laughs aloud.
5. Coos.
6. Vocalizes in response to familiar voices.
7. Vocalizes to toys.
8. Makes sounds beginning with consonants m, b, or p.
9. Makes sounds beginning with consonants t, d, or ch.
10. Produces vowel sounds and actively chained syllables (baba, dada, kaka).
11. Begins to imitate sounds.
12. Imitates definite speech sounds.
13. Says two words, such as 'dad, mama'.
14. Says three words.
15. Can identify one object by name in a picture book.
16. Can identify three objects by name in a picture book.
17. Speaks a simple sentence using two words.
18. Shows emotion through words (beautiful, nice, cute, etc.).
19. Gives own first name and family name.
20. Can repeat a two-number sequence ('5-8' '6-2' '3-9') and two correct answers out of three.
21. Can repeat a two-word sequence and do this correctly two-thirds of the time.
22. Has simple conversations with children of same age.
23. Can repeat three simple sentences ('Flowers come out.' 'A plane flies.' 'I sing well.') and one correct answer out of three.
24. Can repeat three simple sentences (as above), with at least two correct answers.
25. Can produce parents' names and address successfully.
26. Can repeat a four-number sequence ('5-2-4-9' '6-8-3-5' '7-3-2-8'), with two correct answers out of three.
27. Repeats a simple sentence after adult ('Two children are playing with swings.' 'A big moon came out above the mountain.' 'I went shopping with mama yesterday.'), with two correct answers out of three.
28. Repeats short stories.
29. Can successfully play a word-chain game.
30. Tells a story voluntarily.
31. Reads *hiragana* (the Japanese cursive syllable) books.
32. Does not use baby talk.

VI. Intellectual development

1. Shakes hands or feet when a sound is made near the ear.
2. Visually searches to locate voices.
3. Becomes quiet when hears a voice.
4. Tries to locate voices by turning head to side.
5. Recognizes the difference between the mother's and others' voices.
6. Smiles when finds a person.
7. Understands parent's feeling from the tone.

8. Locates voices by turning from head to side and looking in the same direction.
9. Recognizes the difference between a familiar voice and a stranger's voice.
10. Responds to word 'no'.
11. Reacts to greetings by waving hands.
12. Understands simple verbal commands (e.g. 'Give it to me', 'Come here', 'Throw this'), with one correct answer out of three.
13. Understands simple verbal commands (same as above), with three correct answers out of three.
14. Can follow simple commands in succession.
15. Asks adult to read for child.
16. Is able to identify eyes, mouth, ears, hands, foot, stomach and four correct answers out of six.
17. Understand the meaning of 'one more' and 'little bit'.
18. Is able to identify the eyes, hair, teeth, tongue, belly button, nails and four correct answers out of six.
19. Understands the meaning of big and small.
20. Understands the meaning of long and short.
21. Names four or more colors.
22. Understands the meaning of high and low.
23. Understands the concept of numbers (up to two).
24. Understands the concept of numbers (up to three).
25. Understands and appropriately answers all five questions below:
 - Q₁: If you want to read, what do you need? (Answer: book, etc.)
 - Q₂: If you want to write, what do you need? (Answer: pencil, etc.)
 - Q₃: If you want to know the time, what do you need? (Answer: clock, etc.)
 - Q₄: If you want to sit, what do you need? (Answer: chair, etc.)
 - Q₅: If it's dark, what do you need? (Answer: light, etc.)
26. Understands the concept of numbers (up to 5).
27. Can differentiate the right from the left.
28. Understands the feelings of being hungry, tired and cold.
29. Can understand riddles.
30. Comprehends analogies, such as 'If ice is cold, fire is.'
31. Plays a card game of concentration.
32. Is able to tell time

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