

*An Interim Report for the Mitsubishi Foundation  
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*On the operational criteria of Ohta's Staging  
as an instrument measured cognitive development  
in autism spectrum disorders (ASD)  
(or pervasive developmental disorders :PDDS)  
(Revised 2007)*

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Autistic children have difficulty in developing all domains of symbolic functioning, including language, symbolic play, gesture imitation, etc. (DeMyer et al. 1981, Ferrari 1982, Hermelin 1978, Ohta 1987, Ricks & Wing 1975, Tanguay 1984, Ungerer & Sigman 1981).

In order to clarify and describe in terms of development, we have hypothesized five structural stages of symbolic representative development employing Piaget's and other developmental theories (Table 1).

Furthermore, we have developed operational criteria for symbolic representational stages using language development as the criteria, that is, Language Decoding Test (Ohta 1987), now we are using Language Decoding Test Revised (1992).

We have already reported the validity of this classification in term of describing characteristics on a developmental scale, that is Ohta's staging

(Ohta & Nagai 1986).

Today, we will present the operational criteria of the staging.

Stage I is non-symbolic representation; the operational criteria of that are zero or less than 4 correct responses on the LDT-R1 (Language Decoding Test Revised sub-test1:).

Figure 1 shows LDT-R1 as identification of object by name.

Stage I is divided into three sub-stages according to clinical behavioral symptoms. Stage I-1 is a period when there is no active requesting behaviors. Since crying or showing distress is an example of requesting behaviors, no caretaker can understand child's request except by inferring from their situations or daily routine.

Stage I-2 is characterized by the most dominant request behavior known as the "crane phenomenon". In order to fulfill their request, autistic children take someone's hand as if the hand was a machine or "crane".

In Stage I-3 is, instead of the crane phenomenon, various request behaviors including speech, gestures and/or pointing are observed.

Figure 2 shows LDT-R2, identifying objects by use. For example, "With which thing do you write?". Criteria for stage II, which is identified as the "emergence of symbolic functioning", is passing Stage I and 4 or more correct responses on this LDT-R2.

Autistic children who pass Stage II are examined with the LDT-R3 (Figure 3). Stage III, which is identified as "explicit existence of symbolic functioning", is divided into two sub-stages according to this LDT-R3.

Criteria for stage III-1, which is identified as the "understanding object names", is failure on these two tasks of LDT-R3.

Stage III-2 is passing LDT-R3 and failure in criteria on LDT-R4, which is shown in figure 4. The LDT-R4 is as follows: five items are placed in front of the subject: a pair of scissors, a small box, a small plastic dog, a button, and a set of three blocks. Six tasks are given regarding placement of the items as Figure 5 shows.

Stage III-2 is passing LDT-R3, which Figure 3 illustrated and failure in criteria on this LDT-R4. That is, if the subject has earned credit for tasks 1) ~3) and one of task 4) or 5), or all the tasks, his/her stage is evaluated as Stage IV.

The LDT-R5 (Figure 5) is test for conservation of quantities. A number of tasks are arranged in order of difficulty in terms of cognitive development. Passing Stage III-2 and failing on this LDT-R5, children are classified as Stage IV.

If the subject passes the LDT-R5 tasks completely, his/her developmental stage is classified as the concrete operational period as defined by Piaget.

Ohta M. Cognitive disorders of infantile autism: A study employing the WISC, Spatial relationship conceptualization and gesture imitation.1987 Journal of Autism & Developmental Disorders 17(1) 45-62

Table 1

## STAGE OF COGNITIVE DEVELOPMENT (Ohta's Staging)

Stage I	Non-symbolic representation
Stage I-1	Non active requesting behaviors
Stage I-2	"Crane phenomenon" most frequent behavior
Stage I-3	Various request behaviors including speech, gesture and/or pointing behavior
Stage II	Emergence of symbolic functioning
Stage III	Explicit existence of symbolic functioning
Stage III-1	Understanding "object names"
Stage III-2	Understanding "concepts of relationship"
Stage IV	End of the preoperational period
Stage V	More than Stage IV

## Language Decoding Test Revised (LDT-R)

Figure 1

LDT-R 1  
(Identifying objects by name)

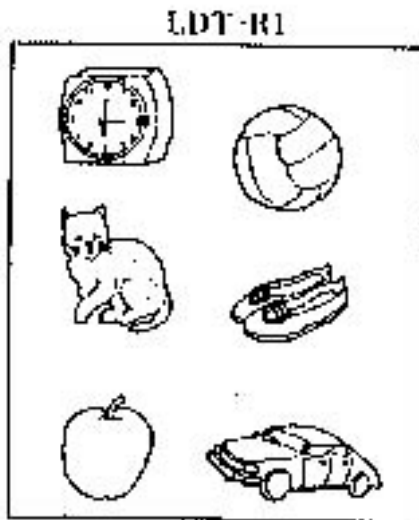
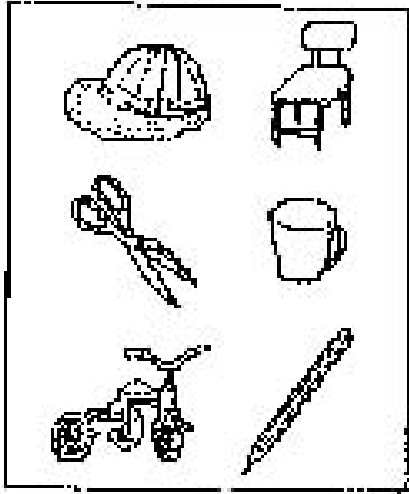


Figure 2

LDT-R2  
(Identifying objects by use)

LDT-R3



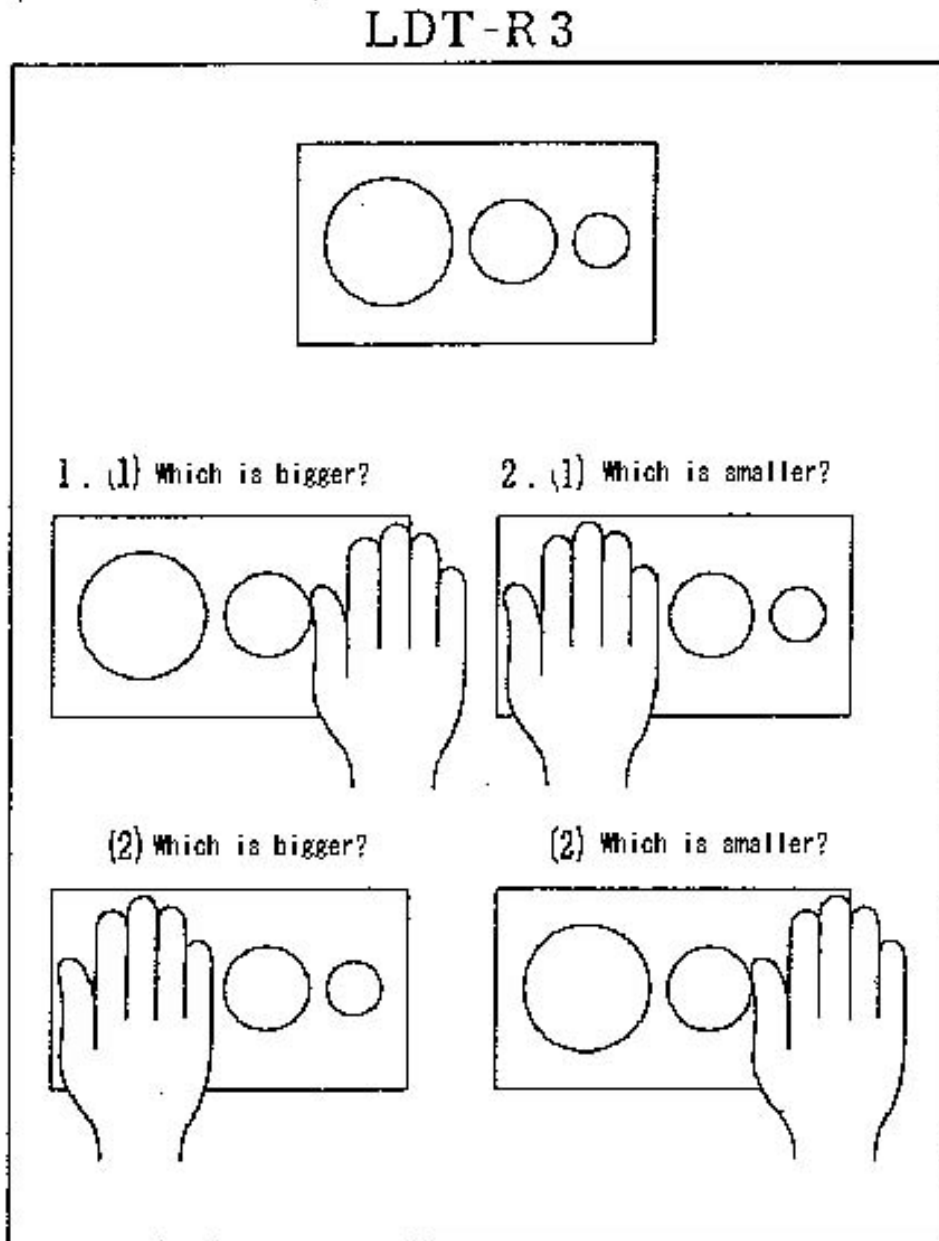
Which is a cat?

Which can you drink with?

Figure 3

LDT-R 3 (three-circle comparison)

Procedure;



Criteria;

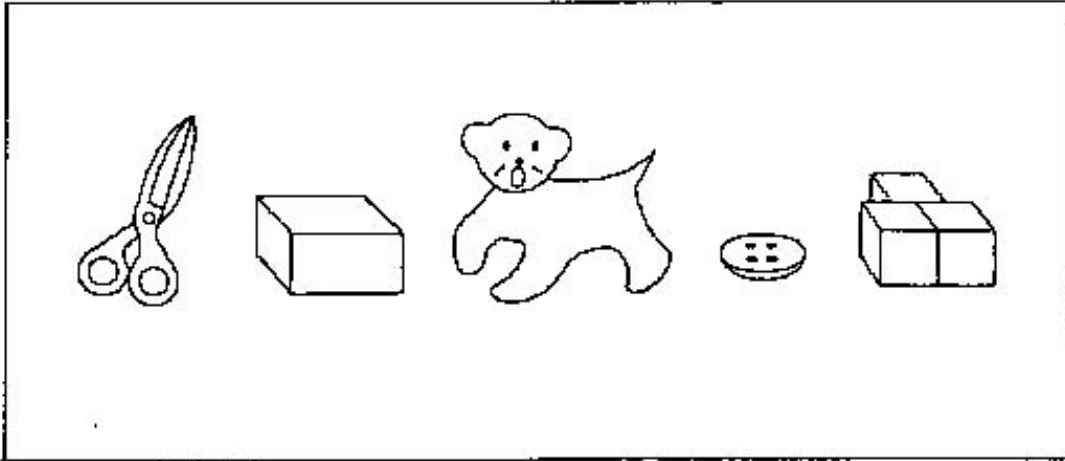
Credit is given only there is a correct response on both trials.

Remark;

If the subject does not obey instruction and identify each circle correctly at will, the subject gets no credit.

Figure 4

### LDT-R 4



#### LDT-R4 (spatial relationships)

- 1) Pick up the dog.
- 2) Put the button on the box.
- 3) Put the scissors next to the blocks.
- 4) Put the box on the button.
- 5) Put the blocks next to the scissors.
- 6) Put the button into the box.

#### Procedure;

After each task is completed, the items are placed back in their original position by the examiner. Two trials are given for each task. If the subject responds correctly in both trials for a particular task, he/she is given credit.

#### Criteria;

If the subject has earned credits for tasks 1)~3) and one of task 4) or 5), his/her stage is evaluated as Stage IV.

**Figure 5**

**LDT-R5 (conservation of quantities)**

1) Are there more black marbles or white marbles?



2) Are there more black marbles or white marbles?



3) Repeat #2.

Are there the same numbers of black marbles or white marbles?



**LDT-R6 (concept of inclusion)**

Which is more, all the marbles or the black marbles?

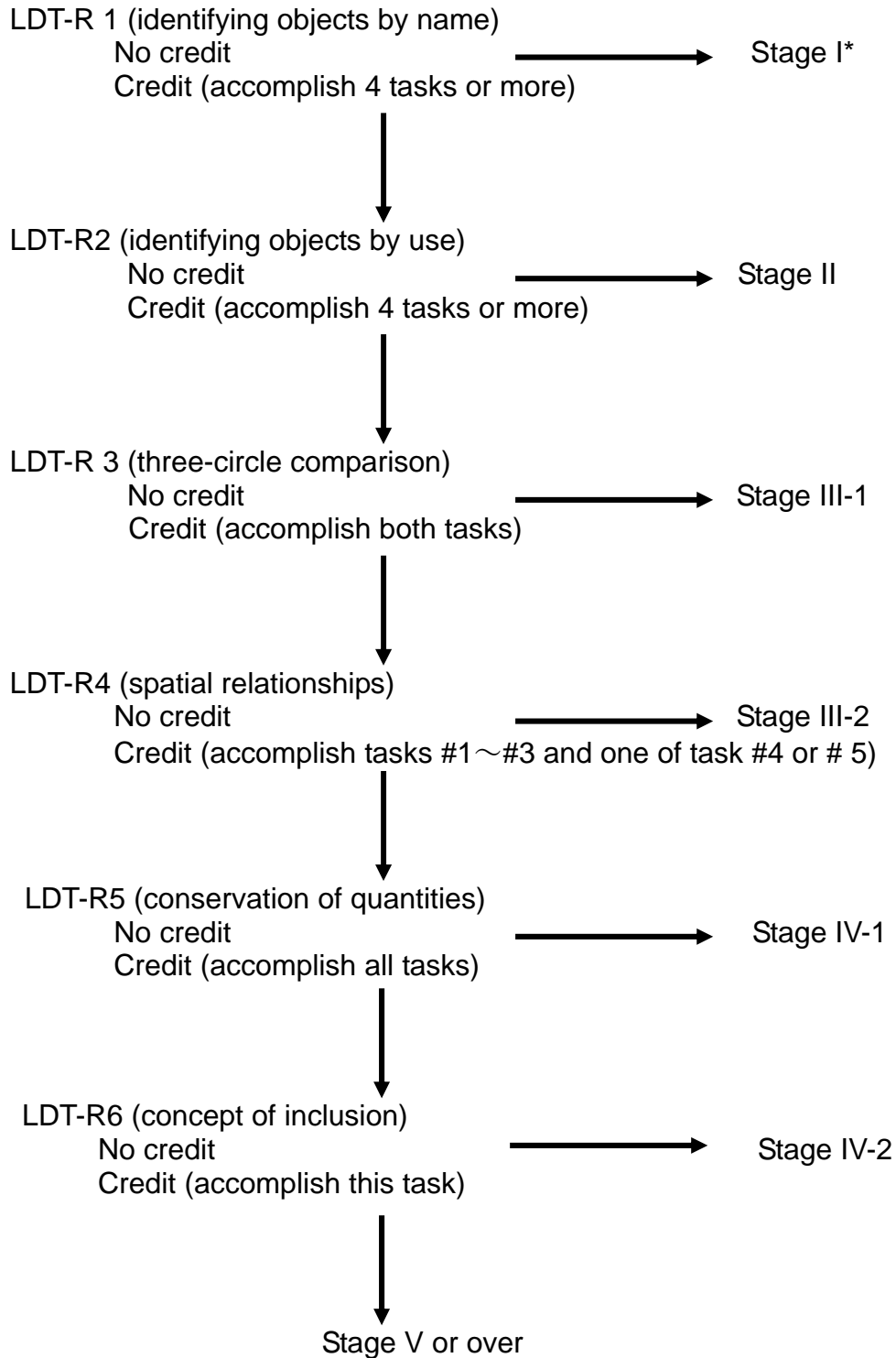


Criteria;

If the person passes all tasks of the subject, his/her cognitive ability reaches the concrete operational period according to Piaget's theory.

(Reference of this paper is elsewhere)

## Algorithm of Ohta's Stage Evaluation



\* Stage I is divided three substages according to “crane phenomenon”

## L D T - R Score Sheet

Name \_\_\_\_\_ (M F) DOB / / Age year month

Date of Exam. / / / ID No. Stage:

Examiner: \_\_\_\_\_

<b>LDT-R 1 Identifying objects by name</b>		
cat		
ball		
clock		
shoes		
apple		
tricycle		
<b>LDT-R 2 Identifying objects by use</b>		
drink		
write		
ride		
cut		
sit		
wear		
<b>LDT-R 3 Three circles comparison</b>		
(big & middle) Which is bigger?		
(middle & small) Which is bigger?		
(middle & small) Which is smaller?		
(big & small) Which is smaller?		
<b>LDT-R 4 Spatial relationships</b>	1st	2nd
1) pick up the dog.		
2) put the button on the box.		
3) put the scissors next to the blocks.		
4) put the box on the button.		
5) put the blocks next to the scissors.		
6) put the button into the box.	(      )	
<b>LDT-R 5 Conservation of quantities</b>		
1) ●●●●● ○ ○ ○ ○ ○		
2) ●●●●● ○ ○ ○ ○ ○		
3) ● ● ● ● ● ○ ○ ○ ○ ○		
<b>LDT-R6 concept of inclusion</b>		
●●●●●●●●●● ○ ○ ○ ○ ○		

(Japanese Association of Ohta's Stage Research 2005)