

# Comparison of Problematic Behavior According to the *Ryouiku Techou* Standard

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**Abstract.** [Purpose] We compared problematic behaviors of children according to the severity of their mental retardation (MR) of intellect as categorized by the *Ryouiku Techou* in this study, to investigate the influence of MR of intellect on children's problematic behaviors. [Subjects] The subjects were 86 mentally retarded children undergoing physical therapy at hospitals and other facilities. [Methods] The examiners were 13 physical therapists and 8 occupational therapists who worked at the hospital and knew the children well. The examiners individually assessed the subjects using the Japanese version of the Aberrant Behavior Checklist. The subjects were divided into two groups (A and non-A) according to the *Ryouiku Techou* standard. [Results] No significant differences were observed between the groups except in the items of stereotypy and lethargy. [Conclusion] Problematic behaviors other than stereotypy and lethargy were not influenced by the *Ryouiku Techou* standard.

**Key words:** The Japanese version of the Aberrant Behavior Checklist, *Ryouiku Techou*, Problematic behavior

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## INTRODUCTION

Tada reported that 55% of the services provided by physical therapists at special needs education schools were for physically handicapped children, and included individual counseling and lectures concerning physical disabilities for such children. The services of physical therapists for mentally retarded children, however, also accounted for a high percentage (30.4%), and include individual counseling for mentally retarded children and lectures concerning mental retardation (MR)<sup>1)</sup>.

Tada's report suggests that physical therapists are often involved in the management of mentally retarded children. We assessed 26 mentally retarded children undergoing pediatric physical therapy at one of three facilities, including a child daycare facility. Examiners were a physical therapist and other medical practitioners working at the facilities. Assessment was made using the Japanese version of the Aberrant Behavior Checklist (ABC-J). Out of 26 children, *irritability* was observed in 23, *lethargy* in 23, *stereotypy* in 13, *hyperactivity* in 23, and *inappropriate speech* in 12<sup>2)</sup>. Pediatric physical therapists must increase their understanding of MR<sup>1)</sup>, and physical therapy approaches must consider MR<sup>3)</sup>. Development tests commonly used to measure mental retardation of handicapped children do not reveal problematic behaviors that may interfere with physical therapy.

We compared problematic behaviors according to the severity of MR in intellectual children as categorized by

the *Ryouiku Techou*. The purpose of this study was to investigate the influence of MR of the intellect on children's problematic behaviors.

## SUBJECTS AND METHODS

The subjects were 86 mentally retarded children undergoing physical therapy at hospitals and other facilities (56 boys and 30 girls; age 16 months to approximately 20 years; average age  $8.5 \pm 4.7$  years) (Table 1). Subjects' diagnoses included cerebral palsy (CP) and psychomotor retardation among others. The examiners were 13 physical therapists and 8 occupational therapists who worked at the hospital and knew the children well (Table 2). The examiners individually assessed all subjects using the ABC-J. The subjects were divided into two groups (A and non-A) according to the *Ryouiku Techou* standard. *Ryouiku Techou* is distributed available to intellectually disabled persons by the Japanese Government and is used in the assessment of their intellectual disability. Individuals are classified into one of the three stages (A, B1, B2) representing serious, moderate, and slight disability, respectively, based on their intellectual disability. The study objectives, significance, methods, and privacy protection were explained to the caregivers of the subjects in writing, and each participant provided their informed written consent. Wilcoxon's signed rank sum test was applied to the ABC-J scores of both groups for *irritability*, *lethargy*, *stereotypy*, *hyperactivity*, and *inappropriate speech*. Statistical analyses were conducted using R 2.8.1 software. The ABC<sup>4)</sup> is a questionnaire developed by Aman et al. to assess problematic behaviors in mentally handicapped persons. It has been used in several studies, including those on syndrome phenotype and pharmacotherapy ef-

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**Table 1.** Subjects

Case	Diagnosis	Age	Sex	the Ryouiku Techou 3stage
1	mentally-retarded	2Y5M	Female	
	Cerebral palsy	5Y9M	Male	
3	Pierre Robin syndrome	3Y3M	Male	B1
4	3P trisomy	12Y1M	Female	A
5	Epilepsy (West syndrome)	6Y6M	Female	A
6	Cerebral palsy	5Y8M	Male	A
7	mentally-retarded	3Y7M	Female	B1
8	mentally-retarded	5Y1M	Male	A
9	mentally-retarded	8Y	Male	A
10	Cerebral palsy	4Y10M	Male	
11	Epilepsy (West syndrome)	5Y1M	Male	A
12	Chromosome aberration (8p-synd)	13Y11M	Male	A
13	Cerebral palsy	7Y4M	Male	
14	Down syndrome	1Y4M	Male	
15	Cerebral palsy	13Y6M	Female	
16	Cerebral palsy	4Y7M	Female	A
17	Cerebral palsy	4Y10M	Male	A
18	autism	9Y4M	Male	A
19	Cerebral palsy	7Y9M	Male	
20	Mowat Wilson syndrome	5Y3M	Male	A
21	mentally-retarded	15Y5M	Female	A
22	Mowat Wilson syndrome	7Y7M	Male	A
23	Pena-Shokeir	19Y10M	Female	A
24	Bourneville-Pringle	13Y	Male	A
25	microcephaly	16Y	Male	A
26	mentally-retarded	9Y10M	Male	A
27	Chromosome aberration (13 trisomy)	15Y2M	Male	A
28	Cerebral palsy •mentally-retarded	15Y5M	Male	A
29	mentally-retarded	6Y11M	Female	A
30	Cerebral palsy	5Y8M	Male	A
31	Cerebral palsy •mentally-retarded•Epilepsy	13Y7M	Male	
32	mentally-retarded•Epilepsy	3Y5M	Male	
33	Cerebral palsy	14Y	Male	
34	Cerebral palsy •mentally-retarded•Epilepsy	12Y9M	FeMale	
35	Cerebral palsy •mentally-retarded	17Y6M	Male	
36	Head injury aftereffects	13Y7M	Male	A
37	Head injury aftereffects	16Y5M	Female	A
38	Artifact of brain tumor aftereffects•Epilepsy	16Y4M	Female	
39	HIE•Epilepsy	6Y4M	Male	A
40	Cerebral palsy	15Y	Male	A
41	Cerebral palsy	9Y2M	Female	A
42	Chromosome aberration (6P-) mentally-retarded	3Y5M	Female	B2
43	Cerebral palsy	2Y	Male	B2
44	Cerebral palsy	11Y3M	Male	A
45	Cerebral palsy	10Y5M	Female	A
46	Head injury aftereffects	4Y2M	Male	A
47	Cerebral hemorrhage aftereffects	9Y4M	Male	
48	asplenia	6Y3M	Male	
49	dwarfism	6Y6M	Male	B2
50	Cerebral palsy	13Y2M	Male	

**Table 1.** Continue

51	Cerebral palsy	4Y6M	Male	
52	mentally-retarded	4Y6M	Female	B2
53	schromosome aberration	4Y7M	Female	A
54	Cerebral palsy	9Y2M	Male	
55	Cerebral palsy	14Y5M	Female	
56	hydrocephalus	6Y2M	Male	A
57	campomelic dysplasia	10Y2M	Male	
58	Cerebral palsy	7Y2M	Male	
59	Cerebral palsy	9Y5M	Female	
60	Cerebral palsy	16Y7M	Male	A
61	Artifact of brain tumor aftereffects	17Y	Female	A
62	Cerebral palsy	11Y1M	Male	
63	Cerebral palsy, mentally-retarded	15Y2M	Male	
64	Cerebral palsy, mentally-retarded	13Y10M	Female	
65	Acute encephalopathic aftereffects	18Y1M	Male	
66	Acute encephalopathic aftereffects	5Y6M	Female	
67	Acute brain fever	9Y	Female	A
68	mentally-retarded	6Y7M	Male	A
69	mentally-retarded	6Y4M	Male	
70	Head injury aftereffects	14Y8M	Male	
71	mentally-retarded	6Y3M	Female	
72	Influenza-associated encephalopathy aftereffects	6Y7M	Male	
73	mentally-retarded	4Y0M	Male	
74	autism	7Y5M	Male	
75	Cerebral palsy	19Y	Female	
76	Williams's syndrome	2Y4M	Female	A
77	Cerebral palsy	4Y6M	Male	A
78	Cerebral palsy	8Y	Male	A
79	Cerebral palsy	7Y1M	Male	A
80	PVL	4Y4M	Female	
81	PVL	6Y5M	Male	A
82	One side cerebellum loss	2Y6M	Female	
83	low birth weight infant	6Y0M	Female	B1
84	mentally-retarded	6Y	Male	A
85	mentally-retarded	5Y6M	Female	A
86	Epilepsy	6Y6M	Male	A

Y, year; M, month

fects. Outside Japan, several studies have used ABC<sup>3, 5-8</sup>). ABC has a total of 58 questionnaire items: 15, 16, 7, 16, and 4 for *irritability*, *lethargy*, *stereotypy*, *hyperactivity*, and *inappropriate speech*, respectively. Medical staff, parents, caretakers, and other examiners who know the subjects well assess these items using a 4-point scale: no problems (0 points), minor problems (1 point), moderate problems (2 points), and major problems (3 points) to depict the severity of the problematic behavior. *Ryouiku Techou* is provided by the Japanese Government to people with intellectual disability, to assist with consultation regarding the disability and the provision of help from various welfare systems. It is classified into three stages (A, B1, B2), as described above. This study was approved by the Research Ethics Committee of Kobe International University (G2009-004).

## RESULTS

Significance of differences (p) observed between the A and non-A groups were as follows: *irritability*, p = 0.223; *lethargy*, p = 0.027; *stereotypy*, p = 0.018; *hyperactivity*, p = 0.174; *inappropriate speech*, p = 0.231. There were no significant differences between the groups for any items except those of *stereotypy* and *lethargy* (Table 3).

## DISCUSSION

Physical therapists use exercise and physical therapy to help physically handicapped adults and children improve their basic physical capabilities. Physically handicapped children are often also mentally retarded<sup>7</sup>). Pediatric physical therapists must increase their understanding of MR<sup>6</sup>,

**Table 2.** Characteristics of examiners

Examiners	Sex	Years work experience
PT A	female	7
B	male	2
C	male	2
D	male	2
E	male	2
F	female	2
G	female	14
H	female	2
I	female	20
J	female	22
K	female	15
L	male	13
M	male	10
OT a	female	10
b	female	2
c	female	11
d	female	2
e	female	2
f	female	24
g	female	7
h	female	4

and physical therapy approaches must consider MR<sup>1)</sup>. According to the National Liaison Council of Four Development Support Facilities Organizations that examined 2,609 children attending schools for mentally retarded children, 56.0% had severe MR, 30.6% had medium MR, and 8.7% had autism<sup>9)</sup>. Koike reported that 145 children attending a particular pediatric rehabilitation department included 54 with CP or other cerebral disorders, and 43 of these children also had MR. Physical therapists often treat mentally retarded children with CP. The better the motor functions, the lower the percentage of children with MR and problematic behaviors<sup>10)</sup> With regard to gross motor function classification system levels, the percentages of severe MR and problematic behaviors were reported as follows: Level I, approximately 5% or less of children with both disabilities were capable of ascending/descending stairs; Level II, approximately 20% and 5% or less, respectively, were capable of walking; Level III, approximately 30% and 5% or less, respectively, were capable of walking with assistive mobility devices; Level IV, approximately 25% and 5% or less, respectively, were capable of using electrically powered wheelchairs; and Level V, approximately 85% and 10%, respectively, had limited self-mobility even with the assistance of electrically powered wheelchairs. According to Carlsson et al., MR is observed in 45% of children with CP and 25% of them show severe MR. Twenty-five percent of parents of children with CP assess their children as behaving abnormally, and 18% assess their children as

**Table 3.** Comparison of Group A with Group non-A

	Group A (n=43)	Group non-A (n=43)
	Median (inter-quartile range)	Median (inter-quartile range)
Irritability	8.0 (2.0 – 13.0)	4.0 (2.0 – 10.5)
Stereotype	2.0 (0.0 – 8.0)	0.0 (0.0 – 2.5)
Hyperactivity	10.0 (3.0 – 17.0)	6.0 (2.0 – 12.0)
Inappropriate Speech	0.0 (0.0 – 2.0)	1.0 (0.0 – 2.0)
Lethargy	9.0 (2.0 – 15.0)	4.0 (1.0 – 10.5)

being borderline. Children with CP are known to be at a higher risk of behavioral and psychological problems than healthy children. However, for handicapped children including those with CP, the only problematic behaviors in this research that were influenced by the *Ryouiku Techou* standard were *stereotypy* and *lethargy*. All subjects were receiving physiotherapy and had impaired mobility. *Lethargy* relates to insufficient activity; *stereotypy* relates to insufficient movement repertory. Therefore, the examiners were readily able to evaluate problematic behaviors. The main limitation of this study was that there were some subjects in the non-A group who not *Ryouiku Techou* holders. Although the examiners knew the subjects well, this study was limited by the fact that examiner knowledge of subjects varied. Few studies address problematic behaviors from a medical perspective. Despite such limitations, this study has significance and offers new contributions as a physical therapy study.

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