

Developmental Neuropsychology of Cognition in Children with Severe Brain Dysfunction

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1993 Fiscal Year Final Research Report Summary

Developmental Neuropsychology of Cognition in Children with Severe Brain Dysfunction

Research Project

Project/Area Number

04831003

Research Category

Grant-in-Aid for General Scientific Research (C)

Allocation Type

Single-year Grants

Research Field

認知科学

Research Institution

Kanazawa University

Principal Investigator

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1992 – 1993

Keywords

Severe brain Dysfunction / Auditory Cardiac Responses / Orienting Reflexes / Postnatal Experience

Research Abstract

The subjects were 6 children with severe brain dysfunction, who were resident in hospitals for severely handicapped children. Through measuring auditory evoked potentials(ABR, MLR, SVR), the functional state of brain were estimated.

Cardiac responses to environmental stimuli reflect the active aspects of cognitive system. Therefore, based on the information about these responses, it is possible to estimate cognition in children with severe brain dysfunction.

About these subjects, cardiac responses to auditory stimuli were examined regarding both aspects of transient changes (phasic) and long-lasting changes(tonic) of heart rates(HRs). Results were as follows :

1. In subjects with brainstem dysfunction, inferred from waveforms of ABRs, tonic and phasic HR responses were hardly observed to auditory stimuli.
2. In subjects with normal functions of brainstem, developmental shift in the direction of HR responses were observed. Namely phasic accelerating

responses (defensive reflexes) became to be clear with increasing temporal variability of HRs, and then occurrences of decelerating responses(orienting reflexes) gradually insereased. In the further stage of development, "the second" accelerating responses to signal stimuli were observed. These responses were regarded as occurences of active attention. Considering the immature level of cardiac responses to enviromental stimuli, it might be possible estimate the aspect of plasticity in the cognitive function of children with severe brain dysfunction.

Research Products (4 results)

All Other

All Publications (4 results)

[Publications] 片桐和雄: "重度重複障害児の発達生理心理学の課題" 特殊教育学研究. 31(3). 57-62 (1993) 

[Publications] 片桐和雄: "重度脳障害児における聴性心拍反応の発達の検討" 小児の精神と神経. 33(3・4)(印刷中). (1994) 

[Publications] Katagiri, Kazuo: "Developmental psychophysiology for children with severe brain dysfunction." Japanese Journal of Special Education. 31(3). 57-62 (1993) 

[Publications] Katagiri, Kazuo: "A developmental study of auditory cardiac responses in children with severe brain dysfunction." Psychiatria et Neurologia Paediatrica Japonica. 33(3/4), (in press). (1994) 

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