This thesis tested the hypothesis that hyperactive rated children would exhibit a selective attention deficit. Inadequacies in the behavioural definition and assessment of both hyperactivity and selective attention, led to the conclusion in 1975, that contrary to general opinion, the selective attention hypothesis had not been adequately tested. Thus it was felt necessary to establish in what ways children rated to be overactive, distractable and impulsive show deficits of selective attention.

From samples acquired in normal schools, those children rated both by teachers and observers to be hyperactive were selected for study of selective attention processing. Selective attention was defined, following one current prominent theory (Shiffrin and Schneider, 1977) as a limitation in the capacity to encode, search and decide in "working memory" and operationalized in memory and visual search tasks in the paradigm suggested by Sternberg (1969 a,b). This enabled the term selective attention to be assessed in terms of stages of information processing rather than as a global construct.

A systematic examination of three stages proposed in Sternberg's paradigm: encoding, search and binary decision and manipulation of the speed-accuracy trade-off by instruction sets provided evidence of differences between the hyperactive and normoactive rated children. These experiments did not, however, provide evidence of a selective attention deficit in hyperactives. These results lay open to question the hypothesis of selective attention deficits in hyperactive rated children in normal schools. It questions, furthermore, the usefulness of applying this concept diagnostically as proposed in the Diagnostic and Statistical Manual III and as an explanatory concept of hyperactive behaviour as recently suggested by Rosenthal and Allen (1978).

In chapter 1, the term hyperactivity is examined for its aetiological, diagnostic and explanatory usefulness. In this chapter it is argued that clear-cut evidence for diverse prognostic hypotheses is needed and that some of these hypotheses need to be re-examined. In this thesis will be tested the selective attention hypothesis of hyperactive rated children in normal schools by teachers and observers. In chapter 2, the selective attention hypothesis will be tested. These children are selected from samples acquired in normal schools, those children rated both by teachers and observers to be hyperactive, distractable and impulsive show deficits of selective attention.

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and Allen (1978).... needed for its... aetiological, diagnostic and prognostic significance. It is concluded... in this chapter that the aetiology is theoretically uncertain... that clear-cut diagnostic criteria are absent which lead to a... diverse prognosis from psychotic to normal behaviour. To overcome... some of these problems, the assessment of hyperactivity in this... thesis will be conducted through behavioural ratings and observations by teachers and observers. Previous work in testing attentional defi-
cits in hyperactivity are briefly reviewed. A critical summary of an... attentional experiment by Sykes, Douglas and Morgenstern (1973) is... given to illustrate the need to operationalize selective attention in... terms of stages of information processing.

In chapter 2, there is reviewed the concept of selective atten-
tion as a cognitive process which is required to overcome the limita-
tions in man's capacity to handle information, in certain conditions. ...these conditions refer to the modes of information processing: auto-
matic and controlled processing (Shiffrin and Schneider, 1977). In an... automatic mode, selective attention demands are absent. In controlled... processing mode, demands of attention may lead to either a... divided attention deficit or to a focal attention deficit. This thesis is... concerned with the former, which is defined as a reduction in per-
formance due to effects of loading the system by the addition of sen-
sory inputs or additions in memory load. In this theory, selective... attention has its locus in short term memory, consequently, tasks... with a high loading on short term memory processes are required to... establish the operation of divided attention. For this purpose search... tasks are employed. Two types of search tasks were employed in this... thesis: memory and visual search tasks.

In chapter 3, there was described in detail the select'ion pro-
cedure employed in obtaining subjects and the method of measurement... used in the memory and visual search tasks.

This concludes section one of the thesis. This is followed by... section two, which is a full-report of six experiments conducted to... test the selective attention deficit hypothesis.

In experiment 1, the relation between ratings by teachers, ob-servers and scoring of video-recordings of the children's behaviour... is reported. Teachers rated the children on six scales: activity,
distractability, impulsivity, task application, irritability and talkativeness. Observers rated the children on the first three scales. There was further employed and tested for its validity as a diagnostic instrument, the Matching Familiar Figures test. The results of this experiment reject the employment of this test as a suitable instrument for rating hyperactivity. Succeeding studies will be based upon the concordant assessment of the children's behaviour by teacher and classroom observers on criteria scales given separately for each of the succeeding experiments.

In experiment 2, the first test of the selective attention hypothesis was conducted on three groups of children rated concordantly on three criteria scales: activity, distractability and impulsivity. Three groups of children were formed which represented firstly low scores on these scales, the so-called normoactives, secondly moderate scores, the somewhat hyperactives, and thirdly high scores on the criteria scales, the hyperactives. The task administered to the children was a memory search task. While there was evidence that the three groups differed from each other in their performance, there was no evidence of a selective attention deficit in the hyperactives. Indeed the somewhat hyperactive group differed most in performance from controls. Since this group was rated higher in task application than the hyperactives, the following experiment was designed to examine how task application related to attentional performance.

Four groups of children rated high or low on activity and high or low on task application took part in a memory search task in experiment 3. No evidence of a selective attention deficit was obtained in this study.

In experiment 4, the two conditions of speed and accuracy were applied to three groups of children, first of all, secondly constant speed, and thirdly variable speed. While there were clear differences between the three groups of children, there was no evidence of selective attention deficit in the hyperactives. Indeed the somewhat hyperactive group differed most from controls in performance. Since this group was rated higher in task application than the hyperactives, the following experiment was designed to examine how task application related to attentional performance.

Four groups of children rated high or low on activity and high or low on task application took part in a memory search task in experiment 3. No evidence of a selective attention deficit was obtained in this study.

By employing the same groups in a visual search task, there was tested the possibility that the demands of a visual search task with simultaneous stimuli being presented for search and decision might lead to evidence of selective attention deficiency. While the accuracy of the children rated to be overactive was significantly different from normoactives, children rated as variable were less accurate than children rated to be consistent in task application. These results of experiment 4 did not implicate selective attention as being disturbed in hyperactives.
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In experiment 5, the same visual search task was employed but in
two conditions of stimulus visibility: intact and degraded and with
three groups of children rated firstly to be overactive and distract-
able, secondly distractable and thirdly low on distractability and
activity. While there was clear operation of selective attention
and of the encoding stage of the model, there could not be shown
to be any evidence of either an encoding or a selective attent-
ion deficit in the hyperactive children. Inspection of the group who
differed most from controls suggested that the performance of this
group could perhaps be accounted for by a strategy where accuracy is
sacrificed for the speed of cognitive processing.

In experiment 6, there was made a formal test of the relation
between speed and accuracy in a visual search task with the same
groups of children which were used in experiment 5. It was found that
there were clear differences between hyperactives, somewhat hyper-
active and controls. However, these differences were not to be ex-
plained by a selective attention hypothesis. They were to be account-
ed for by a difference in the effect of a speed stress upon, on the
one hand, hyperactives and, on the other hand, the somewhat hyper-
actives and controls. The latter two groups obeyed the expectations
of the macro-trade-off function. The latter group did not conform
to this function. This group's performance could be accounted for by
a deadline model of information processing, whereas the somewhat
hyperactives and controls conformed to a fast guess model. Inspection
of the latency of error responses in relation to correct responses
suggested that hyperactives may alternate between applying a fast
guess or a deadline strategy in meeting the demands of the task.

In the general discussion a number of critical issues in
research in hyperactivity is discussed: selection of samples, cog-
nitive models and clinical samples, time-on-task effects in hyperact-
ivity, strategy differences in hyperactivity. This is followed by
considering the special effect of speed-stress on information pro-
cessing. Recent suggestions which relate the effects of speed of process-
ing to the state of the organism are considered and suggestions
are made how such proposals may account for the results found in
this set of experiments. There is indicated the need to consider in
future work the role of state factors in information processing and this is related to the response organization stage of the model.

It is concluded that there is no evidence to support the selective attention deficit hypothesis in children rated to be hyperactive who attend a normal school as measured in memory and visual search tasks used here.

In dit proefschrift voorzag men de kinderen van een diagnose op basis van hyperactiviteit, onderscheiding van hyperaktiviteit, normale kinderen en kinderen met stoornissen. Volgens Schneider (1977) was het mogelijk het begrip bij te houden van hyperactiviteit. Daarom werden de kinderen die als hyperactief werden genoemd, gesteld van kinderen die als hyperactief en normaal werden genoemd, en dit werd volgens de normale kinderen onderzocht, waarbij de snelheid - nauwkeurigheid - nauwkeurigheid als hyperactief en normaal werd. Het is mogelijk het begin van de studie van informele kinderen en kinderen met stoornissen.

Drie stadia van informele aandacht behelp van deze kinderen en kinderen met stoornissen. Verder is het hiernamaals kritisch, kritisch gedrag, zoals (zie ook Rosenth...