Applications of Span Theory: Intelligence Testing of Non-verbal [1]
Physically Handicapped Young Adults: A Preliminary Report

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Span Theory is a theory of intelligence whose central ability construct is Span Ability. Span Ability is directly assessed by an immediate memory span test. Unlike most tests of intelligence or cognitive ability, the span test does not require that a subject be tested for his understanding of, or skill with, specific tasks or materials. Rather, the immediate memory span test measures the subject's ability to cope with numbers of stimuli; the particular stimuli and responses used to test span ability are theoretically irrelevant. This means that, in principle, valid span tests may be given people with extremely limited response repertoires and extremely limited training histories.

This paper presents the methods and preliminary findings of a project whose aim is to measure the span abilities of several non-verbal seriously physically handicapped residents of Western Carolina Center. Because of their limited behavioral repertoire and failure to perform on traditional IQ tests these individuals have generally been considered to be profoundly retarded and yet some of these people are considered to be much brighter, perhaps even normal, by staff who know them well. For this reason the administration has authorized a class for these people in which they are learning to communicate via symbol boards. The symbol board is a matrix of pictures, diagrams, and written words. By pointing out single symbols or sequences of symbols these students can communicate with their teacher and with each other. The students are well able to point out specific words or symbols upon request and it is this skill which makes span testing possible

The most common form of the immediate memory span test involves auditory presentation of random word or digit sequences and requires their immediate ordered reproduction. Three basic variations of this type of test have been developed for use with symbol boards: a) The words are spoken by the tester and the student points out each word on the symbol board. b) The words are presented in American Sign Language and the student responds by pointing. and c) The words are spoken, the tester scans the board, and the subject nods to indicate each correct word. In the latter procedure the scanning is first for the correct column then for the correct item within a column. When the subject feels he has completed a response sequence, he turns his head to the side to stop the scanning.

Testing is still in progress but the results to date indicate span abilities ranging from 1.7 to 5.4 for four subjects. The 1.7 score is quite low by any known standard but the 5.4 score is the average score for normal adults when tested by the auditory-vocal word span test which is the standard test of my research program. These test results tend to bear out the conviction that some of these subjects are much brighter than profoundly retarded but it must be determined empirically that scores on the symbol board tests are directly equivalent to scores on the standard auditory-vocal span test. Preliminary comparisons among the four tests with normal adults reveal no large or systematic differences in scores on the four tests. Formal comparison is now in progress and will be reported in March. Individual differences in span ability will be discussed with respect to individual differences in classroom performance, communication, and rate of acquisition.

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