

Standardisation of a test of Concentration

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Concentration has been defined as "sustained attention". Attention is not a sharply defined concept. It is closely related to the terms such as alertness, awareness, responsiveness. But it is a widely accepted and clinically useful concept, and its degree and character may be a criterion for acuity of general mental activity and state of consciousness. There is no human activity which does not draw on attention and concentration.

Numerous tests have been devised to ascertain attention capacity. There are tests such as deleting certain letters in a text, finding out misprints, short or tachistoscopic pictorial exposure, colour cancellation and digits-forward digits-backward test.

A close look at these tests reveals that some of them measure memory or capacity for retention plus attention, e.g., digits-forward digits-backward. Other tests offer a low level of task difficulty and do not demand "sustained attention", e.g., deleting of certain letters or colour cancellation. A certain minimum level of task difficulty is essential for the arousal of "sustained attention."

There is no test of attention and concentration which is standardised in India. All the tests of attention in use in India are based upon foreign studies and no Indian norms are available. This fact inspired the present investigator to design and standardise a test of concentration.

AIMS : The aim of the present study is to devise a task which :

- (1) measures attention and concentration as such ;
- (2) has some good level of task difficulty to arouse sustained attention ;
- (3) is economical in terms of time and effort ;
- (4) is applicable to our semi-literate population.

THE DISTURBANCE OF ATTENTION

The problems in the field of attention are seen in varied forms. Attention may be *reduced*. Strong and repetitive stimulation may be necessary before any reaction takes place. The mental energy may be easily exhausted, and the patient may be unable to perceive and take in more than one item at a time. The patient's attention may *fluctuate* in its intensity or may be *fleeting* ; the patient may appear on one occasion quite alert, and immediately after, inaccessible. He may be unable to persevere at any particular task ; he may be easily fatigued and fall back to inertness.

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There may be *difficulty in shifting attention* ; this probably plays a part in certain disturbances in optomotor mechanisms ; the patient may be unable to read because he cannot shift his attention along the printed text ; or a patient may be unable to identify a large pictorial object because he has difficulty in shifting his attention from one part of the picture to another. Attention may be fixed to a tiny object as if the patient was "*stimulus bound*". Other patients may have difficulty in shifting their attention from one subject to another because of perseveration which is also present in other activities. Attention may, on the other hand, be *diffuse* ; the patient is then unable to direct his attention to any particular object. This may be the case with patients, without any other defects in the visual sphere, who are unable to point out a particular object from an assembly of objects, or a particular number from numbers spaced out on paper. Such phenomena have been regarded also as a disturbance in *set*, that is, in the state of expectancy preceding the presentation of a stimulus. The attention may be *contracted*, when only one stimulus or part of a situation can be registered at a given time. Attention, though it can be shifted, is then entirely absorbed by the object just under focus. This can manifest itself in various ways. Patients may, as long as they are fixing an object, neglect any other stimulus in the visual field. Of two stimuli, simultaneously applied to different parts of the skin, only one may be noticed. Other patients may be unable to carry out two different simple tasks at the same time. It may result in bizarre statements as seen in Korsakoff's syndrome ; registration of only part of a situation, for example, of the hospital ward, will make the patient believe that he is in a military camp ; at another occasion, during an interview, he will call the interviewing physician a teacher and, when asked his age, give his school age.

The patient's attention may wander ; his *distractibility* may be increased. When in conversation, every accessory stimulus, any noise in the surroundings, may distract him, and he is unable to sustain his attention. Such distractibility can be seen, apart from psychotic pictures, in post-encephalitic conditions, particularly in children, and in the initial stages after prefrontal leucotomy.

Attention disturbance, when of a more *circumscribed nature*, may be confined to one or more functional fields. In these cases inattention to certain sensory stimuli may be extreme ; the patients may neglect and may appear to be unaware of these stimuli, although they are otherwise quite alert. The disturbance will usually be discovered during routine examination.

To cut short, we need an objective and dependable tool to help us understand these various conditions of disturbed attention as well as the role of attention and concentration in patient-care and comprehensive nursing.

The present test consists of 30 digits in a line and there are 25 such lines printed on a single sheet of paper. The digits are taken from the Random Num-