

EFFECTS OF EDUCATION AND SEX ON SOME COMMON CLINICAL TESTS USED IN MENTAL STATUS EXAMINATION

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SUMMARY

Some common clinical tests were evaluated to see the effects of education and sex. The effect of education was highly significant on tests of Attention and Concentration, Immediate Retention and Recall, General Knowledge (From 'A'), Counting and Calculation, and Comprehension. Males tended to score higher on all of these tests and the differences were significant on tests of Attention and Concentration, and Comprehension in illiterate group of subjects, and on tests of Comprehension in V-IX educational group. It is suggested to obtain norms for these tests for different educational groups, as well as for males and females, before any valid conclusion can be drawn.

The tests of Orientation, Remote Memory, and Recent Memory were not affected by age & education.

From time to time, many investigators have studied the effect of intelligence on one or many of clinical tests used to examine a psychiatric case in routine clinical practice. When Hayman (1941) tried to standardize the test of serial subtraction of sevens from one hundred an indication was given that higher intelligence rating was associated with greater accuracy in the performance of this test. Warburton (1963) found that age, intelligence and sex have got some bearing on tests of rote memory. In a factorial study of 15 clinical tests of memory, Eysenck and Halstead (1945) found that all these tests correlated positively with the intelligence, the correlation varying from 0.65 to 0.96. While devising a battery of tests to measure functions of memory, Williams (1968) found that differences in I. Q. caused differences in score on all tests (especially digit span) but do not affect the test profile. Pershad and

Prasad (1974) reported that digit span test performance was influenced not only by diagnosis but by education also. Folsstein (1975), while evaluating the validity and reliability of 'Mini Mental State', documented that it was correlated with WAIS scores. Hinton and Withers (1971) investigated the influence of intelligence, schooling and age on some reliable clinical tests of sensorium (Withers and Hinton, 1971). There was little doubt that intelligence as measured by standardized tests had a significant bearing on results of clinical tests of sensorium even when patients were mentally disturbed at the time of testing. The findings further confirmed that directly or indirectly, there was some relationship between scores of clinical tests of sensorium and length of schooling but the relationship had little predictive value.

Though, these clinical tests have been in common use by psychiatrists and

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clinical psychologists alike to evaluate psychiatric patients, they themselves have not been evaluated in full detail.

The present study was aimed at studying the effects of education and sex on some common clinical tests used in mental status examination.

Material and Methods

Sample—A sample of 100 neurotic patients was drawn from Psychiatry O.P.D. of K. G's. Medical College, Lucknow. Only patients between age range of 17 years to 50 years having diagnosis of a neurotic disorder according to ICD-9 (W. H. O., 1978) were included.

Patients showing any evidence suggestive of mental retardation, psychosis or organic brain disease including associated neurological disease or not accompanied by a reliable informant were excluded.

47 males and 53 females were studied. Most of the subject (N=61) were in age range of 17-30 years, while in 31-45 years and 46-50 years age-range the number was 37 and 2 respectively. 56 subjects belonged to urban area while 44 were of rural background. Hindu were 68 in number and muslim were 32. Education wise most subjects (N=39) had qualification of X or above, 19 subjects each had qualification of class V (Primary) and from class VI to IX respectively, while illiterate group was comprised of 23 subjects. Most of the subjects were married (N=62). 34 subjects were unmarried and 4 were widow. For females household work was the main occupation while males were engaged in service, cultivation, studies and business. Diagnostic breakup of sample revealed that neurotic depression was present in 35 subjects, followed by anxiety-state (N=31) and hysteria (N=27). There were 4 cases of obsessive compulsive

disorders and 3 cases of hypochondriasis.

Tools—A large number of clinical test items from various psychiatric textbooks and also those used in our hospital (Department of Psychiatry, K. Gs. Medical College, Lucknow) were reviewed by a panel of experts for their utility and applicability. A format was prepared in hindi comprising of tests of Orientation, Attention and Concentration, Remote Memory, Recent Memory, Immediate Retention and Recall, General Knowledge (Form 'A' and Form 'B'), Counting and Calculations and Comprehension. These tests were quite comprehensible even to illiterate rural subjects and they were found to have good test-retest and inter-rater reliability (Srivastav, 1982). The correlations (r) for test-retest were 0.96, 0.85, 0.96, 0.88, 0.83 and 0.50 respectively for tests of Attention and Concentration, Immediate Retention and Recall, General Knowledge (Form 'A' and Form 'B'), Counting and Calculations, and Comprehension, whereas there was no variation in scores for tests of Orientation, Remote Memory, and Recent Memory. Again, there was no variation in score for any item, when inter-rater scoring was done for these tests.

The test items of General Knowledge were divided into two groups, Form 'A' and Form 'B', to be administered respectively to subjects educated below high school and to those who had passed high school examination.

Procedure—The selected patients were interviewed on the day of their very first attendance after O. P. D. hours in a separate interview room where minimum extraneous disturbance was possible. The patients were cooperative and communicative and the testing could be completed in one session itself. No difficulty was experienced in administering these tests.

Results**TABLE 1.** Mean and Standard deviation of various tests in different educational groups and their level of significance.

Test	Mean	s.d.
<i>Attention and concentration</i>		
Illiterate (n=23)	10.22	7.64
Primary (n=19)	19.95	9.08
V-IX (n=19)	26.26	7.09
X & above (n=39)	29.18	5.28
F=33.87 ; d.f.=3, 96 ; p<0.001		
<i>Immediate retention and recall</i>		
Illiterate (n=23)	39.70	9.94
Primary (n=19)	44.53	6.95
V-IX (n=19)	51.95	10.11
X & above (n=39)	56.15	8.80
F=13.04 ; d.f.=3, 96 ; p<0.001		
<i>General knowledge form 'A'</i> *		
Illiterate (n=23)	8.96	2.16
Primary (n=19)	10.74	2.99
V-IX (n=19)	12.05	2.48
F=7.49 ; d.f.=2, 58 ; p<0.01		
<i>Counting and calculation</i>		
Illiterate (n=23)	6.57	2.87
Primary (n=19)	9.79	4.07
V-IX (n=19)	12.53	2.06
X & above (n=39)	13.79	1.70
F=60.81 ; d.f.=3, 96 ; p<0.001		
<i>Comprehension</i>		
Illiterate (n=23)	11.52	1.38
Primary (n=19)	12.11	1.17
V-IX (n=19)	12.63	1.42
X & above (n=39)	12.92	1.21
F=8.82 ; d.f.=3, 96 ; p<0.001		

*Subject having education X and above were not given this test.

Table-1 shows the mean and s.d. of various tests in different education groups. When 'F' test was applied, the effect of education was found to be highly significant ($p<0.001$) on tests of Attention and Concentration, Immediate Reten-

tion and Recall, Counting and Calculations, and Comprehension. The effect was significant ($p<0.01$) on tests of General Knowledge (Form 'A'). As all the subjects who were administered tests of Orientation, Remote memory and Recent memory obtained the maximum possible scores, there seems to be no effect of education on these test.

TABLE 2. Mean and s.d. of various tests in males and females and their 't' values.

Tests	Mean	s.d.
<i>Attention and concentration</i>		
Male (n=47)	29.00	5.54
Female (n=53)	16.79	10.06
t=7.31 ; d.f.=98 ; p<0.001		
<i>Immediate retention and recall</i>		
Male (n=47)	52.89	10.46
Female (n=53)	45.30	11.29
t=3.44 ; d.f.=98 ; p<0.001		
<i>General knowledge</i>		
Form A Male (n=18)	12.39	2.45
Female (n=43)	9.67	2.61
t=3.72 ; d.f.=59 ; p<0.001		
Form B Male (n=29)	5.97	3.13
Female (n=10)	2.50	1.28
t=1.82 ; d.f.=37 ; N.S.		
<i>Counting and calculations</i>		
Male (n=47)	12.98	2.64
Female (n=53)	9.0	4.09
t=5.64 ; d.f.=98 ; p<0.001		
<i>Comprehension</i>		
Male (n=47)	13.26	0.91
Female (n=53)	11.62	1.91
t=7.10 ; d.f.=98 ; p<0.001		

Table-2 depicts the mean and s.d. of various tests in males and females. 't' values were highly significant ($p<0.001$) on tests of Attention and Con-

centration, Immediate Retention and Recall, General Knowledge (Form 'A'), Counting and Calculations, Comprehension, and not significant on tests of General Knowledge (Form 'B'). No effect of sex was observed on tests of Orientation, Remote Memory, and Recent Memory as all the subjects have scored the maximum possible scores on these tests

The effect of sex in different educational group on tests of Attention and Concentration, Immediate Retention and Recall, General Knowledge (Form 'A'), Counting and Calculations, and Comprehension was also studied. The 't' values obtained were not significant in almost all educational groups except in illiterate group where it was found to be significant on test of Attention ($p < .01$) and Concentration, and Comprehension ($p < 0.05$) and in group V to IX where it was significant ($p < 0.01$) only on tests of Comprehension.

Discussion

In the present study, effect of education was studied on tests of Attention and Concentration, Immediate Retention and Recall, General Knowledge (Form 'A'), Counting and Calculations, and Comprehension. For this purpose the subjects were divided according to their educational levels into four groups. Illiterate group comprised of subjects who never attended school; in primary group there were subjects who had gone to school but had failed to complete even their primary schooling; next group had subjects who passed class V but had failed to achieve high school level or could not pass high school examination, and lastly a group of subjects comprising of all those who had passed high school. On tests of Attention and Concentration, it was observed that illiterate group scored the minimum (mean =

10.22 \pm 7.64), the primary group scored higher (mean = 19.95 \pm 9.08) than the illiterate group, the group V to below X scored still higher (mean = 26.26 \pm 7.09) and the group X and above scored the maximum (mean = 29.18 \pm 5.28). These observations apparently showed a rising trend of scores according to the educational level. The same pattern of scoring was observed on rest of the tests also, illiterate scoring the lowest and those educated upto high school and above scoring the highest. Statistical comparison demonstrated that the differences among various educational groups were significant for all of these tests. These findings indicated that level of education had got significant influence in the performance of these tests. This observation is similar to the previously reported effects of intelligence and schooling on some of these tests (Hayman, 1941; Eysenck and Halstead, 1945; Williams, 1968; Hinton and Withers, 1971; Pershad and Prasad, 1974). It clearly indicates that while interpreting these tests the effects of education must be taken into consideration and separate norms should be found out for different educational groups.

As only those subjects who had passed high school, were administered the tests of General Knowledge (Form 'B'), the effect of education on these test items could not be studied because these subjects formed only a single group.

Probably no one studied the influence of sex on all of these tests. In the present study, the effect of sex was observed on tests of Attention and Concentration, Immediate Retention and Recall, General Knowledge (Form 'A' and Form 'B'), Counting and Calculations, and Comprehension. On tests of Attention and Concentration, males scored higher (mean = 29.0 \pm 5.54) than females (mean 16.79 \pm 10.06). Statistical comparison showed the difference to be highly significant

($p < 0.001$). The same was also true when total males and females were compared on the remaining tests except on tests of General Knowledge (Form 'B'). But as the effect of education was also significant on the same tests, the data were further divided education wise to see whether the difference was due to sex alone or due to education also. It was observed that though the males still scored higher in almost every educational group on each of these tests but in most of the educational groups the differences were statistically not significant. However, in illiterates, the effect of sex was significant ($p < 0.01$ and $p < 0.05$ respectively) on tests of Attention and Concentration, and Comprehension. But in this educational group females ($N=21$) outnumbered males ($N=2$) by more than ten times so no valid conclusion can be drawn. In educational group of V to IX it was significant ($p < 0.01$) on tests of comprehension. This difference could be accounted for by the differences in the roles of males and females in our cultural setting where males are repeatedly exposed to varied experiences and are getting indirect education which is responsible for their higher score more or less uniformly in almost all the tests. While females usually live in more restricted environment so their learning is much less and that is why their scores are low on these tests.

On tests of Orientation, Remote Memory and Recent Memory even the illiterate subjects scored maximum which implies that these tests are too simple for this group of subjects, so effects of education and sex could not be studied on these tests.

The tests for Attention and Concentration, Immediate Retention and Recall, General Knowledge (Form 'A'), Counting and Calculations, and Comprehension showed that scores are highly

dependent on education or intelligence as also on exposure to more vivid stimuli. Thus it becomes imperative to obtain norms for these tests for different educational groups as well as for males and females before any valid conclusion can be drawn.

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