

Some Physical and Neuropsychological Correlations of the HOD in Delinquents

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We compared Hoffer-Osmond Diagnostic Test (HOD) scores with a number of neuropsychological and biological evaluations. In order to make the assessment of the HOD more rigorous, and to maximize the number of subjects with scores available, we used the HOD Short Form (SF) rather than the Total Score (TS) with its subtests.

We compared the HOD TS with the Perceptual Score (PerS), Paranoid Score (PS), Depression Score (DS), and Ratio of TS and D (Ratio), in two groups chosen because of the accidental availability of assays of hair for metal content.

1973-74 Residents, N = 66

SF to TS r = .900	TS to	
	PerS r = .879	PerS r = .947
	PS r = .746	PS r = .830
	DS r = .658	DS r = .817
	Ratio r = .397	Ratio r = .279
	r = .396 yields P of greater than .001	

1972-73 Residents, N = 77

SF to TS r = .906	TS to	
	PerS r = .893	PerS r = .965
	Ps r = .898	Ps r = .859
	DS r = .765	DS r = .832
	Ratio r = .344	Ratio r = .424
	r = .368 yields P of greater than .001	

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While an "x" of .950 or greater would be required for an absolute substitution, at these values of "x" SF adequately samples for the other submeasures as well as the TS. SF was used in subsequent correlations. The SF for the total population discharged from February, 1973, through August, 1974, was analyzed in split samples (dependents of military personnel, dependents of civilians, 1972-73 discharges, 1973-74 discharges, groups with hair assays available in both periods). These samples were found not to differ significantly from each other, nor from the total group of 209 delinquents (mean 4.799, S.D. 3.959).

In a sample of 62 patients the HOD SF was found to correlate at the .01 level of confidence to free fatty acids. These blood samples were evaluated blind by A. Fleischman of the Atherosclerosis Research Group, St. Vincent's Hospital, Montclair, N.J.

In a sample of 36 patients the HOD SF was found to correlate at the .05 level to total number of minor physical anomalies.

Hand strength (dynamometer) was found to correlate inversely to the HOD SF at .05.

Number of trials required to condition the GSR by electric shock to buzzer and the eye blink by jet of air to bell was found to correlate to the SF at .05.

DISCUSSION

While correlations of the HOD SF with the TS and other subtests do not reach the level at which the TS might be considered an absolute substitute, they were sufficiently high that the SF might be regarded as a rigorous submeasure of the HOD for assessment of the value of the HOD in detecting delinquents with a high involvement of physical and neuropsychologic liability.

In our population, minor physical anomalies have been highly correlated with severity of disorder; moreover, our assessment of a large population of children and adolescents gathered nationally confirmed this finding. Other authors have substantiated this relationship in hyperkinetic children and other populations.

Elevation of free fatty acids (FFA) is widely reported as a measure of anxiety, and reduction of the FFA level is commonly accepted as evidence of the efficacy of tranquilizers.

Hand strength has been shown to be correlated with developmental maturity. Even if the score on the dynamometer is seen as a function of unwillingness to play the tester's game, this correlation with the HOD is of interest. The HOD is either predicting low motivation, constitutional inadequacy, or interference with muscle performance. In any of these events, the patient is at higher risk for physical illness, the therapist is less likely to help him, and the delinquent is more likely to return to correction. Our clinical impression after testing nearly 1,000 delinquents on the dynamometer is that they do try maximally on the test (more or less as a function of their "macho" world view).

The conditioning data is of great interest. The failure of schizophrenics and psychopaths to condition reliably is well documented. In our population we have found that delinquents either condition within three sets of four pairs of buzzer and shock within which one shockless buzz is randomly presented, or they do not condition in 50 sets of such pairs. Among our delinquents failure to condition is frequently a failure of the galvanic skin reflex to follow a strong electric shock. Often the child does not blink even when

the falling ball of the standard apparatus has been supplemented by air jet, or air jet with water mist. The HOD correlates with derangement of these common reflexes also.

Our conditioning resistant delinquents were also highest of all groups assessed for number of physical anomalies (severe mental defectives were excluded). They were the most resistant to treatment, created more and the most serious acts of delinquency both before and during residence, and had a higher rate of recidivism. GSR conditioning correlates more highly with minor physical anomalies than eyeblink conditioning, while the reverse is true for an index of therapist competence.

In our 31-month study of 209 subjects we consistently found that a very high pain tolerance, a failure to establish a galvanic skin reflex, absence of the orienting reflex, failure to establish or regulate the orienting reflex verbally (by counting or vocally identifying the stimulus), were usually associated with a failure to condition in trials running 10 times the number required by 99 percent of the subjects who did not demonstrate this pattern.

The ability of the HOD to predict this cluster of derangements and clinical experiences and outcomes is highly productive.

When the competence of therapist to help each student was assessed by a panel of therapists on a 10-point scale, the HOD SF was found to correlate negatively at the .001 level ($r = .690$, d.f. = 66, $p = .001$ at $r = .390$).

CONCLUSIONS

The HOD Short Form is highly correlated to the Total Score, Perceptual Score, Paranoid Score, Depression Score, and less so to the Ratio. Since the HOD SF assesses a shorter range of variables than the full form, its use in this study is a more stringent measure of the utility of the HOD.

The HOD SF reliably correlates to a

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biochemical measure of anxiety (free fatty acids), to a physical correlate of illness (minor physical anomalies), to a measure of developmental immaturity (weak hand strength), to resistance to conditioning (GSR and eyeblink), and to a therapist panel assessment of therapists' value to the delinquent. All these measures are also correlated highly with poor therapist success and high recidivism.