PERCEPTUAL DEVELOPMENT OF MEXICAN SCHOOL CHILDREN AS MEASURED BY RESPONSES TO THE HOLTZMAN INKBLOT TECHNIQUE[1]

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Two recent studies with the Holtzman Inkblot Technique (HIT) have been reported which offer evidence for several HIT scores as indices of level of perceptual development(Thorpe & Swartz, 1965; 1966). The initial study, working within the framework of developmental theory as advanced by Heinz Werner (1957) and proceeding from the findings of earlier studies with the Rorschach, reported analyses of several HIT scoring variables indicating steadily increasing mean scores across five separate normal criterion age-groups covering an age range of five to 19 years. The consistent monotonic age trends found principally in five HIT scores—Form Appropriateness, Form Definiteness, Integration, Movement, and Human—were in keeping with the sequence of perceptual development outlined by Werner: progression along a continuum of increasing differentiation and integration. Specifically, the age trends of the HIT scores showed an increase with the age of responses involving an articulated and definite form quality as contrasted with vague and amorphous form responses, and an increase in form appropriate responses characterized by the adequate organization of separate blot areas.

Since the five age-groups employed in this first study were drawn from rather disparate backgrounds in cities in Connecticut, Illinois, and Texas, a second replicative study (Thorpe and Swartz, 1966) was carried out on more clearly defined age groups which covered a large portion of the age range studied in the earlier investigation. Three groups of normal school children, derived from a larger sample being studied longitudinally in Austin, Texas, were employed to comprise three criterion groups of 6.7, 9.7, and 12.7 years of age. Analyses of selected HIT scores obtained on these three groups provided striking confirmation of the earlier findings: despite often marked geographical differences in the age population sampled, the mean scores of the same five HIT development indices for the age-groups in the second study defined almost linear interpolations of those found for the age-groups in the earlier

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study. Further, analyses of the systematic shifts with age in the patterns of intercorrelations among the several HIT scores were interpreted as supporting the concept of a hierarchial integration of perceptual functioning with increasing age.

The purpose of the present investigation is to test the generality of the findings of the earlier studies on a comparable sample of children in another culture.

METHOD

Subjects. The 300 *Ss* employed in the present study were selected from a larger sample of normal Mexican school children residing in Mexico City who are being studied in a (six-year) longitudinal investigation of the developmental aspects of perceptual-cognitive functioning. A parallel project is being carried out in Austin, Texas. The two projects have been closely aligned in terms of subject sampling and test measures employed and will provide means of more direct cross-cultural comparisons of psychological development than has usually been available.

The data presented in the present study were obtained during the first year of data collection in the Mexican project. The three criterion age-groups, consisting of 50 males and 50 females from each of the first, fourth, and seventh grade educational levels, were administered the HIT within two weeks of the specified ages of 6 years, 8 months; 9 years, 8 months; and 12 years, 8 months, respectively. These test ages duplicate exactly the ages at which the children in the Austin propect were tested initially. Subjects in all three age-groups were sampled from 22 different schools in both the government and the traditionally private school systems in Mexico City and are considered largely representative of the socioeconomic strata to be found in Mexico City.

Procedure. Form A of the HIT was administered individually to *Ss* in the youngest and the oldest age-groups, Groups I and III; a parallel form of the HIT, Form B, was given to *Ss* in the middle age-group, Group II. Standard administration procedures were followed for all *Ss*. Although several other tests were given to the *Ss*, the HIT was always given first. The various *Ss* in the three groups were tested by 12 trained examiner-scorers. Testing was carried out during school hours throughout the school year. Each examiner scored his own HIT protocols; the protocols were then routinely check-scored by a second highly experienced scorer.

Of the 22 standard HIT scoring variables, 11 were selected for analysis. The names, abbreviations, and brief descriptions of these 11 variables are given in Table 1. Detailed scoring procedures for these variables are given in Holtzman, Thorpe, Swartz, and Herron (1961). Although the earlier studies of age-

TABLE 1

Name and Brief Description of 11 Variables from the Holtzman Inkblot Technique

Reaction Time. Time, in seconds, from the presentation of the inkblot to the beginning of the primary response, averaged over the 45 responses.

Location. A 3-point scale used to measure the tendency to fragment the inkblot into smaller areas. The greater the area used, the lower the score.

Form Definiteness. A 5-point scale measuring the definiteness of the form of the concept reported, regardless of the appropriateness of this form to the structure of the inkblot. The greater the score, the more definite the concept.

Form Appropriateness. A 3-point scale indicating the goodness of fit of the form of the inkblot area used. The higher the score, the better the fit.

Color. A 4-point scale measuring the primacy of both chromatic and achromatic color in determining a response. The higher the score, the more color is used as a primary determinant.

Shading. A 3-point scale used to measure the primacy of shading as a response determinant. The higher the score, the more shading is used as a primary determinant.

Movement. A 5-point scale indicating the movement energy level the subject ascribes to his percept regardless of its content. The higher the score the greater the movement energy level.

Pathognomic Verbalization. A 5-point scale measuring nine qualitatively different types of autistic and pathological thinking. The higher the score, the more deviant the thinking.

Integration. A 2-point scale indicating the presence or absence of the organization of adequately perceived inkblot elements into a unified response.

Human. A 3-point scale used to measure the amount of human content seen. Each response is scored 0 for no human content, 1 for parts of a human, and 2 for a whole human.

Animal. A 3-point scale used to measure the amount of animal content seen. Each response is scored 0 for no animal content, 1 for parts of animals, and 2 for a whole animal.

trends in HIT scores did not find all eleven of these scores t oreflect developmental changes, they were included for analysis in the present study for exploratory purposes in view of the use of a culturally different subject population.

RESULTS AND DISCUSSION

A two-way classification (sex-by-age) analysis of variance model was em-

ployed to test main and interaction effects on the summary scores of the 11 variables selected for analysis. As in the study cited earlier using children in the Austin project, a procedure was employed in the present study to eliminate the influence of the frequency of rejections on the other scoring variables. Both male and female *Ss* in each of the three age-groups were selected from the larger samples in order to equate the six cells of the design in terms of the distributions of individual rejection scores. This equation of the six cells was achieved readily: 73% of *Ss* in each cell had a zero Rejection score, three was the largest individual Rejection score. Following this procedure, analyses of variance were computed for each of the 11 scoring variables identified earlier..

Although no significant sex-by-age interactions were found, the analyses of variance yielded age-group differences (significant beyond the .001 level) for all of the variables except Location, Pathognomic Verbalization, and Animal. The means and standard deviations for the 11 variables for each of the three age-groups are presented in Table 2. A significant sex difference was found only for the Location and Movement variables (at the .01 level) where, at each age level, females had a higher mean Location score and a lower Movement score than males.

Inspection of the figures in Table 2 reveals that seven variables—Reaction Time, Form Appropriateness, Form Definiteness, Shading, Movement, Integration, and Human—show steadily increasing mean scores across the three age-groups. Five of these seven variables—Form Appropriateness, Form Definiteness, Movement, Integration, and Human—are those which in the two earlier studies proved to be reliable and meaningful indices of perceptual development.

As was the case in the two earlier studies, the Color variable showed a highly significant age effect. However, neither the mean levels of Color scores at each age level nor the age-curves observed for these scores are comparable across the several samples. The current data indicate a considerably lower incidence of Color scores than has been reported earlier.

The monotonic age-trend for the Shading variable indicated in the present data is perhaps questionable. In their first investigation, Thorpe and Swartz (1965) reported an overall increase in Shading scores with age but with a leveling or plateau at the nine to twelve year age range. Their second report (Thorpe and Swartz, 1966) fail to confirm this finding. Again, the present mean Shading scores at each age level are lower than previously reported. The age-trend found for the Reaction Time variable in the present study has not been reported heretofore. This almost linear increase with age in the mean Reaction Time scores may reflect an important cultural factor which additional analyses and comparisons of the longitudinal data on bth the Mexico and Texas groups should serve to clarify. Nevertheless, the results of the present

TABLE 2

Means, Standard Deviations, and Significance Levels for the Three Criterion Age-Groups on 11 HIT Variables

Variable		*Criterion Age-Groups*		
		Group-I	*Group-II*	*Group-III*
Reaction Time*	Mean	13.3	19.6	25.4
	S.D.	7.0	9.3	13.3
Location	Mean	42.6	46.5	47.0
	S.D.	19.7	21.4	20.6
Form Definiteness*	Mean	62.9	73.6	78.1
	S.D.	18.7	15.6	16.7
Form Appropriateness*	Mean	36.1	40.0	41.5
	S.D.	6.7	5.3	5.2
Color*	Mean	14.3	7.2	7.4
	S.D.	14.3	9.0	7.9
Shading	Mean	1.9	2.0	3.6
	S.D.	2.1	2.3	3.4
Movement*	Mean	7.8	16.5	22.4
	S.D.	9.6	11.9	14.2
Pathognomic Verbalization	Mean	3.3	1.9	2.5
	S.D.	5.3	2.6	5.8
Integration*	Mean	0.9	2.4	3.5
	S.D.	1.5	2.3	3.1
Human*	Mean	13.7	16.9	18.8
	S.D.	9.0	9.0	8.5
Animal	Mean	26.2	28.4	28.0
	S.D.	15.4	12.3	8.6

* Variable having significant age effect beyond the .001 level in the analysis of variance.

investigation are interpreted as providing strong support for the several HIT scores as indices of perceptual development and as confirming the nature and direction of this development laid down by the earlier investigations.

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ABSTRACT

In order to test the generality of earlier findings regarding the relationship between level of perceptual development and scores on variables from the Holtzman Inkblot Technique (HIT), a comparable sample of children in another culture—300 normal Mexican school children from Mexico City, comprising three criterion age groups, 6.7, 9.7, and 12.7 years of age—were tested in a replication of an earlier investigation in the United States. Each group contained 50 males and 50 females. Two-way classification (sex-by-age) analyses of variance of 11 selected HIT variables revealed only two significant sex differences and no significant sex-by-age interactions. Age-group differences beyond the .001 level of significance, however, were found for eight of the 11 variables studied, with seven showing consistent monotonic increases with age. Five of these seven variables—Form Appropriateness, Form Definiteness, Movement, Integration, and Human—are those which proved to be reliable and meaningful indices of perceptual development in previous studies with the HIT in the United States. These results are interpreted as providing strong support for the several HIT scores as indices of perceptual development and as confirming the nature and direction of this development, despite marked geographical and cultural differences in the subject population sampled.

RESUMEN

A fin de probar la generalidad de resultados anteriores sobre la relación entre el nivel de desarrollo perceptual y los puntajes en las variables de la Técnica de Manchas de Tinta de Holtzman (HIT), una muestra comparativa de niños de otra cultura—300 niños escolares de la Ciudad de México, comprendiendo tres grupos de edades, 6.7, 9.7 y 12.7 años—fueron examinados en una réplica a una investigación anterior en los Estados Unidos. Cada grupo estaba compuesto por 50 varones y 50 mujeres. Dos formas de clasificación (sexo por edad) del análisis de la variancia de 11 variables seleccionados del HIT revelaron sólo dos importantes diferencias sexuales y ninguna importante interacción de sexo por edad. Diferencias en los grupos de edades bajo el nivel de probabilidad de 0.001, fueron encontrados para 8 de las 11 variables estudiadas, siete mostrado aumento consistente con la edad. Cinco de estas siete variables probaron ser índices de importancia de desarrollo perceptual en previos estudios con el HIT en los Estados Unidos. Estos resultados dan apoyo a los puntajes del HIT como índices de desarrollo perceptual y confirmando la naturaleza y dirección de su desarrollo a pesar de las marcadas diferencias geográficas y culturales de los sujetos de estudio.

RESUMO

A fim de testar a generalidade de resultados anteriores, relativamente à associação entre nível de desenvolvimento perceptual e escores nas variáveis da Técnica de Borrão de Tinta de Holtzman (HIT), uma amostra comparativa de crianças em outra cultura que não os EEUU foi examinada. Os sujeitos estudados foram 300 estudantes mexicanos da Cidade do México, divididos em 3 grupos critério de idades 6.7, 9.7 e 12.7. Cada grupo de 100 crianças era compôsto de 50 meninos e 50 meninas. Uma classificação dupla (sexo por idade) de análise de variância, de 11 variáveis selecionadas do HIT revelou sòmente duas diferenças significativas na variável sexo, e nenhuma interação significativa de sexo por idade. Diferenças entre grupos etários, ao nível de probabilidade 0,001, foram verificadas para 8 das 11 variáveis estudadas, sendo que 7 delas mostraram incrementos consistentes com anos de idade. Cinco destas sete variáveis são aquelas que mostraram ser índices significantes de desenvolvimento perceptual em estudos anteriores nos Estados Unidos. Estes resultados, com amostras de diferentes culturas, sugerem certa universalidade de escores do HIT como índices de desenvolvimento perceptual.