

The Picture Arrangement Subtest of the WAIS as an Index of Social Egocentrism: A Comparative Study of Normal and Emotionally Disturbed Children¹

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This study describes a measure of social egocentrism based on a procedural variation in the Picture Arrangement subtest of the Wechsler Adult Intelligence Scale, compares this procedure with other previously proposed measures of egocentricity, and reports an application of this measure in the comparative study of 30 normal and emotionally disturbed children. The results of this comparison indicate that institutionalized children are sharply differentiated from their better adjusted peers in their ability to take roles or perspectives other than their own.

This study described a procedural variation in the standard method of administering the Picture Arrangement subtest of the Wechsler Adult Intelligence Scale (WAIS), which provides a method of measuring the relative ability with which persons are able to adopt the roles or perspectives of others. The study also described the results of an application of this and related measures of egocentric thinking to two groups of children of markedly different mental health status.

The ability of a person to step outside of his own egocentric perspective and to adopt roles and perspectives other than his own is a well-documented facet of the normal socialization process and has been a matter of recurrent interest to both developmental psychologists and mental health professionals. Young children and seriously disordered adults alike have been shown to fail routinely at tasks that require the ability to differentiate one's self from others and to discriminate public from private thoughts and feelings (Anthony, 1959; Flavell, Botkin, Fry, Wright, & Jarvis, 1968; Haines, 1950; Martin, 1968; Neale, 1966).

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Many important social and interpersonal skills have been shown to hinge on this ability (Cowan, 1966; Feffer & Gourevitch, 1960; Sarbin, 1954), and both diagnostic and treatment decisions frequently rest on informal estimates of this development skill. These potential diagnostic and treatment implications argue for the appropriateness of developing some objective and readily available clinical procedure for determining the presence and extent of persistent egocentric thinking in both children and adults.

A number of laboratory procedures for indexing egocentric thinking have been described in the child development literature. Although differing in detail, all these procedures have required subjects to attempt a description of the same stimulus materials from multiple points of view. The best known and thoroughly researched of these procedures are the "Test of Three Mountains" developed by Piaget and Inhelder (1956) and the Role Taking Test introduced by Feffer and Gourevitch (1960). Piaget and Inhelder's procedures inquire into perspective-taking skills in a somewhat literal sense and require subjects to indicate how a cluster of three papier-mâché mountains might appear to someone occupying a perceptual vantage other than their own. The Role Taking Test considers perspective-taking skills in a somewhat more metaphoric and social sense by requiring subjects to tell and retell stories to the same Make A Picture Story and Thematic Apperception Test (MAPS and TAT) cards, alternately assuming the roles or perspectives of the various characters depicted.

Although both procedures can and have been employed in the measurement of disordered populations (Anthony, 1959; Chandler, 1972, 1973; Neale, 1966), each possesses certain procedural limitations that restrict its usefulness and applicability for the purpose of clinical assessment. The Role Taking Test employs stimulus materials readily available in most clinical settings, and its potential usefulness as a diagnostic instrument is increased by the fact that it inquires into role- or perspective-taking skills in a social or interpersonal context. The difficulty with this procedure lies in the fact that both egocentric and nonegocentric inferences can, at times, result in identical test responses. Persons, including those depicted in the TAT and MAPS test, may often be understood as occupying identical perspectives or frames of reference. Because of this frequently occurring communality or likemindedness of thought, there is nothing inherently egocentric about assuming that two persons might share many thoughts and feelings in common. *Prima facie* evidence of egocentric thinking exists only when there are objective grounds for assuming that the persons whose points of view are being inquired into could not possibly share identical perspectives. The stimulus materials of the Role Taking Test, because they provide only a static and ahistoric glimpse into an interpersonal episode, offer no such evidence; and the attribution of identical points of view to the various characters presented in these materials cannot be unambiguously interpreted.

Piaget and Inhelder's Test of Three Mountains, although relying on stimulus materials not readily available, partially avoids the ambiguity inherent in the Role Taking Test by inquiring into points of view clearly and unequivocally separated from one another in a spatial or geographic sense. This clarity, however, is purchased at the expense of social or clinical relevance and documents failure in perspective taking of a highly literal and perceptual sort.

What seemed required, to arrive at a clinically relevant procedure for measuring perspective-taking skills, was some procedure that possessed the same clarity of interpretation characteristic of Piaget and Inhelder's Three Mountains Test and the accessibility and interpersonal focus of Feffer and Gourevitch's Role Taking Test.

A partial solution to this information-engineering problem was recently introduced in a programmatic study of role-taking behavior reported by Flavell et al. (1968). One procedure described in their study involved the presentation of a single cartoon sequence which, after having been previewed by the subjects, was sharply abbreviated and shown in this attenuated form to an experimental cohort in the presence of the subjects. The subject's task was to anticipate the account that would be offered by the experimental cohort who had access to less information than themselves. This manipulation insured that the subjects and the individual whose vantage point they were asked to assume occupied demonstrably different perspectives and permitted egocentrism to be measured as a function of the degree to which privileged information exclusively available only to the subject was incorrectly attributed to an only partially informed witness or bystander.

The assessment procedure proposed and tested in the present study was closely patterned after that of Flavell et al. (1968) and differed from the strategy they employed in only minor procedural ways. The stimulus materials chosen were four cartoon sequences (LOUIE, ENTER, FISH, and TAXI) drawn from the Picture Arrangement subtest of the WAIS. In addition to being readily available in most clinical settings, these test items provided an optimally engineering set of stimulus materials for measuring egocentric errors in the attempt of subjects to take the roles or perspectives of others. Although differing in content, each of these cartoon sequences hinges on a common literary device. In each case, the meaning attached to the thematic sequence is entirely dependent on an occurrence which, although assigned only minimal space in the plot, completely alters the significance of the events that precede or follow it. Four of the six frames in the TAXI sequence, for example, show the heads of a male and female figure as seen through the back of the taxicab window. The meaning of this interaction is, however, completely altered by the first two pictures, which show a man hailing a cab with a mannequin in his arms. The remaining three items (LOUIS, ENTER, and FISH) are similar in that each presents certain key events, occurring at either the beginning or end of the

sequence, which substantially change the meaning of the remaining pictures. As a result of this common format, the interpretation placed on these materials is heavily dependent on access to the entire thematic sequence, and persons with and without access to the complete cartoon series would be expected to describe these materials in sharply different ways.

By first asking subjects to describe these cartoon sequences and then requiring them to reinterpret the story from the viewpoint of someone shown only an abbreviated version of the sequence, it is possible to assess their skill in abandoning their own perspective and adopting the frame of reference of someone less well informed than themselves.

The only substantive difference between the procedure employed in this study and the method originally outlined by Flavell et al. (1968) concerns the identity of the partially informed witness whose role the subjects were asked to assume. In Flavell's procedure this witness was a co-experimenter, alternately ushered in and out of the examination room. To minimize the choreographic problems associated with this use of a floating experimental cohort, the subjects of this study were asked only to describe the complete cartoon sequences and then to report how an abbreviated version of these same materials might be described by an unspecified boy or girl of their same age. Pilot research indicated that subjects ascribed essentially the same stories to such hypothetical witnesses as they did to actual persons similarly exposed to less information than themselves.

This procedure, along with Piaget and Inhelder's (1956) Test of Three Mountains and Feffer and Gourevitch's (1960) Role Taking Test, was administered to groups of institutionalized and noninstitutionalized children, and the results of this comparative study are reported in the following sections.

METHOD

Subjects

The subjects in this study were 30 children between the ages of 9 and 13, half of whom were institutionalized in a residential treatment center for emotionally disturbed children. All *Ss* were Caucasian and from middle-class and upper middle class homes. Three institutionalized and three noninstitutionalized *Ss* were chosen at each age level between 9 and 13 years. One-third of *Ss* in each of these groups were girls.

The institutionalized *Ss*, while reflecting a variety of admitting diagnoses, had all experienced chronic problems in social adjustment and were sufficiently disturbed to require long-term hospitalization. Those institutionalized subjects evaluated, however, were selected from among those patients who were sufficiently verbal and coherent to comprehend the task requirements and to

provide detailed stories to the stimulus materials. The mean Peabody Picture Vocabulary Test IQ of this group was 114.

The noninstitutionalized *Ss* were drawn from the neighboring community, were of equivalent age and comparable intelligence (mean IQ of 121), but had no record of identified emotional difficulties. All *Ss* were tested individually by the same examiner and were paid for their participation with a movie ticket.

Procedure

Ss were examined individually and administered the Picture Arrangement subtest (PAT) procedure, Piaget and Inhelder's (1956) Test of Three Mountains (3 MTs), and Feffer and Gourevitch's (1960) Role Taking Test (RTT) in a counterbalanced sequence to correct for possible order effects. In addition, the Peabody Picture Vocabulary Test was administered to provide a measure of intellectual functioning.

Following Cowan (1966), plastic houses of different designs were substituted in this study for the three papier-mâché mountains used in Piaget and Inhelder's original study in an effort to highlight changes in the appearance of the stimulus display when viewed from different perspectives. Eight color photographs representing the display from various major points of the compass were used in place of line drawings. *Ss* were first required to identify the vantage from which each of the photographs was taken and then to indicate, by selecting from the available photographs, how the scene would appear to a doll figure positioned at various predetermined sights around the eight-sided display board. On those trials where mistakes were made, error scores were computed by determining the extent to which *Ss* confused other perspectives with their own.

Following Feffer (1959), three standard background scenes and a subset of characters were chosen from the MAPS Test and, using these materials, the Role Taking Test was administered and scored according to procedures outlined by Schnall and Feffer (Filer, 1972).

The Picture Arrangement subtest was administered by first arranging the cards of each cartoon sequence in their correct order and then instructing *Ss* to tell the story portrayed. Following the completion of these initial accounts, one or two key cards were removed from each sequence,³ and *S* was asked to reexamine the remaining pictures and to offer the story he thought would be told by another boy or girl who had seen only the remaining cards. The cartoon sequences were presented in a randomized order, and verbatim recordings were made of each *S*'s stories. Three *Ss* from the original institutionalized sample were

³The key pictures eliminated from the four cartoon sequences were as follows: LOUIE, picture 3; ENTER, picture 3; FISH, pictures 1 and 3; and TAXI, pictures 4 and 5.

either unwilling or unable to tell stories to these stimulus materials and were consequently dropped from the study.

The four stories offered by each *S* as representing the viewpoints of an only partially informed bystander were examined for evidence of intrusions of privileged information. A 4-point scoring scheme was developed for rating the degree of such contaminations. A score of 3 was assigned to those stories in which a subject explicitly attributed to others detailed knowledge of information available only to himself. A score of 2 was assigned to stories in which such unwarranted attributions were present, but couched in probabilistic language suggesting uncertainty regarding the comparability of perspectives he was asked to characterize. A score of 1 was assigned whenever *S*'s third-person account seemed influenced or contaminated by, but did not include direct reference to, such privileged information. Statements to the effect that the "woman" in the TAXI item appeared "wooden" or "stiff as a board" were, for example, scored in this category. A score of 0 was assigned to those stories in which *S* clearly distinguished between his own point of view and that of someone having access to less information than himself. Two raters trained in this scoring system achieved over 90% agreement in assigning levels of egocentricity on a sample of 15 randomly selected protocols.

RESULTS

Correlations between the Peabody Picture Vocabulary test and the three egocentrism measures employed were low (RTT = +.08, 3 MTs = +.03, PAT = -.05) and statistically insignificant in every instance. Although it seems reasonable to suppose that intelligence and perspective-taking skills might be related, the narrow range of IQ scores (interquartile range = 31) that characterized *S*s of this sample did not permit an adequate test of this hypothesis. The data do suggest, however, that considerable variability in perspective-taking skills exists within groups relatively homogeneous in terms of intellectual functioning. Although limitations in sample size restricted the possibility of documenting possible differences between boys and girls, no suggestion of such sex differences was present in the data.

Within the normal noninstitutionalized sample, egocentrism as measured by the Picture Arrangement subtest was found to decrease steadily with age [Spearman rank order correlation (r_s) = -.49; $p < .05$]. The youngest of the normal control *S*s regularly confused their own point of view with that of others. The older *S*s, by contrast, made infrequent and only modest errors and were generally successful in their efforts to differentiate between public knowledge and information known only to themselves (Table 1).

An almost identical moderate and statistically significant inverse relationship (r_s = -.47) was observed between Feffer and Gourevitch's Role Taking Test and

TABLE 1
PROPORTION OF EGOCENTRIC ERRORS BY AGE

Age in years	Picture Arrangement subtest		Test of Three Mountains		Role Taking Test	
	Normal Ss	Institutionalized Ss	Normal Ss	Institutionalized Ss	Normal Ss	Institutionalized Ss
9	.42	.70	.29	.58	.80	.63
10	.25	.45	.13	.63	.40	.61
11	.25	.33	.21	.29	.25	.83
12	.23	.73	.08	.33	.49	.70
13	.14	.83	.13	.58	.13	.55
Mean	.26	.60	.17	.45	.41	.66

age. Only the youngest of the normal Ss, however, experienced any difficulty with Piaget and Inhelder's Test of Three Mountains; consequently, no substantive age relationship was observed with this measure ($r_s = -.20$; $p > .10$).

Within the institutionalized sample, the usual negative relationship between age and egocentrism was reversed ($r_s = .23$) on the Picture Arrangement subtest; and there was a trend, approaching statistical significance ($p < .10$), for the institutionalized and noninstitutionalized Ss to diverge in opposite directions on this measure with increasing age. A similar failure for egocentrism to decrease with age was observed on the Role Taking Test ($r_s = .07$) and the Three Mountains Test ($r_s = .14$).

Despite their comparable relationship with age, the three measures of egocentrism tested were not equally sensitive to the gross differences in social adaptation which characterized the institutionalized and noninstitutionalized samples. Institutionalized Ss were found to be significantly more egocentric than their noninstitutionalized counterparts on both the Picture Arrangement subtest and the Test of Three Mountains [Kolmogorov-Smirnov D (Siegel, 1956) for the TMT and PAT were .60, $p < .01$, and .54, $p < .05$, respectively]. On the Test of Three Mountains, over 90% of the normal control Ss made fewer than four of a possible 12 errors. By contrast, approximately 85% of the disturbed children made more than three such errors. Similarly, on the Picture Arrangement Test, 75% of the normal children made fewer than 4 of a possible 16 egocentric errors, while over 90% of the institutionalized subjects made four or more such errors. The Role Taking Test, by contrast, failed to significantly differentiate the two groups ($D = .20$; $p < .10$).

This lack of concordance between the three measures of egocentrism is also expressed in their pattern of intercorrelations (Table 2). Within the normal,

TABLE 2
SPEARMAN RANK ORDER INTERCORRELATIONS AMONG THREE
EGOCENTRISM MEASURES

Measure ^a	Normal Ss			Institutionalized Ss		
	PAT	3 MTs	RTT	PAT	3 MTs	RTT
PAT						
3 MTs	.34			.45*		
RTT	.78**	.40		-.10	-.19	

^aPAT = Picture Arrangement subtest of the Wechsler Adult Intelligence Scale. 3 MTs = Three Mountains Test (Piaget & Inhelder, 1956). RTT = Role Taking Test (Feffer & Gourevitch, 1960).

* $p < .05$.

** $p < .01$.

noninstitutionalized sample, all these measures were positively related at or near statistical significance. This was particularly true in the case of the Role Taking Test and the Picture Arrangement subtest, where over 60% of the observed variation was common to the two tests.

This pattern of intercorrelations was, however, substantially different for the institutionalized sample. The Picture Arrangement subtest and the Test of Three Mountains were again positively and significantly correlated, but neither of these measures was significantly related to scores on the Role Taking Test.

DISCUSSION

The results obtained with the noninstitutionalized sample indicate that egocentric thinking, as measured by the Picture Arrangement subtest, was characteristic of only the youngest Ss tested and was all but absent by early adolescence. This finding is consistent both with the data obtained from both the Role Taking Test and the Test of Three Mountains and with the results of other measures of egocentrism reported in the literature (Anthony, 1959; Haines, 1950; Neale, 1966).

In contrast to their better adjusted peers, the institutionalized emotionally disturbed Ss of all ages were found to be profoundly egocentric and essentially unable to successfully adopt the roles and perspectives of others.

Both Piaget and Inhelder's (1956) Three Mountains Test and the Picture Arrangement measure introduced in this study significantly differentiated between the institutionalized and noninstitutionalized Ss. The institutionalized subjects also obtained somewhat higher egocentrism scores on the Role Taking

Test, but this difference did not reach statistical significance. One possible explanation for the differences observed between these three measures of egocentrism lies in the fact that while Feffer and Gourevitch's (1960) procedure requires Ss to differentiate between the points of view of two or more other people, both Piaget and Inhelder's measure and the Picture Arrangement subtest procedure require Ss to discriminate between his own point of view and that of another person. This requirement may present special difficulties to emotionally disturbed individuals whose pathology often hinges on distorted self-other relationships.

The results of this study suggest the potential usefulness of the proposed adaptation of the Picture Arrangement subtest of the WAIS as a measure of social egocentrism and as a tool for achieving a better understanding of the limitations in interpersonal skills which characterize seriously disturbed children.

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