Journal of Abnormal Psychology
1978, Vol. 87, No. 4, 399-407

Body-Image Aberration in Schizophrenia

Loren J. Chapman, Jean P. Chapman, and Michael L. Raulin
University of Wisconsin—Madison

A 28-item true–false scale was constructed to measure schizophrenic body-image aberration. The scale was standardized on both college students and a nonstudent normal control group. Male schizophrenics reported more body-image aberration than nonstudent normal control subjects, but only a portion of the schizophrenics were deviant. Nonpsychotic clinic clients did not have heightened scores. Correlational findings indicated that schizophrenic body-image aberration is an aspect of a broader perceptual aberration. Scores on body-image aberration were negatively correlated with time since first hospitalization. The Body-Image Aberration Scale had essentially no correlation with the Physical Anhedonia Scale of Chapman, Chapman, and Raulin for schizophrenics. For nonschizophrenics, however, high scores on the two scales accompanied one another significantly less often than expected by chance. The authors suggest that the two scales may identify alternative manifestations of proneness toward the same schizophrenia.

Leading psychopathologists from Kraepelin (1913/1919) and Bleuler (1911/1950) to the present have described schizophrenics' deviant perceptions, feelings, and beliefs concerning their bodies. Every experienced clinician has encountered schizophrenics who report delusions of rotting organs or changed sex, or perceptions of alterations in the size and shape of their bodies, or feelings of unreality of the body, of the merging of the body with external objects, and of the body not being one's own. These experiences have come to be described as disturbances of body image. Body-image aberration plays an important role in Blatt and Wild's (1976) theorizing about schizophrenic disturbances in the capacity to establish and maintain boundaries. These writers explain not only body-image aberration but also disturbances of cognitive, perceptual, and interpersonal functioning in terms of this unifying construct.

Both Schilder (1935) and Szasz (1957) extended the concept of body image to a much wider range of phenomena, but we will use it here to refer only to deviant perceptions, feelings, and beliefs about one's own body. This article reports data from an objective scale designed to measure schizophrenic body-image aberration.

A reliable measure of schizophrenic body-image aberration is needed in order to determine if all schizophrenics have this symptom. Schizophrenia is a notoriously heterogeneous disorder, and symptoms that have been described clinically as characterizing schizo-

Preparation of this article was supported by a research grant from the University of Wisconsin Graduate School and Grant MH-18354 from the National Institute of Mental Health, United States Public Health Service.

The authors are indebted to Leonard Stein, Virginia Sincaban, and Mary Ann Test of Mendota Mental Health Institute; to Marilyn Chapman-Broekema and Michael Spierer of the Dane County Mental Health Center; to Robert Merrill and Carl Leuthold of VA Hospital, Tomah, Wisconsin, for assistance in obtaining schizophrenic subjects; and to Jackie Splitter of the University of Wisconsin Psychology Department for assistance in obtaining the clinic clients.

Thanks are due to Bill Edell and Bruce Carpenter for assistance in preparing the test and testing the subjects.

Requests for reprints or for copies of the scale should be sent to Loren J. Chapman, Psychology Department, W. J. Brogden Psychology Building, 1202 West Johnson Street, University of Wisconsin, Madison, Wisconsin 53706.

 0021-843X/78/8704-0399$00.75

phrenics in general are almost invariably found, on more objective measurement, to characterize only a subset of schizophrenics. Chapman, Chapman, and Raulin (1976) found that schizophrenics as a group exceeded control subjects on physical anhedonia, but that only about one third of the schizophrenics had deviant scores. It is important to determine whether different symptoms that characterize only a portion of schizophrenics are found in the same patients. If not, and if the measures of the symptoms are reliable, the different symptoms may correspond to separate disorders within schizophrenia.

Prior Research on Body-Image Aberration

Attempts to measure body-image aberration have usually been through indirect means. The figure-drawing technique was popularized by Goodenough (1928) and later by Machover (1949) as a way of inferring personality characteristics from the subject's body image as represented in his drawings. The technique has been used often clinically and occasionally by researchers (Cancro, 1971; Jaskar & Reed, 1963; Sugarman & Cancro 1964). Swensen's (1957, 1968) reviews of the literature on figure drawings show that the inferences that clinicians customarily make about a person from his figure drawings are almost uniformly unsupported by research evidence except for inferences from overall drawing quality about global mental health. Most of the differences between schizophrenic and normal subjects appear to reflect nothing more than general inadequacy of the drawings by schizophrenics.

Fisher and Cleveland (1958, 1968) have scored Barrier and Penetration percepts on the Rorschach to infer defects of body image. Barrier percepts are ones that emphasize peripheral boundary defining qualities of the percepts (e.g., flower pot, or knight in armor). Penetration percepts involve penetration of outer surfaces of things (e.g., squashed bug, or x-ray picture). Lowered Barrier scores and heightened Penetration scores have been reported for schizophrenics by Fisher and Cleveland (1958, 1968), Reitman and Cleveland (1964), and Holtzman, Thorpe, Swartz, and Herron (1961). A lack of difference has been reported by Jaskar and Reed (1963). While support for schizophrenic deviancy on the Barrier and Penetration scores is strong, acceptance of such evidence as support for schizophrenic body-image aberration requires belief in the projective hypothesis.

Several investigators have tried to measure more directly the accuracy of a person's perception of his own body. Traub, Olson, Orbach, and Cardone (1967) used a body-distorting mirror which the subject adjusts until he believes that it reflects him accurately. They found that schizophrenics erred more than control subjects both on this task and in adjusting a mirror to reflect accurately nonbody stimulus. The investigators concluded that body misperception reflects misperception in general.

A number of investigators have asked the subject to judge the size of parts of his own body. Cleveland (1960) and Cleveland, Fisher, Reitman, and Rothaus (1962) found that schizophrenics more than control subjects overestimate the size of their various body parts (hand, foot, stomach, heart). In contrast, Weckowicz and Sommer (1960) found that schizophrenics underestimate sizes of hands and feet. Dillon (1962) found no differences between schizophrenics and controls in accuracy of estimating size of their various body parts. Fisher (1966) similarly compared schizophrenics and controls on several estimates of body-part size and found mostly nonsignificant differences. These investigations, although they used direct measures of perceptual accuracy, did not measure the phenomena that are usually subsumed under schizophrenic body-image aberration. Cappon and Banks (1965) reported that patients who spontaneously complain of distortion in body perception do not differ from controls in accuracy of estimate of size of their bodies. A patient who experiences his body as merging with his surroundings may not necessarily err in his estimate of the size of his head.

Questionnaire measurement of the experience of schizophrenic body-image aberration is the technique used in the present study. The only prior such measure of which we are aware is Fisher and Seidner's (1963) and

Fisher's (1964) true–false Body Experience Questionnaire. Their findings appear consistent with the possibility of greater body-image aberration in schizophrenics than in other subjects, but one cannot be sure because their statistical analysis was inappropriate. Also, their questionnaire focused to a large extent on hypochondriacal concerns and feelings of body inadequacy rather than the more extreme psychoticlike deviancy of perception of the body that is usually attributed to schizophrenia. Examples of their items are "My arms feel short," "I feel like I should wash my hands," "My ears feel stopped-up." We therefore decided to construct a new questionnaire.

Method

Construction of the Items

True–false items were constructed around various experiences of body-image aberration as they are commonly reported in the clinical literature for schizophrenics and borderline schizophrenics. Items were worded to ask the subject if he has sometimes or occasionally had each experience rather than to ask if he has it now. Item writers were asked to compose items that would be equally applicable to males and females, to one social class as well as to another, and to avoid items for which either a yes or a no would represent the respondent in either a socially attractive or unattractive light. Items were intended to tap five kinds of deviant experiences that are uncommon in normal people. The experiences dealt with (a) unclear boundaries of the body, for example, "Sometimes I have had the feeling that I am united with an object near me" (true); (b) feelings of unreality or estrangement of parts of one's body, for example, "I have sometimes felt that some part of my body no longer belongs to me" (true); (c) feelings of deterioration of one's body, for example, "I have sometimes had the feeling that my body is decaying inside" (true); (d) perceptions of change in the size, relative proportions, or spatial relationships of one's body parts, for example, "My hands or feet have never seemed far away" (false); and (e) changes in the appearance of the body, for example, "Occasionally it has seemed as if my body had taken on the appearance of another person's body" (true).

Screening and Revision of Items

For purposes of scale development, candidate items were administered to college students together with a 13-item Infrequency Scale modeled after Jackson's (1974) Infrequency Scale in his Personality Research Form. The Infrequency Scale consists of items that almost everyone answers in one direction, so that a converse answer indicates invalid test-taking. An example is "On some mornings I didn't get out of bed immediately." A subject was dropped from further data analyses if his Infrequency score was greater than 2. Also included for purposes of evaluating candidate items were 30 items of the 33-item Crowne–Marlowe (1964) Social Desirability Scale and 55 items from Jackson and Messick's (1962) 60-item DY-3 Scale, which is intended to measure acquiescence with minimal social desirability bias. (Five of the original DY-3 Scale items were omitted because they appear to have pathological content, and three Social Desirability Scale items were dropped because they overlapped with DY-3.) Body-image aberration items were revised or dropped in an attempt to maximize item–scale correlation and to minimize correlation of the item with social desirability and with acquiescence. Testing and scale revision were done with three successive groups of 191, 227, and 275 college students. The final scale consists of 28 items, of which 24 are keyed *true* for presence of body-image aberration and 4 are keyed *false*. We did not balance the number of items keyed true and false because the statement of the absence of one of these bizarre symptoms could usually be achieved only by inserting a *not* or *never* or some other negative. A response of "false" would thus require a double negative, which may be confusing in some items, especially to schizophrenics.

Performance of College Students

The final version of the Body-Image Aberration Scale was then administered to 636 male and 721 female college students. These subjects were also given the Infrequency, Social Desirability, and Acquiescence Scales, a 61-item version of the Physical Anhedonia Scale (Chapman et al., 1976), and items for several other scales that were in the process of being developed. The various kinds of items were intermixed. Three female and five male subjects were dropped from the analysis because their Infrequency scores were greater than 2. Table 1 gives the findings. The mean Body-Image Aberration score was 4.55 for males and 5.56 for females. (The higher the score, the greater is the pathology.) The coefficient alpha (Kuder-Richardson Formula-20) estimate of reliability for Body-Image Aberration was .88 for males and .90 for females, and for the Physical Anhedonia Scale was .79 for males and .78 for females. Table 1 shows that body-image aberration has a modest relation to both acquiescence and social desirability. The correlation of body-image aberration with physical anhedonia was $-.10$ ($p < .01$) for females and $-.20$ ($p < .01$) for males. Thus these data indicate satisfactory reliability for the Body-Image Aberration Scale, and minimal relationship to the Physical Anhedonia Scale. The correlation between the two

Table 1
Findings for the Body-Image Aberration Scale with Five Groups

Variable	College students		Schizophrenics[a]	Normal controls[a]	Clinic clients[a]
	Female (N = 718)	Male (N = 631)	(N = 66)	(N = 100)	(N = 20)
M			5.71	3.71	3.80
SD			5.89	4.39	6.0
Coefficient alpha			.90	.89	.94
Correlation					
Social desirability			−.08	−.34	−.25
Acquiescence			.20	.27	.17
Physical anhedonia			.11		−.18
Age			−.27	−.18	.06
Education			−.12	.02	.03
Father's social class			−.19	.09	
Phillips scale			.16		
7-item perceptual aberration	.63	.58	.76	.70	.68

[a] Males only.

scales was later computed for four additional samples of subjects. The correlation values all fell between −.10 and −.20. The very modest (although statistically significant) negative correlations between the two scales indicate that the more anhedonic subjects tend to have lower than average body-image aberration, and vice versa.

Schizophrenic Subjects

Altogether, 74 male schizophrenics were given the Body-Image Aberration Scale together with the Infrequency, Acquiescence, and Social Desirability Scales, the Beck (1967) Depression Inventory, and the 61-item Physical Anhedonia Scale. (Male patients were studied because many of them were from a Veterans Administration Hospital.) Most patients were receiving antipsychotic medications. Eight of these subjects were dropped because their Infrequency scores were greater than 2. The mean age of the remaining 66 was 35.6 (SD = 10.7). Mean education was 12.2 (SD = 2.2). Mean rating of the patients' fathers on the Hollingshead (1957) Index of Social Class was 45.0 (SD = 18.8). Mean score on the Phillips Scale of Premorbid Adjustment was 16.3 (SD = 6.9), which is slightly on the side of poor premorbid adjustment. Months since first hospitalization ranged from 0 to 432, with a mean of 135.8 (SD = 110.1).

Normal Control Subjects

The college students are, of course, unsuitable as control subjects for the schizophrenics because of large differences in age, education, and social class. The Body-Image Aberration Scale was therefore administered to a noncollege normal control group of 143 subjects (104 male and 39 female). The analyses here will be limited to the male subjects because the schizophrenic subjects were male. These noncollege normal subjects were also given the Infrequency Scale, the 55-item Acquiescence Scale, and the 30-item Social Desirability Scale. The subjects were strangers approached at shopping centers and firefighters at fire stations. Four of these subjects were dropped because their Infrequency scores were greater than 2, leaving 100 male subjects for the analysis. The social class of each subject was computed using Hollingshead's (1957) two-factor system, which weights education and occupation. Mean Index of Social Class of these subjects was 44.9 (SD = 11.2). This value corresponds to the top of Class IV (lower-middle class) in Hollingshead's five-class system. The mean age was 31.7 (SD = 12.0), and mean education was 13.2 (SD = 1.9). Thus, the control subjects were a little younger, $t(164) = 2.18$, $p < .05$, and better educated, $t(164) = 3.02$, $p < .01$, than the schizophrenics. However, as shown in Table 1, Body-Image Aberration score had negligible correlations with both age and education and social class, so these differences would not appear to be of importance. (A multiple correlation of age and social class with body-image aberration was also negligible and nonsignificant.)

Results

Comparison of Schizophrenic and Control Subjects

Table 1 describes the performance of these two groups. The coefficient alpha estimate of reliability for body-image aberration was .90 for the schizophrenics and .88 for the control

subjects. For the control subjects the Body-Image Aberration Scale shared about 7% of its variance with acquiescence (which had a coefficient alpha of .58) and 12% with social desirability (which had a coefficient alpha of .81). For the schizophrenics, the correlations of body-image aberration were negligible with measures of method variance as well as with demographic variables.

Mean score on the Body-Image Aberration Scale was 5.71 for the schizophrenics and 3.71 for the control subjects. The difference was significant, $t(164) = 2.37$, $p < .02$. Another way to look at the data is to consider the number of schizophrenic subjects who scored as deviantly as two standard deviations above the mean of the normal control sample. Among the schizophrenic subjects, 15% scored this high, as compared to 5% of the control subjects. The schizophrenic subjects' distribution of scores was slightly skewed, but was not obviously bimodal.

There was a tendency for body-image aberration to be higher in the poor premorbid than in the good premorbid subjects. Of the 66 schizophrenics, 19 had good premorbid adjustment, as indicated by a Phillips score of 0–12, and 31 were categorized as having poor premorbid adjustment (score of 18–30). Those with good premorbid adjustment had a mean Body-Image Aberration score of 4.1, and those with poor premorbid adjustment had a score of 7.1, but the difference fell short of significance, $t(49) = 1.73$, *ns*.

Body-image aberration correlated −.30 ($p < .02$) with months since first hospitalization. This value indicates that the longer the patient had been ill, the lower was his score. The finding of less body-image aberration in the more chronic patients cannot be attributed to differences in premorbid adjustment, since these differences would only have attenuated the relationship of hospitalization and Body-Image Aberration score. Apparently the experience of body-image aberration occurs more in the early stages of the illness, and the symptoms are forgotten or eclipsed by more serious disorder as the illness progresses. Age correlated −.27 with body-image aberration. This correlation is probably an artifact of the relation of age to months since first hospitalization ($r = .81$). Age, it will be recalled, had no relation to body-image aberration for nonpsychotic subjects.

Thirteen of the 28 items individually distinguished the schizophrenics from the control subjects at the 10% level or better. These 13 items dealt with the body seeming dead or unreal, decayed, misshapen, smaller than usual, not one's own, seeming to melt into surroundings, being indistinguishable from other objects, seeming to remain attached to objects touched, taking on the appearance of another person's body, and incorporating external objects. These 13 items were among the more deviant-sounding ones. Four judges rated the 28 items on a 5-point scale of the degree of deviancy that is indicated by a response in the direction of body-image aberration. Ten of the 13 discriminating items were among the 13 most deviantly rated. This relationship between rated deviancy and discrimination was significant, $\chi^2 = 9.12$, $p < .01$.

Of special interest is the schizophrenics' correlation of only .11 between the Body-Image Aberration and Physical Anhedonia Scales, despite the high coefficient alpha values of both scales. Thus, for schizophrenics, these two scales of schizophrenic pathology are essentially uncorrelated.

The Body-Image Aberration Scale is positively correlated ($r = .30$, $p < .02$) with the Beck (1967) Depression Inventory, but physical anhedonia is not ($r = .06$). The direction of scoring is such that greater body-image aberration and greater depression tend to accompany one another.

Performance of Nonpsychotic Clinic Clients

The Body-Image Aberration Scale and the other scales mentioned above were administered to 20 male clients at the University of Wisconsin Psychology Department Clinic. Only those clients who were judged by the intake interviewer or the client's therapist to be nonpsychotic were tested. These were predominantly college students, with a mean age of 22.6 ($SD = 5.1$).

The coefficient alpha estimate of reliability for the Body-Image Aberration Scale was .94.

The scale correlated .17 with acquiescence, −.25 with social desirability, and −.18 with physical anhedonia.

The mean Body-Image Aberration score was 3.80 (SD = 6.0). This score was slightly lower (but not significantly so) than for the unselected male college students, $t(649)$ = .68. The performance of the clinic clients shows that body-image aberration does not characterize all emotional disturbance.

Relation of Body-Image Aberration to Other Perceptual Aberrations

Some items of perceptual aberration other than of the body image had been included in the testings. These items correlated highly enough with the Body-Image Aberration Scale that they might be included with it. These items sampled changes in visual experience, for example, "Sometimes when I look at things like tables and chairs, they seem strange" (true), and of auditory experience, for example, "My hearing is sometimes so sensitive that ordinary sounds become uncomfortable" (true).

Table 1 shows the correlation of this 7-item subtest with the 28-item Body-Image Aberration Scale. For the schizophrenics, these 7 items had a coefficient alpha of .60 and correlated .76 with the 28-item Body-Image Aberration Scale. This correlation is almost identical to the maximal value permitted by the reliabilities of the scales. Thus, for schizophrenics, body-image aberration appears to be an aspect of a broader symptom of perceptual distortion. For each of the other groups, the correlation of the two sets of items fell short of the maximal value permitted by the two reliabilities.

The addition of these 7 items to the Body-Image Aberration Scale yields a 35-item scale which we call Perceptual Aberration. Table 2 shows findings, using this 35-item scale, for the same group as are reported in Table 1 for the 28-item scale. Comparison of Tables 1 and 2 shows that Perceptual Aberration has a slightly higher coefficient alpha, and yields essentially the same findings as the 28-item Body-Image Aberration Scale. The chief advantage of the 35-item scale is its coverage of a broader range of perceptual pathology than that of the 28-item scale.

As seen in Table 2, the 35-item scale of perceptual aberration had a negative correlation with physical anhedonia, just as did the 28-item Body-Image Aberration Scale. Among male subjects, there is a greater dearth of subjects who score high on both scales than is indicated by the modest negative correlation. (The modest size of the negative correlation between the two scales reflects the skewness of the data, with the majority of the subjects scoring very low on both scales.) For

Table 2
Findings for the 35-item Perceptual Aberration Scale with Five Groups

Variable	College students		Schizophrenics[a]	Normal controls[a]	Clinic clients[a]
	Female (N = 718)	Male (N = 631)	(N = 66)	(N = 100)	(N = 20)
M			7.68	5.14	4.80
SD			7.2	5.4	6.9
Coefficient alpha			.92	.89	.94
Correlation					
Social desirability			−.11	−.34	−.24
Acquiescence			.23	.32	.20
Physical anhedonia			.12		−.12
Age			−.25	−.24	.04
Education			−.13	−.01	.00
Father's social class			−.18	.06	
Phillips scale			.12		

[a] Males only.

a total group of 1,715 male college students who took both scales, 158 (9%) scored 1.5 standard deviations above the mean on perceptual aberration, and 150 (9%) did so on physical anhedonia. Yet only three subjects did so on both scales, less than ($p < .001$) the 14 who would be expected if the scales were independent.

Discussion

One must consider the possibility that the phenothiazine treatment of our subjects may have affected their reports of body-image aberration. The large-scale collaborative studies of both the Veterans Administration (Casey, Bennet, Lindley, Hollister, Gordon, & Springer, 1960) and the National Institute of Mental Health (1964) found that phenothiazine treatment reduces almost all symptoms that can be characterized as schizophrenic. Although neither of these studies examined the effects of drugs on body-image aberration, the breadth of reduction of schizophrenic symptoms that they found leads one to suspect that the drugs would reduce this symptom as well. The possibility that the drugs might accentuate this schizophrenic symptom appears remote.

The finding that the 28-item scale for body-image aberration correlates highly with the 7-item scale for nonbody perceptual aberration indicates that body-image aberration is an aspect of a broader perceptual dysfunction. This conclusion is consistent with the report of Traub et al. (1967), as well as with the theory of Blatt and Wild (1976).

Fenichel (1945) reviewed psychoanalytic literature that indicates that body-image aberration is an early symptom of the schizophrenic process. Many other clinical writers have reported that patients who might be called borderline schizophrenics or schizophrenia prone also show body-image aberration. These writers have used a variety of diagnostic labels for such patients. Distortions of body image have been reported for schizotypy (Rado, 1956; Meehl, 1973, Note 1), latent schizophrenia (Bychowski, 1943; Federn, 1952), psychotic character (Frosch, 1970), borderline personality (Kernberg, 1967), and pseudoneurotic schizophrenia (Hoch & Cattell, 1959). Most of these writers have reported their impression that such patients are at high risk for schizophrenia, and Hoch, Cattell, Strahl, and Pennes (1962) found at a 5- to 20-year follow-up that 20% of patients originally diagnosed as pseudoneurotic schizophrenia were later hospitalized for an overt schizophrenic episode. It appears to follow that the Body-Image Aberration Scale and Perceptual Aberration Scale may be useful tools for identifying persons who are at risk for schizophrenia. We have previously (Chapman et al. 1976) suggested that the Physical Anhedonia Scale may also be useful for identifying schizophrenia-prone individuals.

The Body-Image Aberration Scale identifies about one sixth of the schizophrenics as deviant, using the criterion of a score at least two standard deviations above the mean of the control subjects. These deviantly scoring subjects tend to be process schizophrenics. The Physical Anhedonia Scale identifies about one third of a schizophrenic sample as deviant, most of these being process schizophrenics (Chapman et al. 1976). Surprisingly, these scales of body-image aberration and anhedonia had an essentially zero correlation for schizophrenics, despite the fact that both scales measure symptoms of schizophrenia and despite the good coefficient alpha reliabilities of each. A lack of relation between two reliable measures of psychotic symptoms is unusual. This finding appears to indicate that patients with body-image aberration either have a different kind of disorder or have different manifestations of the same disorder than patients with anhedonia. The lower than chance occurrence of male college students who are high on both scales indicates that the second alternative is the more likely. The finding is that extreme scores of the two symptoms are not independent, so that when an extreme score on one symptom occurs, an extreme score on the other usually does not. If both scales are valid indicators of schizophrenia proneness, the scales may identify alternative forms or manifestations of the same disorder in male college students. This is not to suggest that the scales identify alternative forms of the same disorder for all kinds of

subjects. Each of these symptoms is probably found in disorders other than schizophrenia and schizophrenia proneness, for example, in depression. The two symptoms may have a different relation in such subjects than in schizophrenia and schizophrenia proneness.

Reference Note

1. Meehl, P. E. *Manual for use with checklist of schizotypic signs*. Unpublished manuscript, University of Minnesota, 1964.

References

Beck, A. T. *Depression: Clinical, experimental and theoretical aspects*. New York: Hoeber, 1967.

Blatt, S. J., & Wild, C. M. *Schizophrenia: A developmental approach*. New York: Academic Press, 1976.

Bleuler, E. [*Dementia praecox, or the group of schizophrenias*] (J. Zinkin, trans.). New York: International Universities Press, 1950. (Originally published, 1911.)

Bychowski, G. Disorders in the body-image in the clinical pictures of psychoses. *Journal of Nervous and Mental Disease*, 1943, *97*, 310–335.

Cancro, R. Sophistication of body concept in process-reactive schizophrenia. *Perceptual and Motor Skills*, 1971, *32*, 567–570.

Cappon, D., & Banks, R. Orientational perception. II. Body perception in depersonalization. *Archives of General Psychiatry*, 1965, *13*, 375–379.

Casey, J. F., Bennet, I. F., Lindley, C. J., Hollister, L. E., Gordon, M. H., & Springer, N. N. Drug therapy in schizophrenia. *Archives of General Psychiatry*, 1960, *2*, 210–220.

Chapman, L. J., Chapman, J. P., & Raulin, M. L. Scales for physical and social anhedonia. *Journal of Abnormal Psychology*, 1976, *85*, 374–382.

Cleveland, S. E. Judgments of body size in a schizophrenic and a control group. *Psychological Reports*, 1960, *7*, 304.

Cleveland, S. E., Fisher, S., Reitman, E. E., & Rothaus, P. Perception of body size in schizophrenia. *Archives of General Psychiatry*, 1962, *7*, 277–285.

Crowne, D. P., & Marlowe, D. *The approval motive: Studies in evaluative dependence*. New York: Wiley, 1964.

Dillon, D. J. Measurement of perceived body size. *Perceptual and Motor Skills*, 1962, *14*, 191–196.

Federn, P. *Ego psychology and the psychoses*. New York: Basic Books, 1952.

Fenichel, O. *The psychoanalytic theory of neurosis*. New York: Norton, 1945.

Fisher, S. Body image and psychopathology. *Archives of General Psychiatry*, 1964, *10*, 519–529.

Fisher, S. Body image in neurotic and schizophrenic patients. *Archives of General Psychiatry*, 1966, *15*, 90–101.

Fisher, S., & Cleveland, S. E. *Body image and personality*. Princeton, N.J.: Van Nostrand, 1958.

Fisher, S., & Cleveland, S. E. *Body image and personality* (2nd ed.). New York: Dover Publications, 1968.

Fisher, S., & Seidner, R. Body experiences of schizophrenic, neurotic and normal women. *Journal of Nervous and Mental Disease*, 1963, *137*, 252–257.

Frosch, J. Psychoanalytic considerations of the psychotic character. *Journal of the American Psychoanalytic Association*, 1970, *18*, 24–50.

Goodenough, F. L. Studies in the psychology of children's drawings. *Psychological Bulletin*, 1928, *25*, 272–279.

Hoch, P. H., & Cattell, J. P. The diagnosis of pseudoneurotic schizophrenia. *Psychiatric Quarterly*, 1959, *33*, 17–43.

Hoch, P. H., Cattell, J. P., Strahl, M. O., & Pennes, H. H. The course and outcome of pseudoneurotic schizophrenia. *American Journal of Psychiatry*, 1962, *119*, 106–115.

Hollingshead, A. B. *Two factor index of social position*. New Haven, Conn.: Author, 1957.

Holtzman, W. H., Thorpe, J. S., Swartz, J. D., & Herron, E. W. *Inkblot perception and personality: Holtzman inkblot technique*. Austin: University of Texas Press, 1961.

Jackson, D. N. *Manual for the Personality Research Form*. Goshen, N.Y.: Research Psychologists Press, 1974.

Jackson, D. N., & Messick, S. Response styles on the MMPI: Comparison of clinical and normal samples. *Journal of Abnormal and Social Psychology*, 1962, *65*, 285–299.

Jaskar, R. O., & Reed, M. R. Assessment of body image organization of hospitalized and non-hospitalized subjects. *Journal of Projective Techniques*, 1963, *27*, 185–190.

Kernberg, O. Borderline personality organization. *Journal of the American Psychoanalytic Association*, 1967, *15*, 641–685.

Kraepelin, E. *Dementia praecox and paraphrenia*. Edinburgh: E. & S. Livingston, 1919. (Originally published 1913.)

Machover, K. *Personality projection in the drawing of the human figure*. Springfield, Ill.: Charles C Thomas, 1949.

Meehl, P. E. *Psychodiagnosis*. Minneapolis: Universersity of Minnesota Press, 1973.

National Institute of Mental Health Psychopharmacology Service Center Collaborative Study Group. Phenothiazine treatment in acute schizophrenia. *Archives of General Psychiatry*, 1964, *10*, 246–261.

Rado, S. *Psychoanalysis of behavior: Collected papers*. New York: Grune & Stratton, 1956.

Reitman, E. E., & Cleveland, S. E. Changes in body image following sensory deprivation in schizophrenic and control groups. *Journal of Abnormal and Social Psychology*, 1964, *68*, 168–176.

Schilder, P. *The image and appearance of the human body*. London: Kegan Paul, 1935.

Sugarman, A. A., & Cancro, R. Field dependence and sophistication of body concept in schizophrenics. *Journal of Nervous and Mental Disease*, 1964, *138*, 119–123.

Swensen, C. H. Empirical evaluations of human figure drawings. *Psychological Bulletin*, 1957, *54*, 431–466.

Swensen, C. H. Empirical evaluations of human figure drawings: 1957–1966. *Psychological Bulletin*, 1968, *70*, 20–44.

Szasz, T. S. The psychology of bodily feelings in schizophrenia. *Psychosomatic Medicine*, 1957, *19*, 11–16.

Traub, A. C., Olson, R., Orbach, J., & Cardone, S. C. Psychophysical studies of body image: III. Initial studies of disturbance in a chronic schizophrenic group. *Archives of General Psychiatry*, 1967, *17*, 664–670.

Weckowicz, T. E., & Sommer, R. Body image and self-concept in schizophrenia, an experimental study. *Journal of Mental Science*, 1960, *106*, 17–39.

Received February 14, 1978 ■