Scales for Physical and Social Anhedonia

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True–false scales were devised to measure anhedonia, the lowered ability to experience pleasure. The scales were Physical Anhedonia (40 items) and Social Anhedonia (48 items). After scale development using 371 college students, the final version was given to 505 normal adults stratified by social class, age (18–45), and sex, and to 123 male schizophrenics. The potential artifacts of social desirability, acquiescence, and random responding were ruled out. Coefficient alpha values for Physical Anhedonia and for Social Anhedonia were .74 and .85 for male normal subjects and .82 and .85 for male schizophrenics. The schizophrenics scored more anhedonic than the normal subjects on both Physical and Social Anhedonia. The schizophrenics' scores on Physical Anhedonia appeared to fall into two clusters of scores, one cluster resembling the total distribution of the normal subjects, and a second cluster consisting of scores that were more anhedonic than those of the normal subjects. Anhedonics were more often poor premorbid and hedonics more often good premorbid. The Physical Anhedonia Scale may be useful for testing the hypotheses, advanced by several theorists, that anhedonia is genetically transmitted and that nonpsychotic anhedonics are at high risk for schizophrenia.

Anhedonia, the lowered ability to experience pleasure, has been described as a schizophrenic symptom by many psychopathologists, including Kraepelin (1913/1919) and Bleuler (1911/1950), although both Kraepelin and Bleuler viewed the loss of the experience of pleasure as only one facet of the deteriora-

tion of the patient's emotional life. Rado (1956, 1962) assigned anhedonia a more central role in the development of schizophrenia. He suggested that anhedonia is a central, genetically transmitted defect both in overt schizophrenia and in compensated "schizotypes" who do not actually undergo a psychotic breakdown. This defect, according to Rado, prevents the development of normal healthy sexual functioning, reduces zest for life, impairs the ability to relate with other people, and weakens the feelings of joy, affection, love, pride, and self-respect.

Meehl (1962, 1973) has championed Rado's views and integrated them into a theory of neurological dysfunction in schizophrenia. (Meehl's extraordinary book of 1973 stimulated the present research.) Meehl, like Rado, suggested that the lack of pleasure in relationships with other people leads to social withdrawal, inappropriate behavior, and even deviant logic.

Anhedonia is the focal symptom in the biochemical theory of schizophrenia offered by Stein and Wise (1971) and Wise and Stein (1973). They suggested that schizophrenics, as a result of a genetic defect, produce excessive 6-hydroxydopamine, which damages the brain's neural reward mechanism. This damage produces anhedonia, which, in turn,

causes schizophrenia. These theorists, unlike Meehl and Rado, suggest that anhedonia is a progressive disorder that becomes more severe with time.

Although Meehl (1962, 1973), Rado (1956, 1962), and Stein and Wise (1971) appeared to describe anhedonia as a symptom of all schizophrenics, other considerations indicate that it probably characterizes only some schizophrenics. Schizophrenics have been found to be heterogeneous on almost every symptom that has been measured for groups of schizophrenics. Even more pertinent is the fact that schizophrenics are heterogeneous on measures of the process–reactive distinction (Kantor, Wallner, & Winder, 1953; Wittman, 1941), as well as on measures of the virtually synonymous construct of premorbid adjustment (Gittelman-Klein & Klein, 1969; Phillips, 1953; Ullmann & Giovannoni, 1964). Although some patients have a poor premorbid adjustment, many other patients score in the normal range on these scales.

Differences in anhedonia might be expected to account for these differences in premorbid adjustment. Poor premorbid adjustment, as measured by the Phillips Prognostic Rating Scale (1953), means little activity or achievement with the opposite sex and little activity or achievement in social interaction with members of the same sex. On the Elgin Prognostic Scale (Wittman, 1941), process schizophrenia is also characterized by deficiencies in occupational interests, sports and hobbies, work and play. One might speculate that anhedonia is the basis of such deficient activities because people very often tend to do what they enjoy. Surely, for example, one of the main reasons that young men seek out women and young women seek out men is that they find pleasure in these relationships with members of the opposite sex. Conversely, many of the young people who do not seek heterosexual interaction probably find less pleasure from the activity than those who do seek it. A few people seek the opposite sex primarily because of social pressure, but these are probably only a subset of anhedonics.

Prior Research on Anhedonia

There have been remarkably few attempts to measure anhedonia in schizophrenia. Wat-

son, Klett, & Lorei (1970) attempted to measure anhedonia with five clinical rating items that were chiefly concerned with social withdrawal and apathy. In later research, Watson was unable to find support for predictions that anhedonics are deficient in their physiological reactivity to stress (Watson, 1972b) or deficient in their response to reinforcement (Watson, 1972a). It is unclear whether these negative results are failures of theory or of the measuring instrument. We suggest that clinical ratings of behavior may be too indirect a measure of anhedonia.

Kayton and Koh (1975) have recently tested the hypothesis that schizophrenics are anhedonic by measuring their recall of pleasant words and unpleasant words. They reported that normal subjects, but not schizophrenics, recall more pleasant than unpleasant words, a finding that they attribute to schizophrenic anhedonia. This research does not yield a score of anhedonia for individuals.

Two measures that were not designed to measure anhedonia but came close to doing so are Cautela and Kastenbaum's (1967) Reinforcement Survey Schedule and MacPhillamy and Lewinsohn's (1974) Pleasant Events Schedule. On both of these schedules the respondent is asked to rate on a 5-point scale how much joy or pleasure he or she has been given by each of a number of activities. Neither of these survey schedules could be readily adopted as a measure of individual differences in anhedonia because some of the experiences are not available to everyone. We also felt it inadvisable to ask schizophrenics to use a rating scale to report their experience of pleasure. Bopp (1955), in obtaining semantic differential ratings of words on 7-point scales, found that schizophrenics simplify the scales. Schizophrenics, unlike normal subjects, tended to use the extreme and center positions of the scales (Positions 1, 7, and 4) and to neglect the intermediate positions (Positions 2, 3, 5, and 6). We decided, therefore, to construct a new scale for anhedonia, casting items in true–false format.

METHOD

Item Construction

The following specification of anhedonia was given to our item writers for their guidance.

The anhedonia which we wish to measure is a life-long characterological defect in the ability to experience pleasure. We are not interested in a more transient loss of the experience of pleasure. Pleasure is characterized by a strong positive affect, by a keen anticipation of the experience that evokes it, by a satisfying recollection of the experience, and by a willingness to expend effort to achieve the experience. Behaviors which evoke pleasure tend to be repeated.

Pleasures may be grouped into three categories:

1. Physical pleasures, that is, pleasures of eating, touching, feeling, sex, temperature, movement, smell, and sound.

2. Interpersonal pleasure, for example, nonphysical pleasures of being with people, talking, exchanging expressions of feelings, doing things with them, competing, loving, and interacting in multiple other ways.

3. Other pleasures which are neither physical nor interpersonal. Examples are intellectual pleasure and the pleasure of achievement.

Item writers were asked to construct items for physical pleasure and for interpersonal or social pleasure but (in the interest of time) to omit the third category of "other pleasures." Items were categorized as physical or social by their dominant theme.

We were able to eliminate physical aspects from the items for interpersonal pleasure but unable to achieve the converse completely, that is, to eliminate interpersonal aspects of physical pleasure. This is because one important physical pleasure, sex, usually is experienced with other people.

An attempt was made to eliminate effects of depression. Depressed patients often complain about loss of capacity to experience pleasure, but this anhedonia in depression is relatively transient in most depressed patients. Items were worded to refer to long-standing characteristics rather than to present characteristics. For example, an item read: "I have had very little desire to try new kinds of foods," rather than "I have little desire to try new kinds of foods." As an additional guard against the effects of transient anhedonia, the subjects were instructed to "describe yourself as you have been during most of your adult life."

An attempt was made to avoid items with a bias toward social desirability, males or females, one social class rather than another, and one age within adulthood rather than another. Items asked only about pleasures in activities that are available to everyone. An attempt was made to reduce acquiescent response bias by wording items so that *yes* and *no* responses were anhedonic equally often.

The first form of the questionnaire included 51 Physical Anhedonia items and 56 Social Anhedonia items. The Physical Anhedonia items sampled a wide variety of pleasures. Examples are: "The beauty of sunsets is greatly overrated"; "I have seldom cared to sing in the shower"; "I have always had a number of favorite foods"; "Sex is OK, but not as much fun as most people claim it is"; and "I have always loved having my back massaged."

The Social Anhedonia items sampled a variety of interpersonal situations. Examples are: "Writing letters to friends is more trouble than it's worth"; "I have often enjoyed long discussions with other people"; "I have enjoyed flirting with a woman" (male form of item); and "Getting together with old friends has been one of my greatest pleasures."

The questionnaire also included a 22-item Infrequency scale, modeled after Jackson's (1974) Infrequency scale in his Personality Research Form. It consists of items that almost everyone answers in one direction so that a converse answer indicates invalid test taking. Examples from our Infrequency scale are: "I visited Easter Island last year," and "Sometimes I feel sleepy or tired."

Also included were 37 items from Jackson's (1974) Desirability scales from his Personality Research Form, Forms AA and BB. The correlation of each candidate anhedonia item with Desirability was computed to screen items for social desirability and remove such variance from the anhedonia scales.

Screening and Revision of Items

The subjects used for screening of items were 371 college students, of whom 125 were male and 246 were female.

Items were retained without change in either the Physical or Social Anhedonia Scale if their item-scale correlation was higher than the correlation with Desirability and if they showed minimal bias toward one sex over the other. Correlation with Desirability was a problem only for Social Anhedonia, and 13 items were rewritten in an attempt to reduce this correlation. Only one item was switched between scales because all but one of the 51 Physical Anhedonia and 56 Social Anhedonia items correlated higher with the scale for which they had been intended than with the other anhedonia scale. Of the 22 Infrequency items, 5 were dropped because they were answered in the infrequent direction by as many as 3% of either the males or the females. Three subjects were dropped because they answered 3 or more of the remaining 17 Infrequency items in the infrequent direction.

The final revised scale contained 40 Physical Anhedonia, 48 Social Anhedonia, 17 Infrequency, and 37 Desirability items.

Normal Standardization Sample

The final revised scale was given to a normal standardization sample. Most of these subjects were found by approaching strangers at shopping centers. A few additional subjects included firemen and people we solicited door-to-door. Most subjects were paid $1.50 for their participation.

This sample consisted of 241 males and 263 females of varying social classes as measured by the 1957 Hollingshead system, stratified by age from 18 to 45 years. One additional female and 3 male subjects were dropped because they answered three or more of the Infrequency items in the unexpected direction. The upper age limit of 45 years was chosen because of concern that anhedonia score

might increase with age. The mean age was 30.0 years $(SD = 8.1)$ for males and 30.6 years $(SD = 8.0)$ for females. The mean social class index was 42.0 $(SD = 14.1)$ for males and 46.3 $(SD = 14.0)$ for females. This mean social class index corresponds to the border area at the bottom of Class III (administrative personnel and minor professionals) and the top of Class IV (clerical and sales workers) in Hollingshead's (1957) five-class system.

Schizophrenic Sample

The questionnaire without the Desirability items was also administered to all the schizophrenics, including those in remission, who were readily available at one state hospital and two Veterans Administration hospitals. Because some of the pleasurable experiences mentioned in the scale are not readily available in the hospital, the analysis of results was limited to patients who had been out of the hospital during at least 6 months of the last 3 years and for at least 1 of the last 5 years. By this criterion, there were 123 male schizophrenics but only 18 females. Two male patients were dropped because they answered three or more of the Infrequency items in the unexpected direction, leaving 121 males for analysis. Only the male sample is large enough to justify judgments of the shape of the distribution of scores. The mean age for the male patients was 31.5 years $(SD = 7.68)$, and the mean years of schooling was 12.2 $(SD = 2.0)$. Almost all of these patients were receiving antipsychotic medication.

The schizophrenic patients were also rated on Harris's (1975) revision of the Phillips scale and on history of delusions, history of hallucinations, and on the extent to which depression is a current symptom. All four ratings were done from an integration of information from both the patient and his hospital records. Hallucinations and delusions were rated simply as to occurrence or nonoccurrence, counting as an occurrence an event in either the present or a past hospitalization. Using this criterion, 79% were judged as having been delusional and 67% as hallucinatory. Few of the patients in the present sample appeared deeply depressed at the time of testing but many of them showed varying degrees of mild or moderate depression, and many had an earlier history of depression. To evaluate the extent of current depression, the examiner asked each patient two questions about depression from Spitzer and Endicott's (1969) Current and Past Psy-

chopathology Scale. These questions were: "How often do you feel sad, depressed or blue?" and "How much of the time do you feel that way?" Using the answers to these questions, as well as data from the patient's clinical folder, two judges rated each patient on a 5-point scale from 1 (severe or constant depression) to 5 (no depression). Interrater reliability for the two judges was .86. The mean rating of depression on the 5-point scale was 3.1 $(SD = 1.3)$, which corresponds to a rating of mild depression.

RESULTS

Performance of Normal Subjects

Table 1 gives the mean and standard deviation of both anhedonia scales for both the normal standardization subjects and the mean and standard deviation of physical anhedonia alone for the college students. (Social Anhedonia scores are lacking for the college students because several items were reworded after they were tested.) As seen in Table 1, the female subjects scored more hedonically than their male counterparts in each group. (For male vs. female college students on Physical Anhedonia, $z = 3.14$, $p < .01$; for standardization subjects on Physical Anhedonia, $z = 2.09$, $p < .05$, and on Social Anhedonia, $z = 3.69$, $p < .01$.) Perhaps male and female subjects require a slightly different cutoff point for any dichotomization of subjects as hedonic and anhedonic.

Coefficient alpha (Kuder-Richardson Formula 20) was used to estimate the reliability of the scales. For the normal standardization sample of males, the reliabilities were .74 for Physical Anhedonia and .85 for Social Anhedonia. For the normal standardization sample of females, the reliabilities were .66 for Physical Anhedonia and .82 for Social Anhedonia. The two scales correlated .60 for males and .51 for females, which indicates that the two kinds of anhedonia have much in common. It

TABLE 1
MEAN AND STANDARD DEVIATION OF ANHEDONIA SCORES

| | Physical Anhedonia | | | | Social Anhedonia | | | |
| | Males | | Females | | Males | | Females | |
Subjects	M	SD	M	SD	M	SD	M	SD
College students	7.0	3.9	5.6	3.5				
Normal standardization sample	7.2	4.0	6.4	3.6	11.2	6.9	9.1	5.8
Schizophrenics	10.6	6.1			14.6	7.4		

TABLE 2

RELIABILITIES AND CORRELATIONS FOR 241 NORMAL MALES AND 263 NORMAL FEMALES

Scale	Physical Anhedonia	Social Anhedonia	Age	Social class	Desirability
Physical Anhedonia					
Male	.74	.60	.10	.16	−.23
Female	.66	.51	.24	.13	−.25
Social Anhedonia					
Male		.85	.18	.13	−.36
Female		.82	.26	.11	−.33

will be recalled, however, that we were not able to eliminate interpersonal implications from all Physical Anhedonia items. For an additional analysis, 14 Physical Anhedonia items with potential social implications were dropped. The remaining 26 items had, for male subjects, a coefficient alpha value of .65 and correlated .51 with Social Anhedonia. For the female subjects, this 26-item Physical Anhedonia subtest had a coefficient alpha value of .53 and correlated .37 with Social Anhedonia. Thus the shared variance of the two scales cannot be attributed to shared social implications of the items.

FIGURE 1. The frequency distribution of scores on Physical Anhedonia for male normal and schizophrenic subjects.

Table 2 shows for male and female subjects the relationship of both Physical and Social Anhedonia to age, social class, and social desirability as measured by the Jackson Desirability scale. Physical Anhedonia had a negligible relationship to age and social class, and it had correlations of −.23 and −.25 with Desirability in the normal sample. Thus it shares about 5% of its variance with Desirability. The Social Anhedonia Scale did less well in its correlation with Desirability. With correlations of −.36 and −.33, it shares about 12% of its variance with Desirability.

Figures 1 and 2 show both the schizophrenic and the normal male subjects' distributions of scores on Physical Anhedonia and on Social Anhedonia, respectively. The higher the score, the more anhedonic is the subject. As seen in Figure 1, the normal male subjects had a slightly skewed but almost bell-shaped distribution of Physical Anhedonia scores with a modal score of 7. Figure 2 shows that the scores on Social Anhedonia were somewhat more dispersed than those on Physical Anhedonia.

Physical Anhedonia and acquiescence. The balancing of the two anhedonia scales on the number of positively worded and negatively worded items does not rule out the possibility that acquiescence response bias contributes to anhedonia scores. To investigate this possibility, we adopted, as a measure of acquiescence, Jackson and Messick's (1962) "Dy-3" scale, a 60-item measure of acquiescence that is both reliable and free of social desirability variance. The Dy-3 scale and the Physical Anhedonia Scale were given to 117 male and 132 female college students. Table 3 shows the reliabilities and intercorrelations of the two scales. The intercorrelations are of
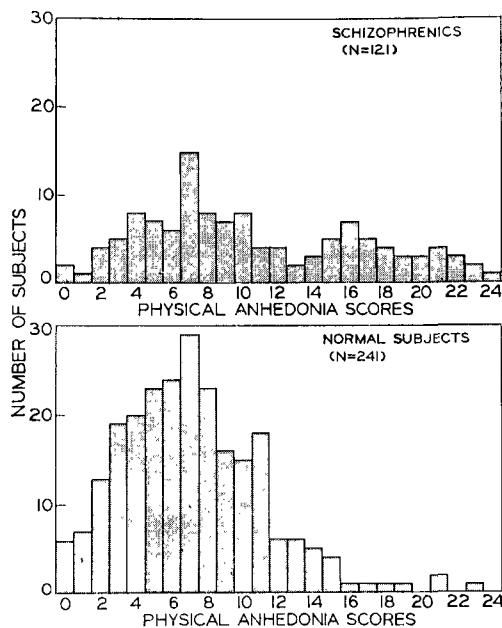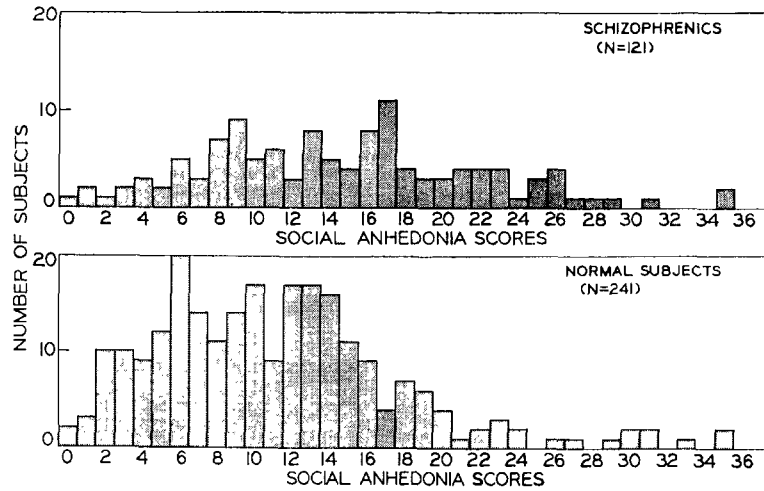
FIGURE 2. The frequency distribution of scores on Social Anhedonia for male normal and schizophrenic subjects.

trivial magnitude. We conclude that Physical Anhedonia has little acquiescence variance. We did not gather comparable data for Social Anhedonia.

Performance of Male Schizophrenic Patients

Correlates of anhedonia. For the male schizophrenics, the coefficient alpha was .82 for Physical Anhedonia and .85 for Social Anhedonia. The two anhedonia scales correlated .69. This substantial shared variance of the two scales is not due to social implications of the Physical Anhedonia items. On the 26-item subtest of Physical Anhedonia without social implications, these schizophrenics had a coefficient alpha of .76 and a correlation with Social Anhedonia of .59.

Table 4 shows the correlations of both Social Anhedonia and Physical Anhedonia with age, history of delusions, history of hallucinations, current depression, days in the hospital in the last 5 years, age at first hospitalization,

TABLE 3

RELIABILITIES AND INTERCORRELATIONS OF PHYSICAL ANHEDONIA AND DY-3 FOR 249 COLLEGE STUDENTS

	1		2	
Scale	Males	Females	Males	Females
1. Dy-3	.61	.65		
2. Physical Anhedonia	−.20	−.15	.71	.69

and months since first hospitalization. As seen there, all the demographic and symptom variables had negligible correlations with both anhedonia scales. The lack of a relationship to depression indicates that our findings are not attributable to the scales' measuring the anhedonia of depression. Full-blown deep depression as in depressive psychosis might, nevertheless, affect scores on the scales.

Comparison of groups on anhedonia. The male schizophrenics were more anhedonic than the normal male subjects on both Physical Anhedonia, $t = 5.62$, $p < .01$, and Social Anhedonia, $t = 4.27$, $p < .01$. Figures 1 and 2 show the distributions of scores. Of special interest is the shape of the distribution of scores on Physical Anhedonia. The schizophrenics' scores on Physical Anhedonia appear to fall into two clusters. The first cluster is like the entire distribution of the normal subjects, with a modal score of 7 and almost bell shaped. The second cluster has a mode at 16. These two clusters do not merely reflect the use of more than one hospital. Each of the three hospitals had patients in both clusters and more patients in the hedonic than the anhedonic cluster. Unfortunately, there is no satisfactory statistical test to determine whether an apparent bimodality truly reflects the presence of two underlying distributions, or if it is instead a chance fluctuation within a single distribution. The striking similarity

TABLE 4

RELIABILITIES AND CORRELATIONS OF PHYSICAL AND
SOCIAL ANHEDONIA WITH OTHER VARIABLES
FOR 121 MALE SCHIZOPHRENICS

Variable	Physical Anhedonia	Social Anhedonia
Physical Anhedonia	.82*	.69*
Social Anhedonia		.85*
Age	−.10	.03
Delusions	.01	−.09
Hallucinations	−.01	−.03
Depression	.08	−.04
Age at first hospitalization	−.06	−.01
Months since first hospitalization	−.02	.07
Hospitalization in last 5 years	.12	.01

* $p < .01$.

of the first half of the distribution to the whole distribution for normal subjects encourages us to speculate that the schizophrenics' distribution in Figure 1 may reflect two underlying distributions. In any case, Figure 1 indicates clearly that some schizophrenics are anhedonic but that the majority are not.

Anhedonia and Premorbid Adjustment

The relationship between these two variables is inadequately described by a correlation coefficient because physical anhedonia and premorbid adjustment might be viewed as dichotomies and because, as suggested earlier, we might expect the relationship to be vitiated by social pressure for anhedonics but not for hedonics.

Table 5 shows the relationship of both physical and social anhedonia dichotomies with the premorbid adjustment dichotomy, as measured by Harris's (1975) revision of the Phillips scale. Patients were omitted from

TABLE 5

RELATIONSHIP OF PHYSICAL AND SOCIAL ANHEDONIA TO
PREMORBID ADJUSTMENT IN MALE SCHIZOPHRENICS

Scale	Number of patients	
	Good premorbid	Poor premorbid
Anhedonic		
Physical	13	19
Social	14	22
Hedonic		
Physical	31	11
Social	32	11

these dichotomies if they fell in the middle range of Physical Anhedonia scores with a score of 12 or 13 (6 patients omitted), or in the middle on the Harris–Phillips scale with a score of 5 or 6 (37 patients omitted, including 3 of the 6 already omitted for middle scores on Anhedonia. Another 7 patients were omitted for a lack of data on premorbid adjustment.) Patients were not omitted on account of falling in a middle range of Social Anhedonia because the scores on Social Anhedonia did not fall into any appealing dichotomy that could define a middle range. The physical anhedonic and hedonic patients differed on premorbid adjustment, $\chi^2(1) = 6.98$, $p < .01$. A similar difference was found for social anhedonia, $\chi^2(1) = 8.75$, $p < .01$. As seen in Table 5, the hedonics of both kinds had good rather than poor premorbid adjustment by a ratio of almost three to one. In contrast, anhedonics are only slightly more often poor than good in their premorbid adjustment. This may be, as suggested earlier, because our society pressures young people to engage in heterosexual activity and to join other members of the same sex in group activities even if they don't enjoy such activities.

DISCUSSION

It appears that about a third of the schizophrenics in our sample were anhedonic as measured by the Physical Anhedonia Scale. This finding is inconsistent with the contention of the several theorists of anhedonia that all schizophrenics are anhedonic, but it is not completely inconsistent with Wise and Stein's data. Wise and Stein (1973) found, in post mortem assays of the brains of schizophrenic and normal subjects, that the majority of schizophrenics showed a biochemical deficit (of dopamine-β-hydroxylase) that was predicted from their theory, but not all their schizophrenics showed this defect. Four of the 18 schizophrenics they examined fell in the normal range. The difference in frequency of occurrence between our hedonic schizophrenics and Wise and Stein's schizophrenics who are not found to be biochemically deviant might be due to differences in the manner of patient selection. Wise and Stein's schizophrenics were long-term chronic patients who died in the hospital. Such a sample might in-

clude many more anhedonics than our more heterogeneous sample.

The relationship of physical anhedonia to both social anhedonia and the Phillips scale is consistent with the theory of Rado (1956, 1962) and of Meehl (1962, 1973) that the loss of the experience of pleasure is the basis of schizophrenics' reduced social interest. However, this reduced social interest, like physical anhedonia, appears to characterize only a portion of schizophrenics. It is, of course, possible that physical anhedonia is the result, rather than the cause, of social withdrawal, but such a causal relationship would seem less probable. Another possibility is that both physical and social anhedonia are the result of some third variable.

Scales of premorbid adjustment have been found by various investigators to have a statistically significant relationship to many other kinds of behavior of schizophrenics, including recovery from psychosis and performance on a large variety of psychological tests. If the predictive power of these scales arises from their imperfect reflection of anhedonia, an anhedonia scale should predict the same dependent variables as do scales of premorbid adjustment, but much more accurately.

Although Social Anhedonia yielded higher reliabilities than Physical Anhedonia, we regard Physical Anhedonia as the more promising of the two scales for research on schizophrenia. The Physical Anhedonia Scale would appear more likely to reflect a biological defect such as that suggested by theorists of schizophrenic anhedonia. The behavior described as social anhedonia is very· likely affected by social pressure, and scores on our Social Anhedonia scale are further distorted by the subject's desire to represent himself in a socially desirable light. These effects may account for the less clear dichotomy of patients on Social Anhedonia than on Physical Anhedonia. Physical Anhedonia would appear much more promising than Social Anhedonia for testing the hypothesis, which was advanced by Rado (1956, 1962), by Meehl (1962, 1973), and by Stein and Wise (1971), that anhedonia is genetically transmitted.

An important question is the extent to which physical anhedonia, as measured by our scale, is an enduring trait of the schizo-. type, as described by Rado and by Meehl. Evidence that at least some of the variance of the scale reflects an enduring characteristic is provided by its relationship to the Phillips scale. Further evidence on the matter would be provided by a longitudinal study of both schizophrenics and anhedonic nonpsychotic subjects.

It is especially important to determine if anhedonic nonpsychotic subjects later become schizophrenic. If a scale for physical anhedonia truly identifies a group of nonpsychotic subjects who are at high risk for schizophrenia, it should be useful for studying the development of the disorder.

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