Social perception in schizotypic college subjects.

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The study of individuals "at risk" for schizophrenia was popularized by Mednick (1966). The most commonly used high risk approach is the genetic high risk paradigm in which the offspring of schizophrenic parents are studied. But this represents a biased sample of potential schizophrenics since nearly 95% of all schizophrenics do not have a schizophrenic parent.

The Chapmans and their associates at the University of Wisconsin (Chapman, Chapman, Raulin, & Edell, 1978) have proposed an alternative behavioral high-risk paradigm, in which subjects are selected on the basis of the presence or absence of behavioral symptoms. This approach is based on the diathesis-stress model of Meehl (1962, 1973). Meehl argues that those "at risk" for schizophrenia (he calls them schizotypes) can be identified on the basis of a series of signs or symptoms.

Several self-report measures have already been developed to measure certain schizotypal characteristics including Physical and Social Anhedonia (Chapman, Chapman, & Raulin, 1976), Perceptual Aberration (Chapman, Chapman, & Raulin, 1978), Intense Ambivalence (Raulin, 1982) and Somatic Symptoms. Other scales are still in the early stages of development. The behavioral high-risk paradigm has been used with several of these scales to investigate social functioning (Chapman, Edell, & Chapman, 1980), social skills (Haberman, Chapman, Numbers, & McFall, 1979), social deficits (Numbers & Chapman, 1982), psychological test performance (Chapman, Chapman, & Miller, 1982; Edell & Chapman, 1979; Raulin, Van Slyck, & Rourke, Note 1), psychotic and psychotic-like symptomotology (Chapman, Edell, & Chapman, 1980; Chapman & Chapman, 1980), communication styles

(Adamski, Note 2; Raulin & Adamski, Note 3), communication effectiveness (Martin & Chapman, 1982), attentional and neurological deficits (Raulin & Chapman, Note 4), and psychophysiological responsivity (Simons, 1981, 1982; Simons, MacMillan, & Ireland, 1982).

Social dysfunction has long been associated with the preschizophrenic (Bleuler, 1911/1950) and the severity of such dysfunction is often the single best prognostic indicator for the patient (Phillips, 1953). Two published studies have investigated the social behavior in college subjects who score high on the schizotypy scales discussed above (Haberman, et al., 1979; Numbers & Chapman, 1982). They found not only social skill deficits, but also inappropriate social behavior in these subjects. A third study (Martin & Chapman, 1982) focusing on the communication effectiveness of these subjects used the Rosenberg and Cohen (1966) word communication task. Subjects scoring high on either of two schizotypy scales (Perceptual Aberration and Nonconformity) were much less able to give an effective clue word which could help an outside observer identify one particular word from a pair of words even though they showed no deficit on vocabulary ability.

The current study investigates a possible explanation for the deficits in social behavior and communication effectiveness of the schizotypic college students. If these subjects have a drasically different view of their social environment, then deviations in their social perspective might lead to particular deviations in their behavior. However, there are very few areas of social perception where one does not see large individual differences in the normal population. One exception is the perception of trait relationships. Certain traits are almost universally seen as covarying with certain other traits and being unrelated to still other traits. Whether these trait relationships are real or not, people unquestionably use such a structure in their attempts to understand their

social world. College students who score high on the Anhedonia, Perceptual Aberration, and Ambivalence scales tend more often then control students to report in interviews that the world, and particularly their social environment, is confusing for them. In this study we tested the hypothesis that the confusion felt by schizotypic college students in social situations results, in part, from using a different trait structure than that used by the rest of the population.

Method

Subjects

Subjects were 46 college students (18 males and 28 females) selected on the basis of their scores on four scales of schizotypy: Physical Anhedonia, Perceptual Aberration, Intense Ambivalence and Somatic Symptoms. Experimental subjects (N=31) scored at least two standard deviations above the mean on at least one of the four schizotypy scales. Control subjects (N=15) scored no more than 1/2 of a standard deviation above the mean on any of the four scales.

Procedure

Each subject was given two test protocols to complete, each of which used a different method to tap personality trait structure. One form used the conditional probability rating method (Laabs & Dawes, 1969) while the other employed direct ratings of meaning similarity (D'Andrade, 1965). The format for the conditional probability method was "Given that a person is X, how likely is it the he will also be Y?" This first slide gives an example of a conditional probability item. The subject rated each item on a 5-point scale ranging from extremely likely to extremely unlikely. In the similarity ratings, two traits (e.g. cautious::irritable) were listed and the subject rated their similarity on a 7-point scale ranging from

similar through unrelated to contrary. This second slide gives an example of a typical similarity rating item. We included several traits in each test that the clinical literature suggests would have special significance for the schizotype (e.g. dependent, cold, shy, anxious, etc.) To enhance generalizability, different traits were used in each of the tests. Each test was constructed by taking all possible pairwise combinations of traits.

Insert Slides 1 and 2 about here

Results

The data from each test were rearranged into a half matrix similar in format and similar conceptually to an intercorrelation matrix except that the scores in the matrix were the mean ratings of similarity. The matrices for experimental and control subjects were then compared. If some of our experimental subjects had an idiosyncratic view of the trait structure, we should have seen differences in either the mean or variance of the ratings in a good many of the cells when compared with control subjects. We found essentially no more significant mean or variance differences between ratings of experimental and control subjects than expected by chance alone. This next slide shows a summary of these data. Since the number of significant differences barely exceed what would be expected by chance, no attempt was made to interpret the differences that were found.

Insert Slide 3 about here

Since past research with these schizotypy scales had demonstrated that some of the scales were differentially sensitive to certain clinically

relevant phenomena, we recomputed the similarity ratings for separate experimental groups, each defined by just one of the schizotypy scales, and compared each with the control group. The perceptual aberration group, for example, contained all subjects who scored two standard deviations or more above the mean on the Perceptual Aberration Scale, regardless of how they scored on the other scales. Our rationale for this secondary analysis was that if only certain scales predicted deviant perceptions, that effect might be masked by including a large number of subjects who scored high on scales which did not predict deviant perceptions. This sub-analysis was intended to be exploratory and no specific hypotheses were made. In addition, the sample sizes for these separate experimental groups were small (ranging from 7 to 15 subjects), so these analyses must be interpreted cautiously. This next slide summarizes these data. Three of the schizotypy scales (Perceptual Aberration, Intense Ambivalence, and Somatic Symptoms) show little deviation from the number of differences expected by chance alone. There is an occasional elevation in one method or the other for a particular schizotypy scale, but in those cases the other method of evaluating perceived trait relationships showed no elevation over chance. In contrast, the Physical Anhedonia Scale subjects showed more than twice as many differences as expected by chance and this effect was shown on both of the measures used in this study. The number of observed differences on both the conditional probability method ($\chi^2(1) = 5.72$, $p < .025$) and similarities rating method ($\chi^2(1) = 26.62$, $p << .001$) were significantly above what would be expected by chance. A visual inspection of what trait relationships were perceived differently by anhedonics and controls revealed no obvious differences in the characteristics in those trait pairs relative to the trait pairs where no

differences were found. The sample sizes were much too small to break the data down any further to look at possible sex effects.

Insert Slide 4 about here

Implications and Conclusions

These data suggest that schizotypes (with the possible exception of schizotypes defined on the basis of Physical Anhedonia) generally perceive relationships between personality characteristics no differently than nonschizotypes. Since the greatest deficits in social behavior and communication effectiveness have generally been found in Perceptual Aberrators, with little of no deficits found in Anhedonic subjects, it seems clear that we cannot attribute any of these differences in social behavior to distortions in perception of trait relationships. However, these findings do not mean that the subjects we tested are free of perceptual distortions in their social environment. It is possible to learn what relationships between traits others see from exposure to literature and films even if you do not see those same relationships yourself. A solution to this problem might be found in the experiences of other investigators of borderline or schizotypic disorganization. Many researchers have argued that it is the ambiguity of the Rorschach that makes it such a sensitive indicator of pathology in borderline schizophrenics (Singer & Wynne, 1965). A more sensitive test of the hypothesis that there are perceptual distortions of the social environment in schizotypic individuals might use ambiguous situations as stimului. This might prevent subjects from giving normative answers based on outside experience.

But the data also suggest that those schizotypes who demonstrate

Physical Anedonia may have a somewhat distorted perspective of the relationship between traits; they are less responsive to the subtleties of social relationships. This finding is intriguing since in past research, anhedonics have generally shown less clinical disturbance than subjects who score high on some of the other schizotypy scales. In fact, Raulin et al. (Note 1) actually found male (but not female) anhedonics to be more normal on the MMPI than the control subjects in the study. The only exceptions to the general finding that anhedonics show less disturbance than other schizotypes occurred in situations where the anhedonic could not shape his or her response. Edell and Chapman (1979) found that male, but not female anhedonics, showed distinctly psychotic profiles on the Rorschach. Simons and his colleagues (Simons, 1981, 1982; Simons et al., 1982) found the psychophysiological reactions of anhedonics to various stimuli to be distinctly different from controls.

There seems to be a pattern emerging in the data, at least for male schizotypes. We would like to propose that (at least for males) Anhedonia may not be a primary symptom of either schizophrenia or schizotypy, but rather represents a reactive symptom representing social withdrawal which effectively protects subjects from possibly more severe disturbance. This would be a radical departure from the theories of Bleuler (1911/1950) and Meehl (1962, 1964). The anhedonic subjects we have studied generally show a broadly flattened affect rather than just a loss of a pleasure capacity. Their responses have a stilted quality. Anhedonic subjects are more withdrawn, show less heterosexual interest and report more schizotypal experiences than control subjects (Chapman et al., 1980) and they actively avoid interactions in a role-play situation (Numbers & Chapman, 1982). The Anhedonic's withdrawal and unresponsiveness isn't limited to just the voluntary responses involved in social interaction. Anhedonics have

demonstrated decreased responsiveness to external stimuli on at least three psychophysiological measures (Simons, 1982, Simons et al., 1982). Their MMPI profile is almost too flat at the same time that their Rorschach profile is distinctly psychotic in nature. There is also evidence to suggest that being very anhedonic precludes the possibility of showing some of the other schizotypic signs. Perceptual Aberration, for example, is rarely seen in anhedonics, yet both are demonstrated symptoms of chronic schizophrenia. The frequency of covariation of these traits is well below what you would expect by chance if the scales were actually unrelated to one another (Chapman et al., 1978). Subjects who show perceptual aberration are much more likely to show other clinically relevant pathology than subjects who show Physical Anhedonia except in ambiguous settings like a Rorschach test. If Anhedonia does in fact provide a resistance to clinical deterioration, then several predictions can be made. First of all, Anhedonic subjects should demonstrate significantly less risk for psychosis than Perceptual Aberrators or subjects characterized by other schizotypic signs. Secondly, if anhedonia is a secondary symptom, there should be some evidence of primary symptomotology preceeding the onset of the anhedonia as well as evidence that those symptoms decreased in severity about the time the anhedonia appeared. Furthermore, any shifts in the level of anhedonia over time should be accompanied by opposite shifts in other schizotypic symptomotology. Finally, one would expect to find other schizotypic signs in family members of anhedonic subjects. This would provide powerful evidence since anhedonia has generally shown minimal correlation with the other schizotypic signs studied so far. Some of these predictions are already being explored and we hope to investigate some of the others shortly.

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Slide 1

An example of a Conditional Probability Item

Given that a person is cold, how likely is it that he is also frail?

a) extremely likely
b) very likely
c) not very likely
d) very unlikely
e) extremely unlikely

Slide 2

An example of a Similarity Rating Item

Cautious::Irritable

similar_____:_____:_____:_____:_____:_____:_____contrary

Slide 3

The number of significant mean differences and variance differences for the two trait structure measures.

	Conditional Probability Method	Similarity Ratings Method
Number of Significant Mean Differences	6	10
Number of Significant Variance Differences	8	12
Number expected by Chance Alone	5.6	9.5

Slide 4

The Number of Mean Differences between Experimental and Control Subjects for Experimental Groups Defined on the Basis of Four Different Scales of Schizotypy

	Conditional Probability Method	Similarity Ratings Method
Physical Anhedonia	11 *	25 **
Perceptual Aberration	11 *	9
Intense Ambivalence	6	14
Somatic Symptoms	7	10
Chance	5.6	9.5

* significantly different from chance at $p < .05$
** significantly different from chance at $p << .001$