Interpersonal Influence and Symptoms of Stress*

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Many previous works relating the social structure to states of psychological stress or tension have accorded some importance to the role of interpersonal influence. Here, three fundamental features of the influence process held pertinent to stress are delineated. To assess the relative impact of (1) discrepancy among influences, (2) level of influence, and (3) the number of influence sources, data from 58 rural high school students and over 750 of their sources of educational and occupational influence are examined. The results of this analysis suggest that a multi-dimensional conception of the relationship between interpersonal influence and stress seems warranted. Implications for the future study of stress and our conception of the influence process are noted.

STUDENTS of stress and related psychological impairments have long been aware of the significance of interpersonal influence processes as potential contributors to conditions of psychological tension and disorder. For example, Dohrenwend (1961) proposed that one's relational system might act as "stresser" for an individual and Jackson (1962) has argued that symptoms of stress might be the consequence of the conflicting expectations presumed to be held for the occupants of inconsistent statuses. In a less explicit fashion, other researchers have acknowledged the impact of influence processes by couching the concept in the context of "familial relations" (Croog, 1970; Hansen, 1965), "conformity pressure" (Costell and Leiderman, 1968), or the reputational aspects of social class and status (Hollingshead and Redlich, 1958; Dohrenwend, 1957; Hunt, 1959).

The social psychological approach that this work represents is inherently attractive because of its implicit linkage of the individual to the social structure. From such a perspective we may view agents of interpersonal influence as the means whereby stress-inducing social structural conditions are mediated and then transmitted to the individual participants in that structure. In a sense, the influence process is the *nexus* of the individual and the social system. It is perhaps because of this theoretical significance that the concept of interpersonal influence processes has been so intricately involved in the study of the social distribution of stress.

Although there are clear theoretical grounds for examining interpersonal interaction in relation to stress, the research findings do not present a very lucid picture. In general, research in this field may be characterized as fragmentary, with different investigators having focused their attention on different features of the influence process. The reasons for this divergence in research are several and involve both theoretical and methodological problems. This paper is addressed to the conceptual and empirical problems attendant to the study of psychological stress and the interaction of an individual with others. Here we shall attempt to: (1) more clearly define those features of the influence process believed to be pertinent to stress; (2) examine some evidence of the relative importance of these sources of stress for a sample of rural youth, and; (3) discuss the implications of the above for the study of stress and psychological disorder.

Before moving on to the important dimensions of the influence process, we would do well to provide some parameters to this discussion by more clearly specify-

* The authors are grateful to Professors L. Saxon Graham, Tai Kang, and Lionel S. Lewis for their thoughtful comments on previous drafts of this manuscript; to Edward L. Fink and Erwin P. Bettinghaus for their helpful suggestions; and to the Graduate Research Board, University of Illinois, Urbana, for financial support of research reported here.

ing what is meant here by "psychological stress" or "tension." We use these terms here to refer to a pattern of attributes characteristic of an individual's physical and/or mental condition. The terms refer to underlying states which may be witnessed principally by the observation of "symptoms." Included among those things viewed as symptomatic of stress conditions are sensations of nervousness, depression, withdrawal and isolation. This conceptualization of our dependent variable is akin to that employed in the Midtown Manhattan Study (Langner and Michael, 1962) and by others (e.g., Jackson, 1962; and Meile and Haese, 1969). This conceptualization of stress as a psycho-physiological state may be distinguished from the view of psychological status as having no reality beyond the "reactions" of some audience, organization, or treatment institution. We believe that while this alternative view is important in its own right, it is addressed to a different sort of issue and is of only oblique importance here. These brief remarks on the general concept of psychological stress to be used here tell us little about the way in which it is observed. This empirical problem will be addressed in a later section.

The Problem

To a large extent the study of the relationship between stress and interpersonal influence has been impeded by two fundamental problems. First, there has evolved no theoretical consensus as to precisely *what* features of interpersonal interactions might contribute to states of stress and second, the methodolgies whereby pertinent aspects of the interpersonal influence process might be measured are in dispute. The first of these problems stems, no doubt, from the diversity of basic theories about the nature of interpersonal influence. Reference group theory, cognitive dissonance theory, role theory and interaction theory, all, for example, tend to focus attention on different select features of the influence process. When these different theoretical perspectives are applied to the study of stress and interpersonal influence, each guides the researcher to a different set of independent variables.

Much of the work relating influence to stress has been implicitly based on those theories which, put simply, view the state of minimal conflict as the least stressful to an individual. From this theoretical perspective attention is focused on the potentially *conflicting* or *inconsistent* aspects of influence. Jackson (1962) has examined the effects of the *conflicting expectations* presumed to be associated with occupancy of conflicting statuses. Kahn, et al. (1964) suggest that stress may be related to the conflicting influences acting on the performer of a given role (role strain) as well as from the conflict inherent in an individual's performance of divergent roles (role conflict).

The consistency, incongruence or conflict of different sources of influence is by no means the only dimension of interpersonal interaction considered in conjunction with stress. McGrath (1972) contends that psychological stress is a product of an individual's questionable capacity to perform at the *level* demanded of him by others. Mechanic's study (1962) of students under stress is representative of this tradition in that the expectations that peers, teachers and parents have for the academic achievements of students were viewed as stress inducing. It was presumed that those who were expected by others to perform at a high level would be potentially more "stressed" than those who were confronted with lower expectations.

In addition to the above, we may characterize the size of one's influence network as related to psychological stress. Thus, it is hypothesized that in those situations in which a person must confront a large audience of alters, there is greater potential for stress than when one must please only a few. This is used to explain, in part, the higher incidence of stress in urban settings as opposed to rural and a common application of the variable audience size is inherent in the everyday notion of "stage fright," a stress condition.

We may at this point summarize three basic characteristics of interpersonal in-

fluence believed associated with psychological stress. They are:

1. *Discrepancy* among influences. Interpersonal influence may manifest discrepancy in the form of conflicting influences presented by different sources at one point in time or by inconsistencies in a single source across time. Greater discrepancy is believed to lead to higher levels of psychological stress.

2. *Level* of influence. A given instance of interpersonal influence may be seen as compelling an individual to a given rate of performance (i.e., to achieve certain goals, make certain self-improvements, etc.). The higher the level of performance demanded by an influence source, the greater the potential for stress and;

3. The *number* of influence sources to which one is exposed. The larger the number of influence sources to which one must respond, the greater the stress.

From this it is easy to understand the lack of continuity among various studies of interpersonal influence and stress. Almost all previous investigations in this field have focused on the effects of but one of a variety of significant dimensions of the influence process. These differing conceptions of the independent variable are however, not the only obstacle to our inquiry. As noted above, important problems are found when one examines the way in which these concepts of interpersonal influence are operationalized in research.

Typically, investigations of the effects of others on one's psychological stress have relied on measurement techniques which are, at best, indirect. The nature of the influences to which one is exposed are most often inferred from some aspect of the presumed recipient rather than from the actual observation of agents of influence (Levine and Scotch, 1972: 1-16). Thus, place of residence is used as a measure of the size and complexity of one's network of interpersonal affiliations, one's status, or class is used as an indicator of the level of expectations held for him and the consistency or inconsistency of statuses are taken as an indication of the discrepancy of expectations. Such measures are, of course, of questionable validity. It is not altogether clear that urban residents are exposed to sources of influence more than rural residents (see for example, Reiss, 1959), and at any rate within each population, individuals may differ considerably in terms of the size and complexity of their networks of influence. Additionally, because one's status or pattern of statuses may measure a great deal more than expectations, their use may tend to confound rather than clarify the matter. While the problems of more directly operationalizing interpersonal influence variables are several, it is obvious that better measures than have been employed in the past must be used here if any accurate assessment of their relationship to stress is to be achieved.

Methodology

The preceding has several important implications for the choice of methods one uses to relate interpersonal influence to stress. These research procedures must: (1) involve a research design in which independent measures of *both* stress and the influence process are obtained; (2) employ a conceptualization of interpersonal influence which is appreciative of the *multiple dimensions* of influence suspected of playing some role and; (3) operationalize the influence process so that it may be more directly observed. To achieve these several ends, this investigation will employ techniques recently developed in study of the attitude formation process.

In attempting to assess the impact of interpersonal influence on the educational and occupational aspirations of high school youth, Woelfel and Haller (1971) introduced a novel set of procedures known as the Wisconsin Significant Other Battery (WISOB). These instruments purportedly identify and measure the specific influences of others upon the formation of the recipients' beliefs about themselves and the objects or behaviors they confront (i.e., attitudes). In the past they have been used to demonstrate the relationship between interpersonal influence and the formation of educational and occupational aspiration attitudes

(Woelfel and Haller, 1971; Mettlin, 1970), the formation of smoking attitudes (Mettlin, 1973), and the formation of generalized social values (Saltiel and Woelfel, 1974). Although the dependent variables of these investigations differ substantially from that considered here, WISOB does have considerable applicability to this investigation in that it allows for the simultaneous measurement of multiple dimensions of interpersonal influence. Because of this potential, we shall briefly review the basic features of WISOB. More extensive information related to the concept, reliability, and validity of this procedure has been presented elsewhere (cf. Haller and Woelfel, 1969; Woelfel, 1972).

The use of WISOB involves a two-step process that entails first administering a questionnaire to the focal individuals (i.e., high school students), asking them to identify those to whom they have *spoken* about educational and occupational attainment matters (for example, "Who has spoken to you about what *kind of work* would be best for you?"). To these people, termed *definers*, questionnaires are mailed asking what expectations they hold for the focal individuals.

On the basis of the responses to questions measuring separate paths of influence (definer's educational and occupational expectations) several potentially stress-inducing variables may be defined. First, each of these areas of influence may be characterized as compelling the individual to perform at some *level*. Each agent of influence responding to the mailed questionnaire is asked to indicate the level to which he/she expected the focal individual to perform in terms of a scale of educational or occupational attainment (for example, "Of the jobs listed, which one would you like to see (the focal individual) have if he/she were free to choose any of them he/she wished when his/her schooling is over?" or "How much education would you like to see (the focal individual) have if nothing prevented him/her from having as much as he/she wanted?"). The scales, ranging in value from little or no attainment (e.g., quit high school, become a gas station attendant) to high attainment (e.g., earn M.D., become a physician), were adapted from previous studies of the attainment process (see Woelfel and Haller, 1971; Haller and Woelfel, 1969). The higher the aggregate value of the responses of each focal individual's agents of influence for each of the paths of influence, the higher the *level* dimension of the influence process. Each of these modes of influence may vary in terms of both number and homogeneity as well. The number of agents of influence identified in each influence category is used to indicate the size of the audience exerting influence and discrepancy among the influences may be detected by calculating the statistical variance in the levels of influence presented to the focal individual by differing sources. Thus, those who are subjected to *uniformly* high or low educational or occupational expectations would be subjected to less conflict or discrepancy than those who were subjected to widely *varying* inputs of influence.

The educational and occupational versions of the WISOB by no means measure all of the influence to which an individual may be exposed. They tap only the influences on two specific attitudes, educational and occupational aspirations. However, the career decisions of selecting the level of education one is going to seek and ultimately the level of occupational attainment desired are believed to be of considerable importance to high school students. For this reason, one might expect the multiple dimensions of educational and occupational influences to be related to stress for such a population. It is on this basis that the implementation of WISOB to relate interpersonal influence to psychological stress seems justified.

To operationalize our dependent variable, Stress, a twenty-two item test of psychological well-being is employed here. This test is composed of items that relate to both psycho-physiological symptoms (e.g., "I am often bothered by nervousness" and "My hands sometimes tremble enough to bother me") and symptoms of withdrawal and depression (e.g., "I sometimes can't help wondering if anything is worthwhile anymore" or "I feel

somewhat apart, even among my friends"). Originally developed by Langner (1962), it has been modified to make each item answerable in terms of a five-point Likert Scale, ranging from *strongly agree* to *strongly disagree*, instead of the simple yes-no response categories of the original. Our measure of stress is the sum of these twenty-two items. In its initial form, this scale has been employed extensively as an indicator of stress, most recently by Summers *et al.* (1971), Meile and Haese (1969) and in this modified version, by Saltiel and Woelfel (1974). It is similar to scales employed by Jackson (1962) to measure the same concept. Although there has been considerable debate as to the validity of such paper and pencil test devices in measuring a concept as complex as psychological impairment, stress and tension, few alternatives are available. (For excellent review of these issues, see Seiler, 1973). This particular instrument was chosen because of its simplicity, its extensive prior use in this field of research, and, in its modified form, its reliability.

Not aspects of influence, but included as pertinent control variables, are the level of the focal individual's own educational and occupational aspirations and the inconsistency of these two variables. These variables are included in the belief that, independent of agents of influence, the level of a person's own aspirations might induce symptoms of stress.

Data on all of the above variables were obtained from a sample of 98 rural Illinois high school students. These students were administered the WISOB and the Langner stress scale. On the WISOB, 1443 educational and occupational influence sources were identified. Sixty-eight percent of these influence sources (993) responded to the questionnaires subsequently mailed to them. When these influence data were combined with the earlier obtained stress and aspiration data, 58 complete cases result. Each case consists of data from one focal individual and an average of thirteen sources of influence. The 58 cases (19 males and 39 females) are from all four years of high school and have an average age of 15.5 years.

On the stress scale, which has a possible range of values from 22 to 110, this sample had a mean score of 55 (SD=13). Of the influence sources observed, 12 percent were parents of focal individuals, 18 percent were some other relative, 48 percent were friends of the focal individual, 13 percent were teachers, and the role relationships of 9 percent of the influence sources were not determined. For an extended discussion of the role relationships of those identified by WISOB to the focal individual, see Woelfel (1972).

Results

The basic pattern of findings is given by the zero-order correlation coefficients in Table 1. Column one of Table 1 shows that, as expected, stress is positively related to the discrepancy in expectations ($r_{1.5} = .23$; $r_{1.9} = .31$) and to the number of significant others ($r_{1.6} = .28$; $r_{1.10} = .16$). Moreover, variance in occupational expectations is completely independent of variance in educational expectation ($r_{5.9} = -.07$) indicating that their effects on stress will be additive. Number of educational and occupational definers are correlated ($r_{6.10} = .52$) as might be expected, but only 27 per cent of their variance is shared in this sample. Furthermore, intercorrelations among the number of definers and variance in expectations are also quite small ($r_{5.6} = .40$; $r_{5.9} = -.07$; $r_{5.10} = .10$; $r_{9.10} = .19$; $r_{6.9} = -.02$). These coefficients indicate that these variables act relatively independently in their effect on stress.

Table 1 also shows, contrary to expectations, that neither high aspirers nor those from whom high levels of performance are expected experience high levels of stress. On the contrary, all status aspirations and status expectations are inversely related to stress ($r_{1.2} = -.06$; $r_{1.3} = -.11$; $r_{1.4} = -.18$; $r_{1.8} = -.20$). Unlike the variance measures, however, these aspiration-expectation levels are substantially interrelated ($r_{2.3} = .62$; $r_{2.4} = .45$; $r_{2.8} = .57$; $r_{3.4} = .47$; $r_{3.8} = .58$; $r_{4.8} = .62$) as should be expected, and therefore their effects on stress are not simply additive.

Variable X_{12}, inconsistency of aspirations, represents the difference between the respondents' educational and occupa-

TABLE 1: MEANS, STANDARD DEVIATIONS, AND ZERO ORDER CORRELATIONS (N=58)

				Correlation Matrix										
		Mean	SD	X_1	X_2	X_3	X_4	X_5	X_6	X_7	X_8	X_9	X_{10}	X_{11}
X_1	Stress	55.1	13.7	1.0										
X_2	Student's level of occupational aspirations	38.4	12.8	-.06	1.0									
X_3	Student's level of educational aspirations	6.8	1.7	-.11	.62	1.0								
X_4	Mean level of significant others' occupational expectation	42.6	10.5	-.18	.45	.47	1.0							
X_5	Variance in occupational expectations	30.0	40.3	.23	-.05	.05	-.02	1.0						
X_6	Number of occupational definers	2.8	1.6	.28	.10	.21	.08	.40	1.0					
X_7	Total variation in occupational expectation (X_5 X_6)	108.8	167.4	.31	.02	.09	-.03			1.0				
X_8	Mean level of significant others' educational expectation	7.3	1.4	-.20	.57	.58	.62	-.08	-.04	-.09	1.0			
X_9	Variance in educational expectations	1.2	3.2	.31	.09	.01	.03	-.07	-.03		.04	1.0		
X_{10}	Number of educational definers	2.7	1.6	.16	.17	.40	.31	.10	.52		.16	.19	1.0	
X_{11}	Total variation in educational expectations (X_9 X_{10})	4.1	11.9	.31	.16	.13	-.11			-.04	.07			1.0
X_{12}	Inconsistency of aspirations (X_3–X_2)	0.0	.9	-.05	-.44	.44	.02	.11	.12		.09	.11	.26	

tional aspirations (in standard normal form, i.e., the variables X_3 and X_2 have been transformed so that $\bar{X}_3 = \bar{X}_2 = 0; \delta_{x3} = \delta_{x2} = 1$). Variable X_{12}, thus, is given by $Z_3 - Z_2$, and consequently represents only one kind of aspiration inconsistency—the extent to which educational aspirations exceed occupational aspirations. Other superior measures of aspiration inconsistency can also be calculated, but at least this kind of aspiration inconsistency shows no relationship to stress, as the coefficient $r_{1.12} = -.05$ shows.

These findings suggest that those respondents whose interpersonal communication patterns are extensive and diverse experience higher levels of stress than those whose communication networks are less diverse and less extensive. This is theoretically plausible, since it suggests stress is associated with the total amount of discrepancy with which an individual is confronted. Consequently, two additional variables were calculated. The first of these variables (X_7, total variation in occupational expectation), is the product of the average variability of expectations (i.e., the variance) and the number of definers, so that $X_7 = X_5 X_6$. The second, X_{11}, is the educational counterpart of the first, so that $X_{11} = X_9 X_{10}$. As expected, both X_7 and X_{11} are related to stress in this sample, with $r_{1.9} = r_{1.11} = .31$; that is, the total variation of educational expectations (X_{11}) explains no more variance in stress than does the average variance of educational expectations (X_9).

The pattern of these results is made clearer by the partial regression coefficients in Table 2. Equation one (Column one of Table 2) shows that both average variance in educational and occupational expectations exert independent effects over stress ($\beta_{1.5} = .16$; $\beta_{1.9} = .31$). As with the zero-order coefficients, all expectation and aspiration variables are negatively related to stress, although only X_4, mean occupational expectations, is of any substance. Number of occupational definers also shows a positive net effect, but number of educational definers does not. (Occupational aspirations, X_2, are left out of the equation because, $X_{12} = X_3 - X_2$ and those three variables are collinear; if entered into the equation instead of X_{12} its coefficient would be less than $\pm.05$). Inconsistency of aspirations shows essentially no net effect ($\beta_{1.12} = -.05$). These variables jointly account for 25 per cent of the variance in stress.

TABLE 2: COEFFICIENTS OF THE MULTIPLE LINEAR REGRESSION EQUATIONS PREDICTING PSYCHOLOGICAL STRESS

Independent Variables		Adjusted Partial Slopes (Beta Weights) Equation One	Equation Two
X_2	Student's level of occupational aspirations	--	+.03
X_3	Student's level of educational aspirations	-.06	-.10
X_4	Mean level of significant others' occupational expectations	-.15	-.13
X_5	Variance in occupational expectations	.16	--
X_6	Number of occupational definers	.22	--
X_7	Total variation in occupational expectations ($X_5 X_6$)	--	.32
X_8	Mean level of significant others' educational expectations	-.06	-.07
X_9	Variance in educational expectations	.31	--
X_{10}	Number of educational definers	-.07	--
X_{11}	Total variation in educational expectations ($X_9 X_{10}$)	--	.35
X_{12}	Inconsistency of aspirations ($X_3 - X_2$)	-.05	--
R =		.50	.50
R^2 =		.25	.25
N =		58	58

The second equation differs from the first in that it includes the products of variance in expectations and number of others (total variation in the interpersonal network) as independent variables rather than variance and number individually. This equation is quite informative, showing that total variation in the interpersonal communication system is by far the largest net contributor to stress ($\beta_{1.7} = .32$; $\beta_{1.11} = .35$). These coefficients also show that what small net effect the expectations of significance others have is negative ($\beta_{1.4} = -.13$; $\beta_{1.8} = -.07$). Furthermore, no predictive accuracy is lost by entering total variation as an aggregate rather than variance in expectations and number of definers separately, since the multiple correlation remains the same as in Equation 1 ($R = .50$). Logarithmic transformation of this equation shows no substantial curvilinearity in the regression surface. (The resulting equation yielded an $R = .47$ and $R^2 = .22$.)

Discussion

While these data appear to provide sig-

nificant evidence that the interpersonal influence process is related to symptoms of stress, some caution must be used in interpreting these findings. As was noted earlier, the influence observed here is certainly not all the influence to which these students are exposed. Although we have considered more aspects of more influence sources than has been done heretofore, they concern only matters of educational and occupational aspiration and attainment. While these two topics are both matters about which high school students are subjected to a great deal of influence, other stressful influences no doubt abound. For example, not considered here was the number, level and discrepancy of influences pertinent to the formation attitudes about dating and sex, political beliefs and conceptions about drugs and alcohol. When relevant characteristics of these additional influences are considered, our ability to predict symptoms of stress should become even greater. Even for the attitudes examined here, some sources of influence were unmeasured due to their failure to respond to questionnaires or their lack of identification by the focal individuals. Thus, some part of the coefficient of alienation is attributable to measurement rather than theoretical error. In terms of our theoretical conception of discrepancy in influence, the procedures used are only an imperfect operationalization. That conception proposed that variance might occur among sources at one point in time as well as across time for a single source. Here we have dealt with conflicting influences at only one point in time. Stress that might result from the changing expectations of others has gone undetected.

The relationship between our several measures of variability in expectations and levels of psychological stress observed has some relevance to the theory of "status inconsistency" as a source of stress. These data provide some support for Jackson's (1962) assertion that it is conflicting expectations attendent to inconsistent statuses that produce symptoms of stress. Further research on this question is clearly warranted, however, since as noted above not all forms of variability in influences have been observed here.

A finding not anticipated from previous work was that the number of influence sources would account for variance observed in levels of stress, even when other features of influence and respondents' attitudes were controlled. It suggests the possibility that large organizations or urban settings which bring people into contact with large numbers of alters may be stress-inducing by virtue of their "bigness" alone. The city, the university, the asylum, the factory, etc., may induce their stress by collecting audiences for the members to confront rather than through the quality or complexity of demands placed on the members of such institutions. These are, of course, research questions which go far beyond the scope of this investigation and are presented only to illustrate implications for research which may be drawn from our findings.

There are other implications of these findings for our conception of the nature and determinants of stress. As was noted earlier, the approach employed here suggests that the sources of psychological stress may be found, not within individuals but within the social structure, and particularly in the influences which are exerted on persons by others.

Finally, since a particular conception of the nature of influence was extensively employed in this investigation, it has some import for social psychological theory and methodology. It can be argued that the present investigation tends to further validate the notion that the influence process is best characterized as one involving the aggregation of the disparate effects of multiple agents of influence rather than solitary others or uniform points of reference. This implies that the traditional sociological concepts of the influence source (i.e., the reference group), the "significant" other, the orientational other, the "alter," etc.), which conceive of influence being exerted by only one or a few individuals or groups, are no longer our best tools for studying the nature and effect of interpersonal influence. Clearly, what is required is a conceptualization of influence which when operationalized, allows the observation of the *distribution* of

influence effects, as well as the interrelationships among the sources of influence. The concept of *communication network* might be suggested. Such a concept makes the description of the results of this study quite parsimonious: other factors equal, stress is proportional to the heterogeneity and extensiveness of the communication network within which the individual is embedded. While an oversimplification, this conception provides a ready source of additional research hypotheses concerning the frequency of communication of the individual with other nodes in the network, the rate of flow of information through the network, the connectivity of the network, the variance of information flowing through the network, and so on. Should the findings of this research be supported in other contexts, such hypotheses will warrant careful investigation.

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