*An initial report is presented on a project to study a group of workers who are to lose their jobs before this happens and until they have become stabilized in a new situation. The purpose is to see how or whether specific diseases and/or illness behavior arise out of the covariation of certain feelings, physiologic responses and behavior interacting with more enduring properties of the person and the environment.*

# THE HEALTH OF PEOPLE CHANGING JOBS: A DESCRIPTION OF A LONGITUDINAL STUDY

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ALEXANDER POPE wrote in his Essay on Man, "The proper study of mankind is man." But to study man only in his everyday environment may yield an incomplete understanding. The study of man as he passes through a crisis is also necessary. One of the more serious crises which can befall a man in our culture is the loss of his job. We believe that the employment—unemployment—reemployment episode will illuminate the dynamics of social stress when studied on a broad medical and social-psychological basis. This report will describe a longitudinal study, currently in progress, which seeks to determine the effects of loss of job on the health and behavior of adult male blue-collar workers.

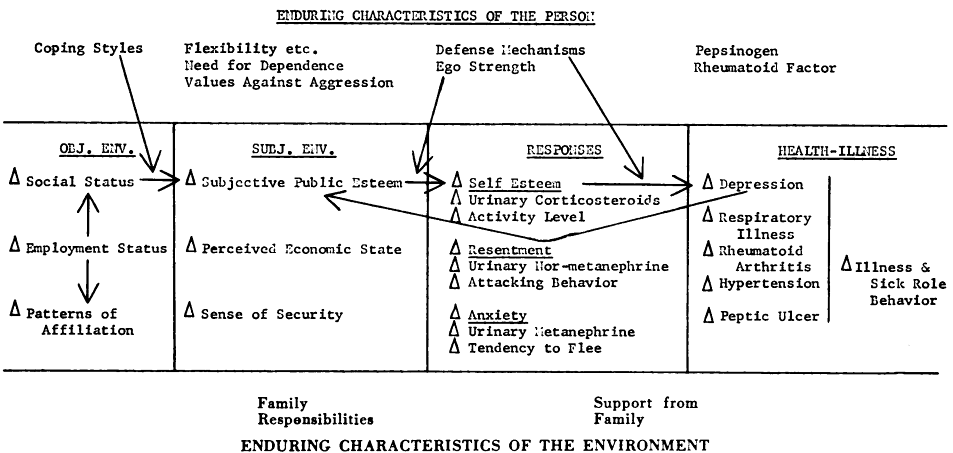
The purposes of this study are two. First, it will examine changes in the frequency of illness and illness behavior. Second, it will investigate the extent of covariation of certain feeling states, physiologic responses, and behaviors. The more important variables of the study are categorized in Figure 1. First, let us look at the nature of this diagram. The left-hand box contains variables of the Objective Environment which are presumed to influence the variables in the second box called the Subjective Environment. The Subjective Environment in turn influences the Responses, which may be approximately classified as changes in feelings, physiology or behavior. These in turn influence the Health-Illness variables. The degree to which a variable in one box affects the relevant variable in the next one is frequently influenced by specific enduring properties of the person or his environment. A few such enduring characteristics are indicated in the upper and lower portions of the figure.

Now let us follow a single simplified theme within this diagram. A part of the thinking about depression is illustrated by the arrows that flow from Δ Employment Status (the Δ's represent "change in") to Δ Social Status to Δ Subjective Public Esteem to Δ Self Esteem to Δ Depression. The arrows imply hypotheses within this postulated

causal sequence. The reflexive arrow from Δ Depression to Δ Subjective Public Esteem indicates the reasonable hypothesis that the level of depression will influence the way in which a man views his environment. Furthermore, Subjective Public Esteem is presumably dependent not only on a man's new status, but also on the way he goes about dealing with it. The fact that this is probably an interactive relationship is symbolized by the arrow from Coping Styles to the arrow from Δ Social Status to Δ Subjective Public Esteem. Similarly, Defense Mechanisms and/or Ego Strength clearly condition the subsequent two relationships. It should be obvious that the depression theme described above does not constitute the totality of our understanding of this subject, nor does it indicate more than a small subset of the hypotheses about depression that will be examined. This theme does illustrate the way we go about constructing hypotheses. If we were to put in all the variables and all the complex hypotheses involved, the figure would be totally illegible.

The major focus of the study is on the covariation of the feeling, physiologic and behavioral variables of the Response box. The interest in specific diseases has to be secondary because it may be some time before we can build up our sample to a size sufficient to demonstrate reliable differences. However, the study will explore intensively the changes in illness behavior and sick role behavior,[1] i.e., that domain of man's behavior which reflects the pattern and sequence of interacting sociopsychological forces on the individual as he reacts to changes in his state of health. It has been the impression of some observers that employees who have been thrown out of work will occasionally adopt the sick role in preference to the role of the unemployed. For example, the health insurance claims after the closing of the Studebaker plant in South Bend, Ind., rose so high that for a while the corporation was unwilling to meet the payments.[2] It is not clear whether this phenomenon is primarily an increase in sickness or an increase in sick role behavior. It is hoped that self-identity theory[3] will help to clarify the identity and role issues involved.

**Figure 1—A diagrammatic presentation of selected major variables from the study of people changing jobs**



As indicated by the joint authorship, the study has developed as a collaborative enterprise involving an epidemiologist, a biochemist, a psychologist, and a research associate in public health nursing. This collaboration grew piece by piece but is now on a full and effective footing. Much of the collaborative atmosphere grew initially out of the need for extensive discussions about hypotheses and measurement. As the staff grew, these discussions became formalized into staff meetings at stated intervals in which the major decisions were made.

## Blue-Collar Workers Studied

The persons to be studied are male blue-collar workers between the ages of 35 and 59 who are married and have at least three years seniority. They are selected from factories in southeast Michigan that are about to close or to automate some of their processes. With strong backing from the United Automobile Workers, we have succeeded in bringing into the study about two thirds of those approached. The staff has been instructed to avoid the hard sell which might lead to participation at first and dropping out later. Our experience with other panel studies suggests that we should lose very few of those who complete the second round.

The data are being collected by public health nurses using three different types of visits. The Initial Visit aims at establishing rapport and at collecting certain basic health, demographic and personality data. This is followed by a data collection sequence composed of the Health Visit followed by 14 days of keeping a health diary followed by the Way of Life Visit. The Health Visit involves the collection of physiologic data, i.e., body weight, blood pressure, a blood sample and a timed urine sample, plus certain specific health data, mental health data, and illness behavior data. The health diary is a straight-forward daily record form borrowed from the Tecumseh Health Study.[4] The Way of Life Visit focuses on the environment of the individual and his attitudes about that environment. An important part is his perception of his economic status. A large section is devoted to daily activities and is designed to provide a variety of opportunities for the man to speak freely and tell us about his life situation. A section of this is tape recorded and we are exploring the possibilities of reaching attitudes and affects with automated content analysis via the General Inquirer Program of Stone[5] and a content free index of anxiety.[6] At the end of this visit, the nurse is asked to evaluate the man in certain dimensions, to enter some notes about the man's relationship with his wife, if she has had a chance to observe this, and to comment on his response to the threatening aspects of his environment. This data collection sequence is repeated every three months as long as the man's employment status remains unchanged and again as soon as possible after a change in employment status. The study of a particular individual will be terminated as soon as he has stabilized in a new situation.

One of the things that has been most exciting in the development of this series of visits is the integration of a whole series of technics into one study. This range of technics provides for variety and change of pace within visits, which is agreeable both to the nurses and to the subjects. The strictly medical technics range from the taking of a simplified medical history and the examination of joints for swelling, through measurement of pulse rate and blood pressure, through the collection of timed urine specimens, to the drawing of a blood sample. The self-report information is collected using technics that vary all the way from a request for the nurse to find out about this man's rela-

tionship with his family, through formal interview questions and self-administered questionnaires, to a card sort technic for the evaluation of certain mental health variables.

This card sort technic[7] is of some interest for it has proved not only acceptable to the men but also very useful in that it provides some immediate feedback to the noninterviewing staff. It involves the use of 116 items, each printed on the back of an IBM card. The items are the components of 19 scales in the areas of guilt, anger-aggression-resentment, anxiety-tension symptoms, independence-dependence, and depression. The scales are listed in the left-hand segment of Figure 2. They are mostly drawn from well documented sources or are ones with which we have had previous experience in paper and pencil tests. Some are better validated than others. The group of scales at the bottom which form the depression area were developed and validated in a specific study for this purpose.[8] They show promise of being sensitive even to minor fluctuations in depression.

At the beginning of each deck are five pink cards that have printed on them respectively: VERY UNTRUE, SOMEWHAT UNTRUE, NEITHER TRUE NOR UNTRUE, SOMEWHAT TRUE, VERY TRUE. These are placed out on the table in a row and the individual is asked to place each card into one of the five piles. When the sorting is complete, the deck is assembled so that the colored guide cards precede the item cards. The deck is then returned to its plastic case and delivered to the data processing room thus eliminating coding and key punching. The output from the data processing machine includes cards with the scores on the individual items punched into them and another card with the mean values for the indexes punched into it. In addition, the machine pro-

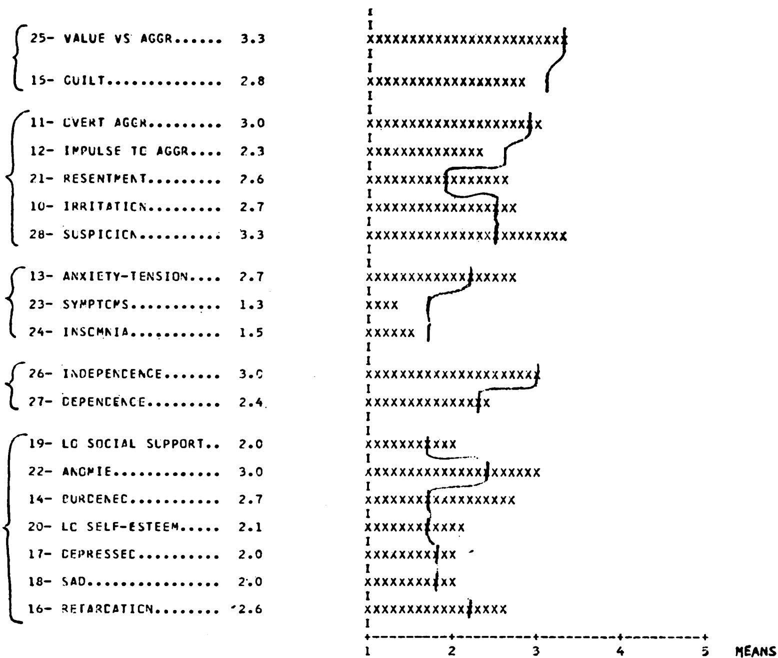



**Figure 2—The IBM output for the card sort for individual No. 031 compared with the mean for his colleagues**

vides a printout like that shown in Figure 2, which gives not only the mean values for the several indexes but also provides a set of bar graphs from which one can see profiles at a glance. The mean profile for the first 34 cases is superimposed on the histogram for this man. By inspection we can see that, in comparison to his colleagues, this man is high in the area of resentment and suspicion and on all the scales in the depression area.

As of the date of writing, the men still do not know when the plant will close though they all expect it will happen soon. They know that they will not be taken to the new plant and they know that they will lose all the security accumulated by their seniority, which has a median value of 18 years. The only recompense that they will receive for this loss is severance pay of $30 per year of service and a cash settlement in place of their pension. Many of them have rather specialized skills which will not be transferable to other jobs. Many of them are in the "Too Old to Work, Too Young to Retire" category of Sheppard, Ferman and Faber.[9] Some of them fear that they will not be able to pass a physical examination for a new job.

### Reactions of Workers

It is too early to present numerical data, but we have a distinct impression from consultation with Dr. Louis A. Ferman that the mean on the anomie scale is above that to be expected of men of this social class under usual circumstances but below that of persons who have experienced severe economic deprivation.[9] This implies that these men are already feeling somewhat unwanted, neglected, and lost. Along with this has gone a distinct increase in their illness behavior but only further study will tell us what part of this is due to the approaching winter season and what part to the impending termination.

As we read the reports and listen to the nurses talk as they come back from the field, even we who started this project with the expectation of a high level of social stress are startled. The extent to which these men are showing their disturbance both at work and at home is striking. The union shop chairman says that the men in the plant are getting very tense and anxious and that tempers are flaring and rumors are flying. Some of the men are so full of resentment that they are withdrawing from social contact. An interested wife said of her husband who had refused to participate in the study, "He is very bitter against the company and the union and won't talk to anybody. I can't change his mind as he is the boss."

The men in the study are mostly very conscious of the anxiety and tension though some are overtly denying the very immediate threat of job loss. For example, one man when asked if he was looking for another job said, "Why abandon the ship? It could rise right up again. I got hopes." Some express their anger openly and others project it as the man who said, "*They* are all mad at the company and at everybody."

Somehow this "death" of the plant seems to have an uncanny way of bringing up the topic of sudden death. We get repeated reports about the three salesmen who have had heart attacks in the past year, and it is common for the employees to talk about a man who apparently became paranoid and then attempted suicide. One very anxious wife says that every day when her husband leaves for work, she wonders if he will return home.

In summary, this is a project that is designed to carry out some basic research in the investigation of a significant social problem. The longitudinal design calls for the observation of a group of men before their jobs are abolished and until they have stabilized in a new situation. The purposes are to

observe the covariation of certain feelings, physiologic responses, and behaviors and to see to what extent the interaction of these variables with the more enduring properties of the person and of the environment produces certain specific diseases and/or illness behavior.

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