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QUALITIES OF THE PERSON

In the previous chapters we have discussed participation in the epidemic as a means of communicating or expressing one's sense of tension or dissatisfaction and we have looked for sources of tension and dissatisfaction as part of our investigation of the phenomenon. It is also likely, however, that individuals will vary in the degree to which they will be responsive to such sources of strain and in their tendency to express their feelings in the particular manner found during the epidemic. That is, there will undoubtedly be persistent patterns of behavioral tendency which will in part determine the type and extent of response a woman will exhibit under such conditions. We have purposely avoided using the term "personality" in this context because our data do not permit any clinical or psychodynamic interpretations of the women's behavior, but to the extent that such persistent behavioral tendencies may be called personality, that is the subject of this chapter.

We have limited ourselves to the investigation of personal characteristics which may be viewed as rather directly relevant to the particular kind of behavior which formed the manifest content of the epidemic, namely, the hysterical contagion of illness behavior. We thus selected the following kinds of measures:

1. Since the mode of expression was through illness behavior,

the meaning of health and sickness in the person's life is directly relevant. Especially important is the question of the emotional significance of sickness, whether it is viewed in a rather matter-of-fact manner or whether it occupies a central place in the life of the person. This should give us some basis for differentiating among the women according to their readiness to respond in the manner observed during the epidemic.

2. Closely associated with this question of the emotional significance of illness is the kind of self-report a woman gives of her own state of health and her report of her recent experiences with illness.

3. Another rather direct measure of the relevance of illness to the woman is the frequency with which she acknowledges having symptoms listed for her by the interviewer.

4. Another characteristic, not necessarily directly associated with those just noted, is the degree to which a woman is anxious or tense. This should indicate a tendency to develop those symptoms which could be defined as due to "bites."

5. Finally, as a factor which would presumably predispose a woman to be influenced by the contagion, we also attempted to measure the level of suggestibility or acquiescence.

HEALTH AND SICKNESS AS AN EMOTIONALLY CHARGED AREA

Two different but related issues were raised in the interview. One was the general inclination to adopt the sick role; the other refers to the instrumental use of illness, namely, claiming illness as a reason to stay home from work to get a rest. The inclination to adopt the sick role was measured by an index derived from the work of Mechanic and Volkart (1961). It is based on the following question: During the past year would you have reported to the doctor if the following situations had arisen: (1) You had been feeling poorly for a few days; (2) You felt you had a temperature of about 100 degrees; (3) You felt you had a temperature of about 101 degrees. Each question could be scored from 0 to 3 for responses ranging from "certainly" to "very unlikely." The total scores were dichotomized so that

a score of 0 to 5 indicated a high tendency to adopt the sick role and a score of 6 or higher indicated a low tendency.

We have briefly discussed the other measure in the last chapter. It was derived from the following questions: Do you think that some people here in this plant sometimes take off from work when they aren't sick, just to get a rest? Do you think that there is anything wrong with this? The answer to the second question was used as an indication of the woman's attitude toward using illness behavior as a means of improving her situation. The responses to this question were related to the scores on the measure of inclination to adopt the sick role, those having a high inclination being less likely to see such instrumental use of illness as acceptable. Though not strong, this relationship held up for all three categories of women (see Table 5.1).

TABLE 5.1
Inclination to Adopt the Sick Role and Approval of Instrumental Use of Illness Among Affecteds, Self-Defined Affecteds, and Controls

Characteristic	Self-Defined		
	Affecteds (N = 56)	Affecteds (N = 17)	Controls (N = 71)
	%	%	%
High inclination to adopt sick role			
It is wrong to stay home when not sick	60.7	41.2	52.1
It is not wrong	8.9	29.4	15.5
Low inclination to adopt sick role			
It is wrong to stay home when not sick	21.4	11.8	21.1
It is not wrong	8.9	17.6	11.3

All three categories of women scored rather high on the measure of inclination to adopt the sick role, over two-thirds of all the women being in the "high" category. If we compute the mean of the actual scores for each category of women, the affecteds had a somewhat

greater inclination to adopt the sick role. Their average score was 4.1 compared with 4.6 and 4.4 for the self-defined affecteds and controls, respectively, a low score indicating a high inclination to adopt the sick role. As we have seen before, there was greater difference in the responses on the second measure with the affecteds saying most often that it was wrong and the self-defined affecteds agreeing least often (see Table 4.3). There was also some noteworthy variation when one considers the combination of these two measures. Since such a large proportion of the affecteds saw taking off work for a rest as wrong, almost all of those affecteds who had a high inclination to adopt the sick role felt that way. Only 5 out of 39 high inclination affecteds said there was nothing wrong with such a practice. In very striking contrast, almost as many high inclination self-defined affecteds saw this as acceptable as saw it as objectionable (five versus seven). The controls fell between these two extremes. Thus, although all three categories of women seemed to define rather minor symptoms as medically relevant, they differed considerably in their willingness to cope with discomfort and fatigue without recourse to medical authorities.

It is as if there were alternative ways of dealing with the experience of symptoms. One can define them as an "official illness" and seek medical attention, or one can attempt to cope with them oneself. Although the great majority of the women said that they would seek medical attention if they had symptoms which are defined in medically acceptable terms (having a temperature or not feeling well), they differed in their ability to cope with the more everyday problems such as fatigue. Some of them evidently were unable to cope with such difficulties unless they defined them as "official illnesses," whereas others were better able to deal with them by themselves. If we view those with a high inclination to adopt the sick role as women who became disturbed by minor symptoms, it is clear that there were some who could handle such problems better than others. The affecteds had the highest proportion who were sensitive to minor symptoms but who seemed incapable of coping with them on their own, while the self-defined affecteds had the smallest proportion of such women and the highest proportion of those who were sensitive to minor symptoms but seemed quite capable of coping with them.

It is also true that a larger proportion of the self-defined affecteds with a low inclination to adopt the sick role seemed to be capable of dealing with such problems.

This pattern, of course, corresponds to the behavior of the affecteds and self-defined affecteds during the epidemic. The former, when faced with an upsetting experience, were either overwhelmed with the experience and fainted or sought medical attention. The latter, faced with what they said was a similar experience, managed to cope with it by themselves. It may very well be, therefore, that a major difference between these two categories of women was the ability of the self-defined affecteds to handle their own problems without defining them as medically relevant and without any socially conspicuous behavior.

HEALTH EXPERIENCE

In describing their own health experiences, the respondents in the three categories present a picture which is generally consistent with their attitudes toward health as discussed in the previous section. On practically all questions, the controls indicated the least experience with health problems, and in general the affecteds indicated the greatest experience (see Table 5.2). In response to the question: Have you been sick during the past several years? less than one-fourth of the controls answered "yes," compared with almost two-fifths of the affecteds. Similarly, the affecteds were more likely to say that they had had to stay home from work during the past year because they had been sick,¹ and they were more likely to acknowledge that they were taking medicine of some kind at the time of the interview. In most cases, the self-defined affecteds were more similar to the affecteds than the controls. There is the possibility, of course, that the self-defined affecteds were really organically weaker. Look-

¹ It is rather striking, however, that in all three categories there are many more women who admit they had stayed home from work during the past year because of illness than admit they had been sick during the past several years. Evidently there is a general tendency to view some illnesses as sufficient to warrant staying home but not serious enough to refer to as a sickness. This presumably would be the case with menstrual difficulties; but it might also be the case with other ailments. We will return to this peculiar pattern later in the chapter.

TABLE 5.2

Health Experience and Assessment of Affecteds, Self-Defined Affecteds, and Controls

Characteristic	Affecteds (N = 56) %	Self- Defined Affecteds (N = 17) %	Controls (N = 71) %
Had been sick during the past several years	39.3	29.4	21.1
Had had to stay home because of sickness during the past year	64.3	70.6	52.1
Had had to stay home because of organic sickness only during the past year	28.6	35.3	28.4
Had been taking medicine or pills recently	41.1	47.1	28.2
Described own health as "excellent"	16.1	5.9	25.4

ing at the description of the illnesses which made them stay home, we can isolate the strictly organic cases from those due to such things as nausea, alcohol, or nervousness. If we look only at staying at home for these organic reasons, the self-defined affecteds are the highest, while the other two groups are almost identical. The self-defined affecteds are also more likely to take medication. We may infer that they are dealing realistically with health problems just as they were dealing realistically with environmental strain.

When one considers that the interview took place only two months after an epidemic which had led all of the affecteds and self-defined affecteds to feel sick and many of them to stay home and/or to take medicines, the order of these findings is not particularly surprising. In fact, the surprising thing is that so few of the affecteds said they had been sick. When we look at the content of the interviews, it becomes apparent that only eight of the affecteds mentioned anything about the epidemic when discussing the reasons they had had to stay home. Given the recent experience during the epidemic, it was surprising both that there were not more affecteds who said

they had been sick and that there was not a greater difference between the affecteds and the self-defined affecteds. After all, the former were known to have been sick and had even received medical treatment, some of them in the hospital, while the latter had not been as sick during the epidemic but were about as likely to admit to a recent illness.

The findings reported in the previous section suggest that the affecteds were very likely to define minor symptoms as a legitimate reason to seek medical treatment, but they now appear to be less willing than we might have expected to admit that they actually had been sick. It may be, of course, that they defined the epidemic as something wholly outside the category of "sickness," and thus did not see it as relevant to the question we asked, but this pattern of responses suggests that there may be something unusual involved here. This is also suggested when we notice that a larger proportion of the affecteds defined their state of health as "excellent" than did the self-defined affecteds. As we would have expected, the controls were most likely to give that response.

THE OCCURRENCE OF SYMPTOMS

One set of questions which was included in the interview was taken from the Cornell Index (Weider et al., 1948). The full Index includes sets of questions about possible somatic symptoms and some additional questions directed toward more psychosomatic symptoms. For this study, a set of the psychosomatic items and a set of somatic symptoms which might be considered relevant to the experiences in the epidemic were chosen. We had expected that the affecteds would be more likely to experience such symptoms. There were 30 items in the set. The items were divided into three factors on an a priori basis independently by the two authors, each one defining his own criteria for which items belonged together. We were impressed by the degree of similarity in our sets of items, and we thus used those which we had both quite independently grouped together. In this way, 23 of the 30 items were put in three clusters. For the moment, the other seven were set aside, and we factor analyzed the three clusters. All but one of the items had factor loadings of .200 or better in the set to which we had assigned it, and all but three of them had loadings

of .300 or better in the assigned set. Because of the consistency of classification and the high loadings, we decided to keep all 23 items in their respective sets.

The three factors selected in this way were seen as measuring (1) a general feeling of tension and anxiety, (2) a feeling of exhaustion, and (3) the experience of psychosomatic symptoms. The tension index consisted of nine items including such questions as "Do you often cry?" "Are you constantly keyed up and jittery?" "Do you go to pieces if you don't constantly control yourself?" The nervous exhaustion factor consisted of five items including such questions as "Does every little thing get on your nerves and wear you out?" "Must you do things very slowly in order to do them without mistakes?" "Do you often get spells of complete exhaustion or fatigue?" The third factor included nine items which asked about psychosomatic symptoms such as "When you catch a cold do you always have to go to bed?" "Do you suffer from frequent cramps in your legs?" "Are you constantly made miserable by poor health?"

There was a general tendency on the part of all women to reject the items, thus giving a very skewed distribution on all scales. More women admitted to tension and anxiety than to other kinds of symptoms, yet almost two-fifths of the women denied having any of the nine symptoms in the scale. Because of the skewed distributions, we looked at both the average scores of our three categories and the tendency of the women in each category to admit to any of the symptoms. Whichever we did, the same pattern emerged in all three scales, and it was quite different from what we had expected (see Table 5.3). The affecteds consistently received the lowest scores, and more of them than the others denied having any of the symptoms included in each of the scales. The greatest difference, however, was between the affecteds and the self-defined affecteds. The latter acknowledged all kinds of symptoms more readily than either the affecteds or the controls. Thus, whatever basis of comparison is used, the affecteds had the lowest scores and the self-defined affecteds had the highest scores.

This tendency to deny symptoms was so strong, both within the total sample and particularly among the affecteds, that we returned to the original set of 30 items and raised the basic question of the extent of this denial pattern using the total set. We again find the

TABLE 5.3

Admission of Any of the Symptoms on Three Scales from the Cornell Medical Inventory Among Affecteds, Self-Defined Affecteds, and Controls

Scale	Self-Defined		
	Affecteds (N = 56)	Affecteds (N = 17)	Controls (N = 71)
	%	%	%
Tension and anxiety (9 items)	55.4	88.2	60.6
Nervous exhaustion (5 items)	17.9	29.4	28.2
Psychosomatic symptoms (9 items)	39.3	64.7	47.9

most striking difference between the affecteds and the self-defined affecteds rather than between the affecteds and the controls. Thirty-one percent of the affecteds and 21 percent of the controls denied all 30 symptoms, but none of the self-defined affecteds did so. There is thus a continuing pattern: the affecteds were least capable of coping with minor symptoms, they had been sick rather often (even more often than they admitted) but described their state of health rather favorably, and they denied having a whole series of symptoms more often than the other women. The self-defined affecteds, in contrast, were best able to cope with minor symptoms, they had been sick about as often but admitted that their state of health was less than excellent, and they readily acknowledged symptoms. There is a strong suggestion here that many of the affecteds were what could be called "false lows" in that their low symptom scores were probably due to their unwillingness to admit to health problems. In contrast, the self-defined affecteds did not seem to mind such an admission at all. It is possible, therefore, that these findings indicate a more general tendency on the part of the affecteds to deny problems and for the self-defined affecteds to be willing to admit to them. We will return to this theme later in the chapter.

ANXIETY AND REPRESSION

Closely related to some of the items in the symptom scales was an index taken from the Minnesota Multiphasic Inventory. Ten items were selected from the "A and R" scale devised by Welsh to measure

anxiety and repression (Welsh & Dahlstrom, 1956). The index was again subjected to factor analysis, and factor loadings were all .297 or higher. Some of the items used were "I find it hard to keep my mind on a task or job"; "I am easily embarrassed"; "People often disappoint me." We had originally expected the affecteds to score higher than either of the other categories on this scale. But again the same pattern occurred. The affecteds were most likely to reject all items, but about two-fifths of both the affecteds (41.1 percent) and the controls (39.4 percent) rejected all 10 items while only 1 of the 17 self-defined affecteds (5.9 percent) did so. Thus, again the affecteds tended to deny difficulties while the self-defined affecteds were most willing to admit to them. Before discussing this persistent pattern, we will present the findings from our final measure of personal characteristics.

ACQUIÉSCENCE

We had included a simple measure of acquiescence in the interview schedule because we had assumed that social influence had played an important part in the epidemic and it seemed likely that if the women varied in acquiescence, the more acquiescent would be most susceptible to social influence. The measure was not very adequate for the purposes for which it was intended, but it proved to be more useful than we had expected. It consisted of four pairs of attitude items, each pair including two items which were very similar in wording but opposite in meaning; for instance: All in all, it would have been better if so many factories had not come into this area, and All in all, it is good for our area that so much new industry has been built here. The logic of the measure was that agreement with both statements of a pair indicated acquiescence or suggestibility. Although there were four pairs, no one agreed with all eight items, and only a fourth of the women agreed with two or three of the four pairs.²

² It is fortunate that so few women gave acquiescent responses. If this had been a common tendency, there would have been reason to doubt the validity of the whole interview, or at least those aspects which asked for opinions. Even as it is, the degree of presumed distortion of the answers of some of the women, especially the affecteds, presents serious problems of interpretation. If there had been even more suggestion of distortion, the problems would have been impossible to cope with.

The affecteds were most likely to agree with one or more such pairs of items. Seventy-one percent of them did so, compared with 47 percent of the self-defined affecteds and 57 percent of the controls. The fact that the affecteds were most acquiescent fits into the original expectation, using this measure as an index of some general characteristic of suggestibility.

However, it is perhaps even more important to notice that the stronger tendency toward agreement with the items on the part of the affecteds is in direct contrast to their tendency to say "no" to the symptom questions. Also, the self-defined affecteds, who were most likely to say "yes" to the symptom questions, were least likely to do so in response to these questions. We have some greater confidence, therefore, that the denial of symptoms by the affecteds was not simply a function of a general tendency to respond negatively to our questions, nor was the self-defined affecteds' acceptance of symptoms simply a function of a tendency to respond positively. Again, we reach the thin dividing line between disregarding the manifest content of responses and distrust of the reliability of the whole interviewing technique. In the last chapter we discussed the direct and indirect expression of confidence in management; in this chapter we interpret answers as "denial" and "acquiescence." We realize that a respondent in an interview, especially a worker interviewed in a factory, may adapt her answers to the appropriateness of the conditions. However, the differences which we are investigating between the groups remain the same whether we interpret them as conscious distortion or not. Thus the affecteds are women who claim not to have had any symptoms and who accept plausible statements even if they are contradictory. Whether they are women who convince themselves to believe in these attitudes or whether they feel they have to act this way in the mildly threatening situation which the interview may have represented, actually makes little difference. In contrast to the other women the affecteds are likely to present this pattern of responses, and in turn, this pattern makes sense if we consider their behavior in the epidemic. The same reasoning applies to the answers of the other groups. We therefore must return to the pattern of responses on health-related issues and attempt to understand it.

EVIDENCE OF DENIAL

In many respects, our findings with regard to the personal characteristics of the women we interviewed conflicted with the expectations we had. Although we did find that the affecteds appeared to be less capable of coping with minor health problems, when they were asked about specific symptoms, they were more likely than any of the women to deny all of the symptoms listed. They also refused to agree with the MMPI items designed to measure anxiety and repression. This raises a very basic question: Should we accept the symptom measure as it was originally intended and thus conclude that the affecteds experienced fewer symptoms than the others, or should we reject the manifest content of our finding and thus emphasize the *denial* rather than the lack of symptoms? We have chosen to do the latter, but we need to defend this decision.

The impression of the affecteds which we derive from this set of findings is one of women who tend to resist admitting to physical problems which require attention but who are likely to define such problems as quite serious and as requiring expert attention once they admit to them. In contrast, the self-defined affecteds appear to be women who readily admit to the experience of physical problems but who are generally capable of dealing with them. It does not seem possible to determine from these data whether the one or the other category of women "actually" had experienced more symptoms. The interpretation we suggest would assume that all of the women probably experienced some of the symptoms listed, but that the important differences were the ease and the manner in which such symptoms were acknowledged and dealt with. Let us see how the data lend themselves to this interpretation.

The measure of the inclination to adopt the sick role indicates the willingness of the women to seek medical treatment if particular symptoms are recognized, and we find that there is little variation among the three categories of women on this measure. It does not, of course, measure the frequency with which the women actually did have such symptoms, but only their readiness to get medical attention if they should have them. The average scores on this measure sug-

gest that the three categories of women were about equally likely to seek medical aid. It will be recalled, however, that the total score was made up of three parts. On the two questions which asked if the woman would go to the doctor if she had a temperature, there were very small differences among the responses given by the three categories of women. In neither case was there more than an 8 percent variation in the percentages of the women in the three categories who said they "certainly" or "probably" would go to the doctor. In striking contrast, when asked if they would go to the doctor if they had been "feeling poorly for a few days," 57.1 percent of the affecteds, 41.2 percent of the self-defined affecteds, and 32.4 percent of the controls gave one of these two replies. Thus, the less tangible and less easily diagnosed the symptom, the more likely the affecteds were to deviate in the direction of seeking medical treatment.

This is consistent with the affecteds' unwillingness to feign illness as a means of coping with fatigue on the job. Whether because of a more rigid morality or because of a special orientation toward health and sickness, they seemed to require that they be "really" sick before leaving work, and they seemed also to require that their sickness be officially recognized and dealt with by a doctor. There thus seemed to be a greater tendency for the affecteds to seek medical assistance for relatively limited and vague symptoms once they acknowledged their presence.

It is an interesting general finding, reported in Table 5.2, that all three categories of women were more likely to say they had stayed home during the past year for sickness than they were to admit they had been sick during the last several years. Evidently there are kinds of illnesses which women are willing to define as sufficiently serious to warrant staying home but are not sufficiently serious to call sickness in the more general sense. This seems reasonable, particularly among women, since minor problems associated with the menstrual cycle often require them to miss work. It may be of greater importance, however, to note that the difference in response to these two questions was smallest among the affecteds and greatest among the self-defined affecteds. Although more affecteds than self-defined affecteds said they had been sick, more self-defined affecteds said they had stayed home. (The controls were lowest on both measures.) This relationship becomes more pointed if we eliminate staying home be-

cause of possible functional reasons and concentrate on the absenteeism for illnesses which the respondents described as purely organic. Fewer of the affected women reported having stayed home for these reasons than said they had felt sick. The other two groups are almost identical and report slightly more absenteeism for these reasons than they report being ill. This lower absenteeism among the affecteds indicates again their inability to cope with illness, as with other stresses. The self-defined affecteds, by the same token, cope as well as the controls, although they seem objectively to have had more health problems.

Most importantly, of course, the affecteds were most likely to deny having any of the 30 symptoms suggested to them in the interview. This pattern of denial also carried over to the 10 items from the MMPI, all of which are in the form of statements to the effect that "something is wrong with me." There is thus an indication that many of these women wished to deny that anything was wrong with them. And, as we have noted, the exact opposite was true of the self-defined affecteds. None of them denied all of the symptoms, and only one rejected all of the MMPI items.

We have also seen that these two types of women responded very differently to the items in our acquiescence measure. The affecteds were more likely than any of the others to say "yes" to two contradictory items, and the self-defined affecteds were least likely to do so. The affecteds thus not only did not seem to have a general tendency to say "no," they seemed to be rather consistent in giving "agreeable" or "socially desirable" responses.

Again we must stress that we cannot say the affecteds "really" did have as many of the symptoms as the self-defined affecteds. We can only suggest that it is unlikely that many women could honestly say they had none of these symptoms and that complete denial of them probably tells us something about the personal characteristics of the woman beyond her physical state of health. This same kind of logic is used, for instance, in defining a "denial" measure on the MMPI, and it has been used by others in discussions of "social desirability" kinds of response patterns (Welsh & Dahlstrom, 1956; Edwards, 1967; Crowne & Marlowe, 1964). Also, we found much less denial when we used the same symptom list in a similar factory in the same area (see the Appendix).

Finally, the interpretation of the denial of symptoms as indicative of a self-protective tendency on the part of the affecteds is also strengthened by the fact that all four of the affecteds who told us in the interview that they had not "really" been affected cases denied all 30 of the symptoms. Certainly for these four women at least there seems to be good reason to say that their responses involved denial.

The overall weight of the data, therefore, seems to point to a modal tendency on the part of the affecteds to define even vague and minor symptoms as evidence of sickness but to resist the admission of symptoms. There is also a modal tendency for the self-defined affecteds to acknowledge the experience of symptoms but to be willing (and presumably able) to cope with minor difficulties without requiring medical assistance. The controls were in many respects more like the affecteds, although they usually fall between the other two categories on the relevant measures. Given this pattern of findings, one can appreciate why it might have been possible for the affecteds and the self-defined affecteds both to have experienced symptoms during the epidemic with only the affecteds coming to the attention of the doctor. These data are less useful in distinguishing between these two categories and the controls. This is another way of saying that these data help us to understand differences in response to the experience of symptoms, but they do not help us very much to understand why some women experienced symptoms and others did not. As we have seen in the last chapter, this depends partly on the distribution of sources of strain. However, even more important is the network of social relations, to be discussed in Chapter 6.

6

THE SOCIAL CONTEXT OF CONTAGION

Thus far in our analysis we have only examined the relevance of the characteristics of the women as individuals. No attempt has been made to investigate the importance of the fact that this epidemic occurred in a work situation which permitted the workers to interact with each other to a considerable extent. The earlier analysis has indicated that knowledge of the women as individuals aids our understanding of the epidemic in that there is evidence that those who were in some sense "more susceptible" were in fact more likely to be affected by the "bug." However, if we are to use the word "contagion" in this context, we must face the problem of how the phenomenon in question "contaged" or spread among the women. What was the medium of transmission? What pattern of dissemination can be discerned?

Our basic assumption in carrying out the present analysis was that the social relations among the women were probably relevant to their response during the epidemic. However, as we noted in Chapter 2, we were less than certain about the nature of this relevance. There seemed to be bases for different kinds of expectations. Thus, we approached the analysis with a question rather than a clearly de-

rived hypothesis. Our central question was: What relevance does a woman's position in a network of social relations have for predicting whether she will or will not exhibit the hysterical symptoms which spread through a population?

THREE CONCEPTUALIZATIONS

There seemed to be some basis for three very different specific expectations: those who were linked together in a network of social relations should be more likely to be affected; those who were outside the network of social relations should be more likely to be affected; and the pattern of social relations should be irrelevant to the spread of the hysterical symptoms. We will refer to these under the following headings: "group influence," "social isolation," and "crowd response." The basis for each of these expectations will be considered first, after which we will examine the data in light of these three expectations.¹

GROUP INFLUENCE

There is a considerable body of literature which can be used to generate the prediction that the contagion should follow channels of interpersonal ties. The many studies of the adoption of innovations, especially those of farming innovations, indicate that social relations among adopters are often found, and that once informal leaders adopt a new practice, it is likely to be adopted by others (Lionberger, 1953; Barnett, 1953). Even more closely analogous to the present case is the study by Coleman, Katz, and Menzel (1957) of the diffusion of the use of a new drug among physicians. In that study it was found that the adoption of the drug followed sociometric channels, and that members of social cliques were likely to adopt the drug at about the same time. There is a body of experimental literature which might also lead to the expectation that sociometric channels would facilitate diffusion. The classical experiments of Sherif

¹ Some of this material was published earlier (Kerckhoff, Back, & Miller, 1965). The analysis to be presented here goes beyond that earlier publication in a number of ways, but the theoretical underpinning as well as the general outcome of the analysis in relation to the theory is the same. We are grateful to the editor of *Sociometry* for permission to use those portions of this material which were previously published.

(1935) and Asch (1956), and the numerous experimental variations and theoretical interpretations of them (Festinger, 1950), all indicate that both perception and behavior can be made to conform to group definitions when the other members of the group define the situation consistently.

There is thus considerable basis for expecting that interpersonal relations will be highly relevant to dissemination of a new pattern of behavior in a population. However, one may well question whether the literature just cited is, in fact, germane to our interests. The studies of the adoption of innovations deal with the spread of a behavior pattern which is positively related to a central value in the population studied. Farmers certainly value abundant crops and high quality produce, and the studies of innovation in farming deal with adoption of practices which are supposed to serve these ends. The doctors studied by Coleman and his associates value effective drugs as aids in their professional duties; and the drug whose adoption was studied was, in fact, an effective drug. On the other hand, it could hardly be argued that the behavior pattern whose spread we are studying was valuable in the same sense. However it is viewed, one must acknowledge that it was dysfunctional in the specific situation in which it was observed. Not only did the hysteria disrupt the operations of the plant and thus lead to losses for the company, it also led to lost work time for the affected persons and thus reduced their income for the period in question, not to mention the emotional costs involved. It is possible that the dissemination of *any* behavior pattern within a population follows the same channels, but the differences in the kinds of behavior studied in the earlier investigations and the behavior found in the present situation makes such an assumption at least questionable.

The experimental studies noted above, although they often deal with bizarre and dysfunctional behavior (such as misperceiving the relative length of two lines), also provide some reason to doubt the "group influence" expectation in the present situation. These experiments indicate that if there is consistent behavior on the part of the members of the group, the naive subject will tend to adopt that behavior as his own, even though it might ordinarily be rejected by him. They also indicate that if there is *not* consistent behavior by the group members, the naive subject is much less likely to adopt the unusual behavior. In the plant we studied the majority of the

workers never exhibited the hysterical symptoms. Thus, there were always social reference points for those who might have tended to resist the contagion. Also, since the behavior in question was not only dysfunctional but also rather bizarre, it seems unlikely that we could assume that any social grouping had developed a facilitative "norm" regarding such behavior in advance of the initiation of the contagion. It is much more likely that most people in the plant would have defined the behavior as at least "unusual" and "undesirable." If a facilitative norm functioned at all, it must have evolved during the period of the contagion, and this would certainly take time and would probably have had to occur in the face of some social resistance. Finally, and perhaps most importantly, the relevance of this body of experimental literature may be questioned because it is based on *ad hoc* groups in which prior social relations had not been formed, whereas the central focus of our inquiry is the importance of such previously established social relations.

SOCIAL ISOLATION

Given the fact that only a minority exhibited the hysterical symptoms, it seems likely that the average worker in the factory would have some significant social contacts with persons who did not exhibit hysterical symptoms and who rejected the seriousness of the threat. This would not be true, however, for the person who was a social isolate. The isolate would not have access to such social reference points; at least they would not be as significant to him. Although isolates might vary in the degree to which they would be personally susceptible to the effects of contagion, as a category they would seem to be more likely to be susceptible than would those who are socially integrated.

The converse of this can also be argued. At least since the work of McDougall (1920, pp. 68-70), it has been noted that the structure of groups tends to inhibit the spread of contagion among its members. If this is so, socially integrated women would be less likely to be susceptible. The same expectation would be reasonable if we interpret the hysterical behavior as an attention-getting device, isolates being seen as more in need of such social response than those with prior social ties. Finally, it has been noted by many students of collective behavior that the outcast, the person with little investment

in the social system, is more likely to take part in all forms of collective behavior. This kind of person has been defined either in terms of his social position or his personal degree of "social adequacy," but in both cases the point is made that a lack of full integration into the network of social relations increases the tendency for a person to become a participant in collective behavior (Turner & Killian, 1957; Lang & Lang, 1961). For all these reasons, then, we might expect isolates to exhibit the hysterical symptoms more frequently than those who are socially integrated.

CROWD RESPONSE

A third expectation is also possible from the literature on collective behavior, namely, that social relationships would have no relevance to the spread of the contagion. There is a common belief with respect to crowd behavior, substantiated by participants' reports, that contagion is often effective for persons who are not at all related to others in the crowd and who are not particularly concerned with the issue central to the crowd action (Turner & Killian, 1957, pp. 106-110). The "magic" of contagion has been described and analyzed by many, but our knowledge remains less than adequate. Yet, it is very easy to find references to the unstructured nature of contagion, especially hysterical contagion, within a population. Perhaps this passage from Lang and Lang (1961, p. 227) says it as well as any:

The kind of identification that occurs in hysteria, Freud maintains, "may arise with every new perception of a common quality shared with some other person who is not an object of the sexual instinct. The more important this common quality is, the more successful may this partial identification become, and it may thus represent the beginning of a new tie." *The identification does not presuppose any prior emotional or sympathetic relationship; it results directly from the definition of the situation of those exhibiting the behavior as analogous to one's own.*

If this is the case, we might expect that the simple fact that all of those affected by the hysteria in the plant were fellow workers, and the great majority of them women, would be enough basis for the kind of identification just referred to. There would thus be no reason to expect that previously established social relations would be at all relevant to the spread of the symptoms.

We thus have three theoretical positions, each based on literature that is presumably relevant, and each calling for a different kind of relationship between sociometric position and the probability of being affected by the spread of hysterical contagion. Each is plausible in its own way, but clearly all three cannot be correct in any simple fashion. We believe that all three are correct to some extent, but the data must be examined with some care before such a statement can be justified.

A FIRST APPROXIMATION

In keeping with the usual definition of "social relationship" used in sociometric literature, we asked the women who their three best friends were within the plant. Our original analysis focused on this type of relationship. However, we also questioned the women about other relationships they had with their fellow workers. We asked them if they came to work with others, usually in car pools, and if they usually took their lunch breaks with particular workers. We asked them whom they would turn to for help if they had a personal problem in the plant, and who they thought might turn to them under such circumstances. We asked who they thought was the best worker in their section. Finally, we asked them to name the people with whom they routinely came in contact during their working hours—their supervisor, their steward, the person who gave them their work, the one who picked it up, and so on. We thus had not only the usual picture of a network of friendship relationships to work with but also a picture of practically the whole network of social relations these women had with others in the plant.

We approached these data in stages. Our first analysis was of the friendship data only. We then added to these the names given as ones they might turn to or who might turn to them for help on a personal problem. (We called these confidantes.) Then we added the names of lunch associates, car pool members, best workers and work associates, in that order. At each point, we computed a number of indexes to give us some idea of the relative merits of the three theoretical positions just discussed.

It was possible, of course, for a woman to name the same person in all of these categories. To avoid giving undue weight to such in-

dividuals in the indexes of social relations, we counted such a relationship only once, the first time the name appeared in the analysis. Thus, as we moved from the more intimate friendship relationships to the less intimate work relationships, we added only those names which had not appeared earlier. We expected any tendency for these social relations to be related to participation in the epidemic, therefore, to become less pronounced as we added what were presumably progressively less significant names to our lists. We have recorded here only the two end points of the analysis: the summary data using friendship choices only and the summary data using all of the different kinds of choices.²

The summary data in Table 6.1 provide us with a basis for evaluating the three theoretical perspectives. If we simply ask which of the three predictions comes closest to the mark, and if we base our evaluation on the overall differences among the three categories of women, the prediction based on the "group influence" argument seems to be the best. First, there are fewer isolates among the affected women than among either of the other two categories when friendship choices are used as the basis for measurement. This is also related to the fact that the affecteds are chosen as friends more often on the average than are the other women: 1.39 times each (i.e., 56 affecteds received 78 choices) versus 1.07 for controls and .95 for self-defined affecteds. Even when all bases for choice are considered, the affected women are chosen somewhat more frequently than the controls (2.71 versus 2.44 times each), and they are chosen much more frequently than the self-defined affecteds (1.71 times each on the average). Thus, there is certainly no general tendency for the

² We should also note that, although it was at least theoretically possible for our subjects to choose *any* of the women in the sample (as well as those outside the sample), the choices were so heavily concentrated within the categories we had defined, it is not necessary to present all of the data on all of the categories at this time. Both the Negroes within the dressmaking area of the plant and the subjects who worked outside this area tended to choose and be chosen by only each other rather than choosing and being chosen by those women in the more critical portion of our sample. A very limited number of contacts were reported with the Negroes and with those outside the big room which housed the dressmaking departments, but these were proportionally so insignificant as to make it possible to leave them out of the present discussion completely. This fact, of course, increased our confidence in the original decision to concentrate on the three categories of women within the big room.

TABLE 6.1

Sociometric Status of Affecteds, Self-Defined Affecteds, and Controls

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Characteristic	Friendship Choices Only			All Choices		
	Affecteds	Self-Defined Affecteds	Controls	Affecteds	Self-Defined Affecteds	Controls
Percentage who are isolates	28.6(56)	35.3(17)	32.4(71)	12.5(56)	11.8(17)	12.7(71)
Percentage of those chosen who are in the sample	50.9(193)	39.6(53)	34.0(203)	41.8(373)	36.4(132)	30.3(495)
Percentage of within-sample choices directed toward affecteds	55.4(83)	42.9(21)	29.0(69)	50.6(156)	43.8(48)	32.0(147)
Percentage of within-sample choices directed toward self-defined affecteds	8.4(83)	28.6(21)	4.3(69)	7.7(156)	18.8(48)	5.4(147)
Percentage of within-sample choices directed toward controls	33.7(83)	28.6(21)	62.3(69)	39.7(156)	37.5(48)	57.1(147)
Percentage of choices received from affecteds	59.0(78)	43.7(16)	34.6(78)	51.3(152)	37.9(29)	34.7(176)
Percentage of choices received from self-defined affecteds	11.5(78)	37.5(16)	7.7(78)	13.8(152)	31.0(29)	10.2(176)
Percentage of choices received from controls	26.9(78)	18.8(16)	57.7(78)	31.6(152)	27.6(29)	49.4(176)
Percentage chosen by affecteds only						
Percentage chosen by self-defined affecteds only	32.1(56)	23.5(17)	14.1(71)	28.6(56)	23.5(17)	15.5(71)
Percentage chosen by controls only	7.1(56)	5.9(17)	1.4(71)	5.4(56)	11.8(17)	2.8(71)
Percentage of mutual choices with affecteds	60.5(43)	17.6(17)	35.2(71)	54.5(56)	17.6(17)	22.5(71)
Percentage of mutual choices with self-defined affecteds	11.6(43)	50.0(10)	33.3(33)	63.0(81)	35.0(20)	23.9(73)
Percentage of mutual choices with controls	25.6(43)	20.0(10)	9.1(33)	9.9(81)	30.0(20)	9.9(73)

Note: The frequency on which each percentage is based is noted in parentheses. To the extent that the percentages of any given kind do not total 100.00 percent, the remaining contacts were with Negroes or those outside the dressmaking department. Such outside contacts never exceeded 8.0 percent of the total, and in only two cases did they exceed 5.0 percent of the total. Only three contacts between Negroes and whites were recorded. All three were nonfriendship choices of whites by Negroes, two of controls and one of a self-defined affected.

THE SOCIAL CONTEXT OF CONTAGION

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affected women to be socially ostracized, and there may even be a limited positive relationship between sociometric position and being affected.

More important, we find that the links between affected women and other affected women are more common than between affected women and either of the other categories. The affecteds direct a higher proportion of their choices to other affecteds than do the other two groups of women.³ They also receive a greater proportion of their choices from other affecteds than do the women in the other two groups. Affecteds are much more likely than the other women to be chosen solely by other affecteds. Finally, a greater proportion of the mutual choices participated in by the affecteds are with other affecteds.⁴ There is thus considerable evidence that the affected women are more closely linked to each other than they are to the other women.

We were somewhat surprised to discover that the same kind of network of relationships is noticeable for both of the other categories as well. By the process of exclusion, if a choice within the sample is not directed toward an affected woman, it must be directed toward a self-defined affected woman or a control. The distribution of choices between these two categories is hardly random, however. Two char-

³ In our original publication of these data, we reported the proportions of the total number of friendship choices which were directed to affected and nonaffected women (Kerckhoff, Back, & Miller, 1965, p. 10). We have chosen to report the proportion of choices within the sample here, however, because the affected women tended, on the average, to direct a somewhat higher proportion of their choices to other women in the sample. As reported in Table 6.1, half of their friendship choices were of women in the sample in contrast to less than two-fifths of the choices of the women in the other two categories. We feared, therefore, that presenting the proportions of the total choices which were directed to the various groups of women in our sample might give an exaggerated view of the differences involved. As a comparison of the original report and the tables in this chapter will indicate, however, the pattern of results is very similar whichever statistic is used.

⁴ We also computed other indexes of social linkages, all of which led to the same picture as those reported in the table. For instance, we asked if the affected women were more likely than the others to have some relationship with affecteds. The proportion of affecteds who chose or were chosen by at least one other affected was about twice the proportion of controls who chose or were chosen by an affected. Thus, whether we ask about the overall proportion of choices which involve affecteds with each other or the proportion of affected women who are linked together, the result is the same: the affecteds are more closely tied together than they are with the other women.

acteristics of the pattern of choices are noteworthy. First, both the self-defined affecteds and the controls direct a greater than chance proportion of their choices within their own category. The self-defined affecteds direct as many of their friendship choices within their own category as they direct toward controls, and they receive twice as many friendship choices from other members of their category as they receive from controls. The ratios for controls are fourteen to one and seven to one. If choices by these two categories of women were directed randomly, one would expect about four times as many choices in both categories to be directed toward or received from controls as directed toward or received from self-defined affecteds because the categories are so different in size. Therefore, the actual pattern deviates in both cases in the direction of a much greater proportion of within-category choices than would be expected. There is thus a tendency for *all three categories* of women to choose within their own category more frequently than they choose women in the other categories. All three categories have some of the characteristics of a *group*, therefore, even though clear-cut group boundaries are certainly not evident.

A second fact regarding the self-defined affecteds is also worth noting: they are much more clearly linked with the affecteds than with the controls. Again, using a random model for comparison, we would expect them to have somewhat fewer contacts with affecteds than with controls since there are more of the latter than the former with whom they have a potential for a relationship. Whatever measure is used, however, the self-defined affecteds clearly deviate from this model in the direction of being more closely linked to affecteds than to controls. This is especially evident in the data on friendship choices. Thus, the self-defined affecteds exhibit both an internal structure of relationships with each other and a pattern of greater linkage with the affecteds than with the controls.

In sum, all of the discussion thus far leads to the conclusion that, of the three theoretical positions, the "group influence" position is the most promising. This is clearly true when the friendship choices are used as a basis for evaluation. It is even true when *all* known social relations are considered, even those which are presumably of a rather low level of personal significance. It must be noted, however, that as we move from friendship to work relations, the pattern

becomes less obvious. All the proportions presented in the right-hand portion of Table 6.1 still deviate from a random pattern in the direction of within-category cohesion, but the deviation is not as extreme as in the left-hand portion of the table. Each successive, and less intimate, form of relationship reduced the deviation to some extent, but this was particularly true when work associates (the least intimate category) were included. This would lead us to conclude that the *kind* of relationship is of considerable importance in understanding such an epidemic. As we will see later in the chapter, however, if we were to limit ourselves completely to friendship choices, there would be a number of gaps in our understanding, gaps which may be filled, at least in part, by consideration of the other kinds of relationship.

A SEQUENTIAL PERSPECTIVE

It is fortunately possible to go beyond this initial view of within-category choice tendencies. From the records of the epidemic it was possible not only to determine who had come to the attention of the medical authorities but also approximately when they had done so. It will be remembered that the vast majority of the cases were reported on two successive days. Six of our 56 first-shift affected white women came to the attention of the medical authorities before these two big days, however, and 4 did so after the two big days. All but 1 of the 6 early cases were seen on the day before the first big day. The 4 last cases were distributed over three days following the two big days of the epidemic. Our initial analysis, then, simply differentiated among the affected women according to whether they had been seen "Before" the two big days, on "Day One," "Day Two," or "After" the two big days.⁵

⁵ In the earlier publication using these data we classified the women according to when they were supposed to have been affected rather than when they came to the attention of the authorities. Since further analysis indicated the importance of the self-defined affected category, we considered the possibility that a distinction should be made between "being affected" and "acknowledging being affected." Going to the doctor was an admission that something was wrong; the initial sense that something was wrong (in most cases, as a result of being "bitten") might have occurred earlier, but its importance was not clearly acknowledged to others until the time of the medical visit. In terms of social influence, both phenomena might be significant, at least if the feel-

Table 6.2 presents the same measures as presented in Table 6.1 but only for the 56 affected cases classified according to when they came to the attention of the medical authorities. Although the numbers of cases in the "Before" and the "After" categories are quite small and the data must thus be assessed with considerable caution, these two categories of affected cases are rather clearly different from those affected on the two big days of the epidemic. The most striking difference is that 5 of the 6 women in the "Before" period are social isolates when friendship choices are used as the basis of analysis. Only 1 of the 6 is mentioned as a friend by *anyone* in our sample. This is made even more striking when we note that these 6 women are mentioned with considerable frequency when other bases for choice are used. In fact, they are chosen more frequently on a "non-friendship" basis than are the women in any of the other categories. The average number of times chosen on all bases is 2.17, 3.54, 2.00, and 2.54 for the four categories. Thus, they are not completely isolated in the plant; they just aren't very well liked.

Both of the two big days show great evidence of choosing within the affected category. The pattern noted in Table 6.1 is accentuated during either or both of these two days on all of the measures, and this is most striking when friendship choices are the basis for analysis.⁶

ing were reported to one's fellow workers before the medical visit was made. Particularly in the early stages, some women permitted a time lag between "being affected" and "acknowledging being affected." Evidently the significance of "being affected" increased as others reported symptoms. Because of the lag in these early cases, therefore, we have chosen here to emphasize the importance of "acknowledging being affected" as the socially significant phenomenon in the spread of the epidemic. As a comparison between the data in the original report and those presented in Table 6.2 of this chapter will indicate, there is a greater difference between those who acknowledged being affected in the early stages of the epidemic (in the "Before" period) and those who did so later than there is between those who were affected in the early stages and those who were affected later.

⁶ Our original impression was that the pattern of internal choices increased from "Before" to "Day One" to "Day Two" (Kerckhoff, Back, & Miller, 1965, p. 12). However, this original pattern seems to have been a function of the fact that we had included in the "Before" period people who actually saw the doctor on "Day One." They claimed to have been affected on the day before, but did not get to the doctor until "Day One." The change in definition of time affected, then, led to an accentuation of the isolated position of the "Before" period women and an increase in the social links of the "Day One" women with other affecteds.

TABLE 6.2
Sociometric Status of Affected Cases by Time Affected

Characteristic	Friendship Choices Only			All Choices		
	Before	Day One	Day Two	After	Before	Day One
Percentage of isolates	83.3(6)	20.8(24)	22.7(22)	25.0(4)	16.7(6)	12.5(24)
Percentage of choices within sample	57.9(19)	58.6(70)	41.3(63)	27.3(11)	43.6(39)	49.7(149)
Percentage of choices of affecteds	45.5(11)	61.0(41)	53.6(28)	33.3(3)	47.1(17)	55.4(74)
Percentage of choices of self-defined affecteds	9.1(11)	7.3(41)	10.7(28)	0.0(3)	5.9(17)	5.4(74)
Percentage of choices of controls	45.5(11)	31.7(41)	28.6(28)	66.7(3)	47.1(17)	37.8(74)
Percentage of choices from affecteds	0.0(2)	61.0(41)	66.7(30)	20.0(5)	69.2(13)	47.1(85)
Percentage of choices from self-defined affecteds	50.0(2)	12.2(41)	10.0(30)	0.0(5)	15.4(13)	11.8(85)
Percentage of choices from controls	50.0(2)	26.7(41)	16.7(30)	80.0(5)	15.4(13)	37.6(85)
Percentage chosen by affecteds only	0.0(6)	33.3(24)	45.5(22)	0.0(4)	33.3(6)	25.0(24)
Percentage chosen by self-defined affecteds only	0.0(6)	8.3(24)	9.1(22)	0.0(4)	0.0(6)	4.2(24)
Percentage chosen by controls only	0.0(6)	4.2(24)	4.5(22)	50.0(4)	0.0(6)	4.2(24)
Percentage of mutuals with affecteds	0.0(2)	72.7(22)	58.8(17)	0.0(2)	70.0(10)	65.7(35)
Percentage of mutuals with self-defined affecteds	50.0(2)	9.1(22)	11.8(17)	0.0(2)	10.0(10)	8.6(35)
Percentage of mutuals with controls	50.0(2)	18.2(22)	23.5(17)	100.0(2)	20.0(10)	25.7(35)

NOTE: The frequency on which each percentage is based is noted in parentheses. To the extent the percentages of any given kind do not total 100.00 percent, the remaining contacts were with Negroes or those outside the dressmaking departments. Such outside contacts never exceeded 8.0 percent of the total, and in only two cases did they exceed 5.0 percent of the total. Only three contacts between Negroes and whites were recorded. All three were nonfriendship choices of whites by Negroes, two of controls and one of a self-defined affected.

The women affected during these two big days, therefore, are even more clearly related to each other than are the affected women as a total category.

Since the number of women in the "After" category is so very small, one can comment on a pattern of choices only with considerable hesitation. However, the social position of these four women seems to be so different from those affected during the two big days as to warrant some cautious comment. Only 1 of their 3 friendship choices and only 3 of their 11 choices of any kind directed toward women in the sample are directed toward other affected women. Only 1 of the 5 friendship choices and only 3 of the 10 choices of any kind which they receive come from affected women. None of them is linked only with other affected women, and none of them has a mutual friendship choice with an affected woman. Similarly, whatever measure is used, these women are much more frequently linked with the controls than are the other affected women. Perhaps equally noteworthy is the fact that a larger proportion of their choices is directed to persons not even in the sample than is true of the other affecteds. In all these respects, they resemble the controls more than they do the affecteds. Thus, even though they are very few in number, these four women seem to fit into the social system of the plant in a rather different way than do the other affected women.

This sequential analysis has illustrated some striking contrasts between the women affected during the height of the epidemic and those affected before and after this peak period. Although the core of the epidemic follows the "group influence" pattern, both the early and late phases deviate from this pattern. Each deviates in a different way, and the two patterns they exhibit fit more nearly the other two conceptualizations than they do the "group influence" conceptualization.

During the "Before" period we have found that social isolates predominate. All but one of the early cases are isolates. Although they have work and other kinds of relations with others in our sample, they are not chosen as friends. It is these social isolates who get the epidemic started. They are the ones who exhibit the rather bizarre behavior originally, and it is only later that the contagion enters into the intricate network of interpersonal relations among the affected

women. These early cases, therefore, seem to be the kind of cases one would expect from the "social isolation" conceptualization.

The four women in the "After" phase are also rather different from the women affected at the height of the epidemic. They are not isolates like the "Before" women, but they have much more limited contact with the other affected women. Their social relations seem to be outside the affected category for the most part. If we assume that this is a meaningful rather than chance ordering of a very small number of cases, two interpretations are possible. First, we might argue that the contagion is simply entering another sociometric network, and that since the spread is curtailed by the end of the entire epidemic, there are not enough cases to demonstrate what is occurring. On the other hand, it might be argued that a more random distribution of cases is taking place, that the spread of the epidemic has moved out of sociometric channels and is becoming more general. This would be another way of saying that it has become a "crowd response." We are inclined toward the latter interpretation and will present other evidence below which suggests that this was the case.

This analysis may indicate, therefore, that the epidemic begins as a few unusual and socially insignificant women exhibit a form of behavior which, though rather bizarre, is meaningful in the work setting. Not much excitement is generated until the behavior pattern (and a "reasonable" explanation of it) spreads among those who are socially more central, and then the contagion is rather rapid and follows sociometric channels. Finally, as larger and larger numbers of persons exhibit the behavior, the sheer size of the affected category makes the credibility of the phenomenon greater. Ultimately almost everyone believes in "the bug," and cases begin to occur throughout the population. At that point, the pattern becomes a kind of "crowd response." Although the validity of this conceptualization cannot be determined in the present context, the data do seem to fit a pattern of this kind.

THE PATH OF CONTAGION

The discussion in the previous section leads to the temptation to reconstruct the spread of the contagion through the population. There are a number of alternative means of doing so, no one of which is

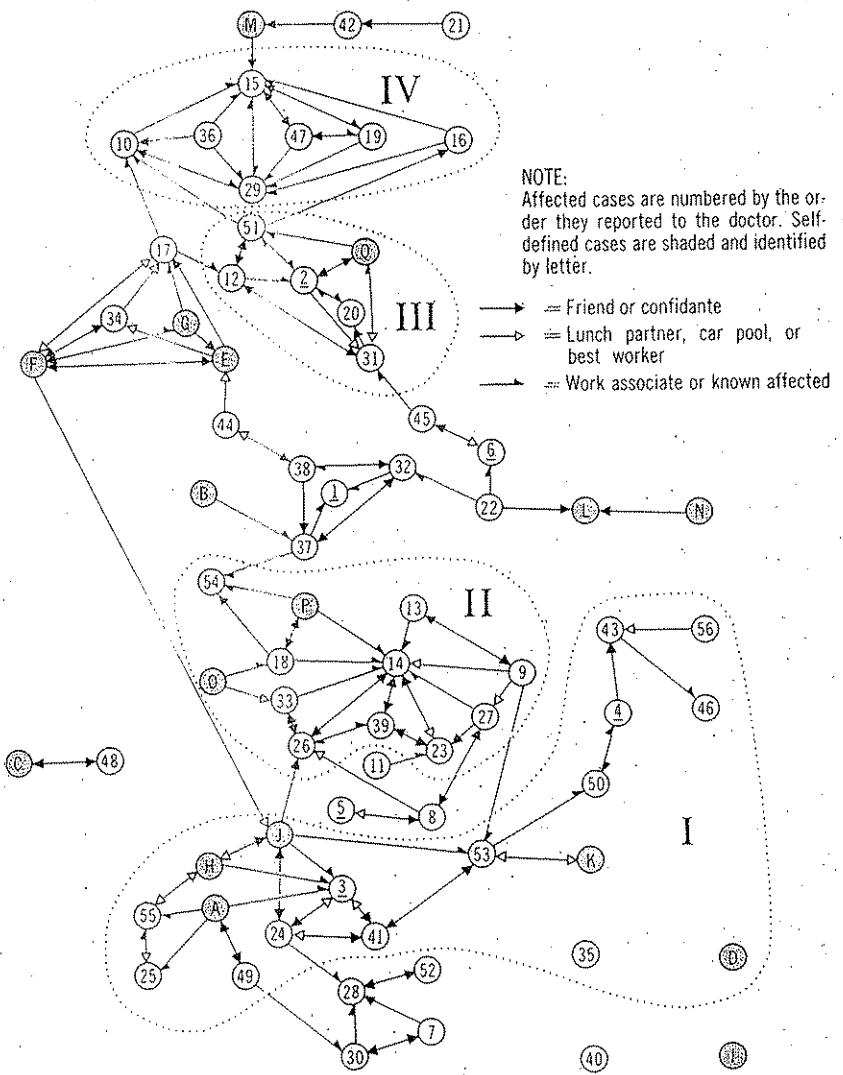
clearly superior to the others. As in the previous section, a basic problem which faced us was to decide what constituted a "link" between two women. We might have considered only a friendship choice as a link because this was the most intimate type of relationship on which we had information, and it was reasonable to assume that the degree of interpersonal influence would vary with the degree of significance of the relationship to the person being influenced. On the other hand, it was not at all clear that only this most intimate link would operate in the way most relevant to our interests. Such a consideration suggested that we include any type of relationship on which we had information as one that would possibly be relevant to our concerns.

We have attempted to encompass both of these extremes in our final view of the contagion. In Figure 6.1 we have represented *all* of the known links among the affected and self-defined affected cases. These are presented according to their degree of intimacy. In so doing, we felt that we would be able to suggest more clearly the total pattern of relationship while yet giving greater emphasis to those presumably more significant relationships.

Before discussing Figure 6.1, however, we must digress a bit to clarify one of the features of that figure which is not anticipated in the earlier part of this chapter. In Chapter 3 we indicated that we asked the women not only if they themselves were affected by the epidemic but also whether they knew anyone who was so affected. Our specific question, which followed their description of the events of the epidemic, was: Did this happen to anyone (else) in the plant whom you know well? If they answered in the affirmative, we obtained the names of those they said they knew and whom they defined as having been affected. As would be expected from the other data reported in this chapter, the affecteds named many more such persons than did the self-defined affecteds or controls (an average of 1.36, .88, and .65 names, respectively).⁷ Since the women named in

⁷ Other results from this question are also worthy of note and are consistent with our earlier findings: (1) None of the controls was named as having been affected compared with 24 percent of the self-defined affecteds and 79 percent of the affecteds. (2) Exactly half of the controls said they knew no one who was affected compared with only 18 percent of the self-defined affecteds and 9 percent of the affecteds. (3) There were 19 people named as having been affected who were not even in our sample, 5 of them outside the dressmaking departments.

FIGURE 6.1. Social Relations Among Affected and Self-Defined Affected Cases



response to this question were necessarily known to the respondents, at least to the extent of being able to give their full names, the data so derived are evidently relevant to our present interests. However, since we had no basis for assuming that the respondent's relationship with a woman named *only* in response to this question was a particularly close one, we included these choices in the least intimate category.

Returning to Figure 6.1, therefore, we combined those links which were based on either the work-contact question or this question to form the least intimate category, represented by the half-headed arrows. The open-headed arrows represent relationships of a medium range of intimacy—eating lunch together, riding in the same car pool, viewing someone as the best worker in one's section. Finally, the solid-headed arrows represent the most intimate relationships—being a friend or being one to whom the respondent would turn with a personal problem or whom she would expect to turn to her with a personal problem (a confidante). As in the tables presented earlier, if a woman was named under more than one of these categories, the relationship is represented as on the most intimate level at which she was named.

This figure is, of course, a very oversimplified view of the context of the contagion since none of the relations these women have with the controls or with women outside the sample is represented here. Such a complete figure becomes impossible to analyze, however, if the choices of all 181 women or even the choices of the 144 women we have studied in the dressmaking departments are included. Thus, we have chosen to present rather full information about the smaller number of women in these two categories. As it is, there are 73 women and 149 choices represented in the figure.

We have included the self-defined affecteds since there seems good reason to believe that they were active in the spread of the epidemic even though they did not report to the doctor for assistance. This is borne out, in part, by the fact that four of them were named by others as having been affected. If we assume that interpersonal relations played a major role in the spread, such women could act as "carriers" even though they never became known to the medical authorities. By the same logic, of course, any number of other women may have acted in this same capacity. This is suggested by

the fact that others who were not in our sample were named as having been affected. Not only were there those who were defined by others as having been affected, but there were undoubtedly many others whom we did not interview who would have defined themselves as having been affected. And, of course, even some of those who would not fit either of these categories might have acted in ways which increased the probability that some of the other women would become affected. But such agents in the epidemic must remain unknown, and we must be content with the limited data at hand. We thus include the self-defined affecteds in our chart because they can more easily than any other nonaffecteds in our sample be assumed to have played some role in the spread of the epidemic.

The most striking impression gained from a first glance at this figure is that there is a remarkable number of links among these women. Although more than one-third (37 percent) of these links are of the least intimate type (half-headed arrows), there are still almost 100 links of the two more intimate varieties, 68 of them being of the most intimate type. Only two affected and two self-defined affected cases have no known relationship to any of the other women in these categories. Besides them, there is only one dyad which is unconnected with the others. The fact that the figure requires only one very long arrow (from case F to case J of the self-defined affecteds) also indicates that the relationships noted here are not just random among the women. Instead, the figure suggests a set of nucleated groupings of women. Forty-three of the 73 women belong to four work groups as reflected in the dotted outlines in the figure. Group I consists of inspectors, groups II and III, sewers, and group IV, menders. Other clusters also seem to be based largely on work-group relations, though not so clearly as those outlined in the figure. Work groups are not the *only* basis of choice even in these four groups, however. This is indicated by the fact that numbers 42 and 21, at the top of the figure, are in work groups I and II, respectively. Some women serve as links between groupings. This is most obvious in such cases as 44, in the upper center section, but it is also true of others like 53 in the lower right portion of the figure.

If we focus on the numbered sequence of the affected cases, we find some very interesting paths that may be traced through this network of relations. Since the numbers 1 through 6 were those cases

affected before the first big day of the epidemic, locating them in the figure permits us to see "where it all began." (We have underscored these six numbers to make them easier to locate.) We find that these six women vary considerably in the positions they occupy in the network. As we have seen earlier, they were not chosen as friends very often. Only case 2 (upper center) receives a friendship choice, and she is the *only* early case to receive a friendship choice from *anyone* we interviewed. Numbers 2 and 3 (lower center) are named frequently, however, in the two less intimate categories. By the usual sociometric standards, they are "stars," only four other cases being chosen more frequently than number 2 and only three others being chosen more frequently than number 3.

Perhaps of greater note than the simple sociometric status of these women, however, is the way in which they tie in with the various chains of relationships. Both 2 and 3 are linked with women who were later affected on Day One, the day after they themselves were affected. The same is true of 5 and 6. The affecteds with whom 4 and 1 are linked, however, were not affected until relatively late in the epidemic.⁸ Some interesting paths may be discerned in the clusters which include numbers 2, 6, 5, and 3 and are worthy of closer examination.

The most closely knit cluster in the figure is the one in the lower center portion, which forms around number 14. Here we find that number 5 is the first affected case. She directs a friendship choice toward number 8 who only acknowledges that they ride in the same car pool.⁹ This tie between 5 and 8 seems to be the "lead-in" to the whole cluster. Number 8 was stricken almost immediately upon arrival at work on Day One, the record showing that she reported to the doctor at 8:05 A.M. Presumably she rode to work that morning and/or returned home from work the night before with number 5.

⁸ The situation with number 1 is rather ambiguous. Although she was the first recorded case in the period covered by our survey of the medical records, she was also affected again on the morning of Day Two. This was at about the same time as numbers 32 and 37 were affected. Thus, whether she should be seen as having influenced them or they as having influenced her, or both, is difficult to say.

⁹ This pattern is repeated elsewhere in the network of choices: the early cases direct friendship choices toward women who either ignore their presence in their own responses or who direct choices of a lower level of intimacy in return.

since they both say they are in the same car pool. Number 5 reported to the doctor at 4:20 that previous afternoon. Within an hour of the time the doctor saw number 8, number 9 became nauseous and reported to the doctor. She evidently had come to work that morning with number 27 who is a friend of number 8 (and who became ill that afternoon). At 11:00 that morning number 13 (a friend of number 9) was stricken with nausea, and 15 minutes later number 14 almost passed out. Number 14 is such a star of the cluster, it is not surprising that numbers 18, 23, 26, and 27 were all stricken that same afternoon. Not only is number 14 a star in the sociometric sense of this term, she is also a union steward who represents most of these women. Thus, both her formal position and her place in the network of informal ties make her a very significant reference point for many of the workers around her. This one small cluster, then, contributes one-third of the Day One cases.

At this same time, in the cluster at the bottom of the figure another pattern was developing. Number 3 had gotten sick and passed out the afternoon of the previous day. The first thing the next morning (Day One) number 7 passed out and was sent to the hospital when she said she had been bitten the previous day and was still sick. That noon number 3 presumably had lunch with 24, who is her sister, and 41 whom she defined as a friend. At 2:00 that afternoon number 24 passed out and was sent to the hospital. At about the same time, number 3 was again bitten and again passed out. By the time the plant was closed that afternoon, numbers 28 and 30, whom number 7 defined as friends, were also affected, 28 being sent to the hospital. In fact, number 30 claimed she was bitten several days earlier (even before number 7) but had not sought medical aid until Day One.

During this same period the cluster which includes number 2 (top center) was also active. Number 2 had reported to the doctor in the middle of the previous day. Her importance is undoubtedly increased by the fact that she was the union steward for the other five women in the work group III cluster. By the middle of Day One, her two work associates, numbers 12 and 20, were stricken. Four others (10, 15, 16, and 19) in the related cluster of menders (above them in the figure) were also stricken at about this same time, and a fifth (number 29) almost passed out at about the time the plant was

closing that afternoon. Again, number 29 is a union steward serving all six of the other women in cluster IV. Although there are ties between these clusters, particularly through number 51, the only known link between these two sets of Day One cases is number 17. This link may be more significant than it first appears to be since 17 said she had been bitten earlier, even before number 10.

There were other scattered cases on Day One also, of course. Number 22 has a work relationship with number 6 (right center). Number 21 (at the top of the figure) has only very indirect connections with anyone who was affected before her (although she is a member of work group II). Number 11 (lower center cluster) and number 25 (bottom cluster) are also very marginal to the majority of the Day One cases (although number 25 is a member of work group I). The great majority of the Day One cases, however, are linked with other cases who were affected at about the same time.

It is difficult to have much confidence in the order of cases beginning the next morning, the morning of Day Two. Eleven cases were recorded between 8:15 and 8:30 that morning, and an additional seven cases were logged in by 10:00. By the middle of the afternoon four more cases had been reported, and the plant management made the decision to close down again. The first flurry of cases included numbers 32, 37, and 38 who are clustered around number 1 in our figure. Number 1 again reported to the doctor that morning. Also included in that early rush were cases 33 and 39 who are part of the cluster around number 14. This completes that cluster, all cases except number 5 being affected within 24 hours of each other. Also affected early that morning were 34, whose lunch partner (number 17) got sick the previous noon and who claimed that she (34) too had been bitten the previous day; 41, whose lunch partners (3 and 24) had both been stricken the day before; 31, whose friends (12 and 20) were bitten the previous day; and 36, whose friend (number 10) was still in the hospital with symptoms developed the previous day. There were two other cases in that early flurry (numbers 35 and 40) who had no known connection with other affecteds, though 35 was a member of work group I.

Connections with earlier affected cases are apparent for some of the cases affected later that day (Day Two). For instance, number 47 in the top cluster and number 51 just below her in the figure

have close relations with one earlier case and less intimate connections with others. In both cases, their union steward had gotten sick earlier. Number 44 (left center) and number 52 (bottom cluster) chose as friends women who were affected that morning and the previous afternoon, respectively, although they have no other known connections with affected women. The links between the others affected during this period and earlier affected cases, however, are either very weak or nonexistent. Number 42 (top), numbers 46 and 43 (right center), and number 48 (lower left) do not name an earlier affected woman in any of our categories, although they have some ties that might have been of some significance in their having been affected. Numbers 45 (center right), 49 (lower left), and 50 (lower right) all name earlier affected cases in some category, but the ties are either rather weak or the connection (as with number 45) is with someone affected much earlier in the epidemic. The pattern of contagion is thus much less clear in these cases than in those affected during Day One and early on Day Two.

The impression gained from this analysis of the late Day Two cases is similar to the one noted in our discussion of the cases affected during the After period. They do not seem to be as well integrated into the network of relations among the affected women. The general conceptualization we have suggested in this chapter called for a number of isolates being affected early, a move into sociometric networks, and a final dispersion of cases throughout the population in a way less clearly relevant to social relations. This pattern is different from the type Coleman, Katz, and Menzel (1957) have called the "snowball effect." In a snowball pattern, which would be expected if social relations were the principal means of transmission of the contagion, there is an increasing tendency for a participant in the contagion to be linked with a person who has already been a participant. If such were the pattern, we would, of course, expect persons affected early to have no links with persons previously affected, but we would expect that as we move through the period of the contagion such links would be increasingly common. We would not expect that the later cases would be less frequently linked with early cases, which is what has been suggested in this analysis.

We had been somewhat hesitant to emphasize this deviation from the snowball pattern solely on the basis of our data from the

four cases in the After period. There is now indication, however, that this deviation may be seen even during Day Two. To make the matter more explicit, it may be worthwhile to add here a systematic summary of the relationships we found.

If we divide the cases reported on Day One and Day Two into early and late cases for those two days, we have 12 early and 12 late cases on Day One and 11 early and 11 late cases on Day Two. If the snowball effect is the dominant effect in this part of the epidemic, we would expect an increasing proportion of the cases to be linked to earlier cases as we move from the early Day One cases to the late Day Two cases.¹⁰ This pattern is actually found through early Day Two. Only 1 of the 12 early Day One cases chooses an earlier affected woman as a friend, but 6 of the late Day One women do so. Six of the early Day Two cases make such a choice, but only 4 of the late Day Two women choose an earlier case as a friend. The proportions of cases in the four periods having such a friendship choice are .08, .50, .55, and .36. The same pattern is found whatever definition of a link we use. For instance, if we consider all links as represented in Figure 6.1 instead of just friendship links, the proportions are .50, .75, .82, and .64. Rather than an increasing tendency to "snowball" throughout the period of the epidemic, therefore, there is a decided decline of the snowball pattern toward the end. Evidently after about the middle of Day Two the epidemic more clearly leaves its original sociometric channels and begins to become more of a "crowd response" type of phenomenon. This, of course, is in keeping with our earlier conceptualization and gives us greater faith in it.

THE INFLUENCE PROCESS

The analysis in the previous section made the implicit assumption that in order for a social link to be seen as a source of influence the influencer had to become affected before the woman she supposedly

¹⁰ Here, as in all similar subsequent analyses, we will consider that individual A has a tie with individual B if A chooses B in one of the relevant categories but not if A is chosen by B. This is done because we would argue that a person whom one chooses is a more salient reference point and thus more likely to influence the chooser than is a person who chooses one but is not chosen in return.

influenced. This is the usual assumption in studies of a spread of a phenomenon in a collectivity. In studies of the adoption of an innovation in farming or medicine there is little grounds for quarrel with such an assumption. In our particular case, however, such an assumption may be more questionable. At least it is doubtful if going to the doctor is the most significant act involved.

Throughout this report we have had to emphasize the difference between "experiencing symptoms" and "going to the doctor," but our criterion of being affected has been the act of going to the doctor. It seems quite possible that not only did the self-defined affecteds experience symptoms without seeking medical assistance, but also that many of the affecteds experienced symptoms and reported them to their friends and associates long before they went to the doctor. They may have "adopted the innovation" well before the medical authorities became aware of it. We have found, in fact, that many of the early cases told the doctor they had actually been bitten several hours or even days before they went to see him. This became less true as the epidemic progressed, but it certainly seems to have occurred in the early stages. It may well be, therefore, that the kind of interpersonal influence which is suggested by our data took place between cases which were related to each other in a way not reflected in any simple temporal sequence of reporting to the doctor. This kind of logic has led us to pay close attention to the self-defined affected cases. Even though they did not go to the doctor, they evidently experienced symptoms, and this fact may have been known by (and thus tended to influence) some of their friends and associates. The influence process presumably acts largely to increase the credibility of the threat of the mysterious insect. If a friend has been stricken, one is more likely to develop symptoms or to define current symptoms as being associated with the insect. If she develops symptoms, she may go to the doctor, but whether she does or not, knowledge of her condition is likely to influence those associated with her.

Such reasoning leads to further questions which we must investigate. For instance: Do we still find a decrease in social ties among late affecteds if we consider a woman's ties with any other affected case? In fact, we should probably consider not only affected cases as possible sources of influence but also self-defined affecteds. Does the pattern hold if they are included? Also, if a woman's ties

with any affected or self-defined affected woman might have been significant, it becomes possible to differentiate cases according to *how many* such ties they had. Is it true, as we should expect, that the more such ties a woman has the more likely she is to become affected?

Tables 6.1 and 6.2 provide evidence that, in general, those with social relations with affecteds and self-defined affecteds are themselves more likely to be affected or self-defined affected. Is it also true that the more such ties a woman has the more likely she is to become affected? The answer is clearly "yes." Of those 41 women with one affected friend, 20 (or 48.8 percent) were themselves affected. Of those 16 women with two affected friends, 12 (or 75.0 percent) were affected. If we use all of the more intimate kinds of ties as our definition of a social relationship (the open-headed and solid arrows in Figure 6.1), the same thing is found. Fifty women had one such tie, and 46.0 percent of them were affected; 18 women had two such ties, and 61.1 percent of them were affected. All 5 women who had two such ties were themselves affected. The same pattern repeats itself when we use ties with both affected and self-defined affected women and when we use being either an affected or self-defined affected case as the criterion. For instance, there were 51 women who had an intimate tie with one affected or self-defined affected; of these, 58.8 percent were themselves either affected or self-defined affected. There were 27 who had two intimate ties with affecteds or self-defined affecteds, and 85.2 percent of them were either affected or self-defined affected. Again, all 5 who had three such ties were affected cases. Thus, whether we are attempting to predict a woman's being an affected or a self-defined affected case, and whether we are using ties with affecteds alone or with them and self-defined affecteds as a basis for prediction, the same result occurs: the more such ties a woman has, the more likely she is to become "affected," however that term is defined.

This is the first time that we have found such a close resemblance between the affecteds and the self-defined affecteds. With respect to both personality characteristics and situational strains they were often more dissimilar from each other than either was from the controls. That dissimilarity, together with the present similarity, makes their different positions in the epidemic more understandable.

Evidently the self-defined affecteds were themselves members of the same network of relations as the affecteds. But they had less original strain to contend with, and they were better able to cope with the problems they faced. Their social position, therefore, suggests the reason they felt affected by ("caught up" in) the epidemic, but their personal and situational characteristics suggest the reason why they did not fully succumb to the point of requiring or seeking medical assistance.

We may now turn to our other question: Is there still evidence of an increasing tendency for the epidemic to break out of the sociometric network? Clearly there is. Using the same four periods (early and late on Days One and Two), we computed the proportion having significant ties in four different ways: using friendship ties with affecteds, using friendship ties with affecteds or self-defined affecteds, using intimate ties with affecteds, and using intimate ties with affecteds or self-defined affecteds. In all four cases, there is an increase between early and late Day One. The increase ranged from 8.3 to 25.0 percentage points. In all four cases also, there was a sharp drop from early Day Two to late Day Two. The decrease ranged from 18.2 to 36.3 percentage points. It is also interesting to note that in all cases there was at least a slight drop between late Day One and early Day Two. It may well be, therefore, that the decrease in the significance of intimate social ties in the spread of the epidemic began even earlier than we had at first thought. In any event, there is little doubt that sometime on Day Two and continuing until the end of the epidemic new cases were more likely to occur outside the original sociometric networks. We are also again impressed with the similarity of the findings whether we use ties with affecteds or with self-defined affecteds.

FURTHER COMPLEXITIES

We have offered three different theoretical bases for predicting the relevance of sociometric ties to the spread of the epidemic, and we have suggested that our data support all three of them to a limited degree. What we have called the "social isolation" theory seems to fit the early stages of the epidemic best, the "group response" theory seems to fit the major portion of the epidemic best, and the "crowd

"response" theory is evidently most appropriate for the late stages of the epidemic. The data analysis we have offered is generally in keeping, then, with a multiple-process view of such a contagious spread.

It is well to emphasize, however, that although we have some confidence in the pattern of processes suggested, each being dominant at a different period in the epidemic, no such conceptualization is fully in accord with all the data from the case. We must assume that all three processes are going on at the same time throughout the period studied. There are, after all, isolates who are affected late in the epidemic, and even the last cases affected show *some* evidence of social ties with earlier affected cases. We would also expect that the more unstructured "crowd response" begins to develop early in the contagion and tends to increase in importance. We have found some suggestion that it became noteworthy as early as the morning of Day Two. It is necessary to keep in mind too that isolates should be affected at least as much by the crowd effect as those with social ties, perhaps more so. Thus, it would presumably be impossible to distinguish the "social isolation" and "crowd response" effects once the epidemic has gotten well under way. By the same token, we cannot with any confidence claim that all of those affected during the height of the contagion who had social ties with other affected cases were influenced by these ties more so than by a "crowd response" type of influence.

Not only are the three theories evidently all applicable to the situation to some extent at all times, but we must assume that other factors not clearly included in these theories were also operating. After all, we found notable differences among our three categories of women with respect to both personal characteristics and the degree of strain they were experiencing. There is no reason to believe that there is a neat correlation among these several kinds of forces in the situation, and we must thus face the problem of attempting to put these various pieces together. We will turn to that problem in the next chapter.

This chapter, however, has contributed to the solution not only by pointing up the importance of social relations in the transmission of the contagion, and thus helping to understand why some women became affected cases, but also by helping to clarify the position of the self-defined affecteds. The earlier analysis of the self-defined

affecteds has been puzzling since it seemed to show little reason for these women to have been affected at all. The data on personal characteristics suggested that perhaps they simply liked to talk about their symptoms and thus wanted to be included in any unusual experiences like the epidemic. The data on the strains experienced by the women gave a more sanguine picture, however. They showed them to be rather "sensible" women who were realistic about their situations, were subject to some strain, and had more adequate means of coping with strain than did the affected women. The present analysis, however, shows that they were intimately implicated with the affected women in a network of social relations. These ties presumably tended to increase the strain they experienced during the epidemic and made it more likely that they would develop symptoms. We might thus speculate that it was their more realistic outlook and better coping mechanisms that saved them from becoming some of the doctor's patients.

PERSON, POSITION, AND PATTERN

In this chapter we will pursue several earlier ideas in an attempt to develop a more holistic view of the epidemic. In each of the previous three chapters we have approached our data with a particular theoretical interest, and we have, for the purposes of each of these chapters, generally ignored other perspectives. In each case, we have noted significant relationships in keeping with the theoretical position central to that chapter. However, in each case we have also noted some puzzling and sometimes contradictory findings. The burden of this chapter will be to examine these data in the context of a more comprehensive perspective.

It may well be that some kinds of personality are particularly prone to react in an hysterical fashion, and that interpersonal influence often hastens the process. On the other hand, it is also undoubtedly true that a given type of personality faced with one type of strain or social process will respond differently from another type of personality faced with the same strain or social process. In fact, we might postulate that all of these factors function in different ways depending on how they are combined. Our chief interest in this chapter, then, will be to examine the significance of several combinations which are suggested by the previous findings.

We have noted that there were various responses to the epi-

demic experience. We began with the rather simplistic notion that there were just two types—the affecteds and the controls—but found that at least a third category—the self-defined affecteds—needed to be viewed separately. In Chapter 3 we also discussed the various symptoms exhibited by the affected women, and we reported that all three categories of women varied in their postepidemic assessments of the causes of the epidemic. Are there systematic differences in the personal characteristics of these women? Do those affecteds who responded to the epidemic in one way (e.g., by fainting) have different personal characteristics from those who responded in another fashion?

In Chapter 4 it was suggested that some of our measures of strain might also be indices of factors which would deter a woman from becoming involved in the epidemic. Since the data in Chapter 6 indicated differences in social position between the women affected early and late in the epidemic, is it also true that these early and late affecteds differed in their response to these "two-edged" or complex sources of strain? Do personal characteristics enter the picture here also? More generally, are the people who were affected early different kinds of people from those affected later, both with respect to their personal qualities and their exposure to sources of strain? Also, do the early and late cases tend to respond differently when they do become affected?

The central theme in Chapter 6 was the importance of social relations in the dissemination of the epidemic. Do those people who seemingly respond to social influence differ on personal or situational dimensions from those who do not? Are there differences in the way they respond to the epidemic if they do become affected? Is there a pattern of interaction among personal characteristics, sources of strain, and social position which is related to if, when, and how a person is affected?

Although we attempted to investigate all of these questions, part of our analysis was so inconclusive as to make it difficult to give a satisfactory answer to some of them. We were most successful in determining the correlates of different kinds of responses of those women who were affected; that is, which ones fainted, almost fainted, or did neither. We were also able to combine the three kinds of variables (personal characteristics, levels of strain, and social relations) into an overall prediction profile. Discussion of these two kinds

of analysis will constitute the bulk of the chapter. Before presenting those data, however, we will discuss briefly a few other issues which our data helped to illuminate.

KINDS OF STRAIN AND THE SEQUENCE OF AFFECTED CASES

In Chapter 4 we noted some difficulties involved in the interpretation of our indexes of strain. One of these was the fact that on some of our measures the self-defined affecteds exhibited as high (and sometimes a higher) incidence of the strain as did the affecteds. We suggested that the kinds of indexes which produced this result were very largely those involving a "two-edged" effect. That is, they not only indicated a situation likely to put the woman under a greater strain, but they also indicated a reason why she would be motivated to resist giving expression to the strain she was experiencing. For instance, the self-defined affecteds were more likely than the affecteds or the controls to have been laid off, to be the sole wage earners in the family, and to be widowed, divorced, or separated. Although each of these conditions presumably adds a strain to the situation in which the woman finds herself, it also suggests that such a woman would be more concerned about her job and maintaining the income which it produces. We have thus suggested that women who bore such burdens might be more likely to be extremely conscientious workers and less likely to give way to the expression of tension experienced on the job. If this were true, it would help explain why some of the self-defined affecteds who experienced this kind of strain did not actually seek or require medical attention.

But if this interpretation is to be accepted, it should also imply some difference between the affected women who experienced such forms of strain and those who did not. Other things equal, the former should have been affected later in the epidemic than those who did not bear this kind of burden. We thus divided the affected women into those who had been affected on or before Day One and those who had been affected after Day One and examined the distribution of such strains. On all three measures just noted, more of the late affected cases had experienced the strain. They were more likely to have been laid off, more likely to be the sole family wage earner,

and more likely to be widowed, divorced, or separated. Only on the second factor, however, was the percentage difference very great. Thirty-one percent of the late cases were the sole family wage earners compared with only 13 percent of the early cases.

THE DISTRIBUTION OF SOCIAL LINKS

In Chapter 6 we have suggested that social relations with affected cases tend to facilitate a woman's becoming affected herself. However, we have also noted in that chapter that many of the self-defined affecteds and some of the controls also had social ties with affecteds. If such relations are facilitative in the manner we have proposed, why weren't these other women affected?

In order to study this issue, we repeated the comparisons which had proved of interest in the earlier chapters using only those cases who had links with affected women.¹ The resulting data are presented in Table 7.1. The findings are generally similar to those using all of the cases, but there are some notable differences. With respect to the measures of strain, working overtime most clearly differentiates the affecteds from the others, and seeing variation in output in the section does so most poorly. Although this was generally true for the total sample, the second of these two measures was more effective with the total sample than it is here. We again find that supplying half or more of the family income characterizes both the affecteds and self-defined affecteds more clearly than the controls. The summary measure of strain again discriminates as before. The differences with respect to the measure of ability to cope with strain (willingness to take time off for a rest) are even greater than with the total sample.

The differences previously noted in the distribution of the measures of denial are again found here. Denial is even more fully concentrated in the affected category than it was with the total sample. Finally, the striking differences in degree of acquiescence

¹ As before, we defined a link in terms of the two more intimate types of social relations. These are the relations represented by the solid and two-headed arrows in Figure 6.1. Also as before, A is defined as linked with B if she chooses B but not if she is chosen by B. We also re-ran data using ties with both affecteds and self-defined affecteds as our criterion as well as using only ties with earlier affected cases. Although the patterns varied somewhat with these other definitions, the general conclusion we reach is justified in all cases.

TABLE 7.1
Characteristics of Affected, Self-Defined Affected, and Control Cases Who Have Links With Other Affected Cases

Characteristic	Linked Self- Defined		
	Linked Affecteds (N = 40)	Defined Affecteds (N = 11)	Linked Controls (N = 23)
	%	%	%
Worked overtime at least two or three times a week	62.5	36.4	34.8
Do not mention supervisor as one to go to with a complaint	45.0	18.2	47.8
Provide half or more of family income	47.5	45.5	26.1
The section varies in output	37.5	45.5	34.8
Have two or more of these sources of strain	67.5	45.5	39.1
It is wrong to stay home when not sick	80.0	45.5	65.2
Deny all symptoms	37.5	00.0	17.4
Deny importance of role conflict	25.0	00.0	8.7
Acquiescence (double "yes" responses)	70.0	45.5	52.2

suggest that the affecteds, more than either of the other categories, might be more responsive to cues received from those around them.

Thus, although the pattern is not as striking as one might have expected on the various individual measures of strain, the total picture gained from an examination of this table is one of the affected women being under greater strain, less likely to be able to cope with strain, and more likely to accept influence from others. There is thus little reason here to discard our interpretation of the significance of social relations as a means of influence in the epidemic. When we ask why the linked controls and self-defined affecteds were not affected, the best answer still seems to be that they experienced fewer other forces operating to lead them in that direction.

THE PATTERN OF LASTING BELIEF

We referred in Chapter 3 to the fact that a number of characteristics might have been viewed as the major dependent attribute

in this study. We stressed the importance of three kinds of indexes of response to the epidemic: a belief, an emotional response, and an action which came to the attention of the medical authorities. However, since our measure of belief was not only made after the epidemic had ended but also after it had been branded as "only hysteria," we were hesitant to emphasize this measure. On the other hand, if we view the women's beliefs as the *result* of the experience in the epidemic rather than as the *cause* of their behavior during the epidemic, it is possible to gain further understanding of the subjects.

Several questions in the interview might be seen as related to this issue, but we will report on only the most directly relevant item. After we had asked a number of open-ended questions about the epidemic, the women were asked: "What do you think caused this to happen?" The responses naturally varied greatly, but they could be classified into four major types. Some of the women made very definite statements to the effect that an insect was the cause. Others made less clear-cut statements which either indicated that an insect was "probably the cause" or that the epidemic was "mostly" caused by an insect. Some, of course, stated that they simply did not know what brought the whole thing about. And, finally, a few said it was *not* an insect and specified some other cause (hysteria, poisonous dyes in the fabric, and so on).

We examined the same kinds of classifications of subjects as discussed earlier using these four types of responses as our dependent measure. The findings that proved of interest are reported in Table 7.2.² There is no mention there of the measures of strain because they were not clearly related to the beliefs the women reported. Their responses were, however, related to the women's role in the epidemic, their personal characteristics, and the pattern of social relations with affected cases.

As we have already pointed out in Chapter 3, the affected women were much more likely to express an unequivocal belief in the bug, and the controls were least likely to be so certain about the matter. It is a bit surprising that three of the affected cases said the epidemic

² Table 7.2 is organized in the opposite manner from our previous tables by having the dependent attribute in the column headings. This is done simply for ease of presentation and does not imply a different view of the nature of these relationships.

TABLE 7.2
Distribution of Explanations of the Cause of the Epidemic, Within Affected, Self-Defined Affected, and Control Categories

Category	Definitely an Insect %	Probably an Insect %	Mostly or Don't Know %	Not an Insect %
Affecteds (N = 56)	62.5	23.2	8.9	5.4
Self-Defined Affecteds (N = 17)	41.2	23.5	29.4	5.9
Controls (N = 71)	26.8	40.8	23.9	8.5
Affecteds who fainted (N = 21)	76.2	19.0	0.0	4.8
Affecteds who almost fainted (N = 15)	60.0	6.7	26.7	6.7
Affecteds who did neither (N = 20)	50.0	35.0	10.0	5.0
Affecteds who are symptom deniers (N = 17)	58.8	17.6	11.8	11.8
Controls who are symptom deniers (N = 14)*	00.0	42.9	50.0	7.1
Affecteds who are role-conflict deniers (N = 16)	62.5	25.0	6.3	6.3
Controls and Self-Defined Affecteds who are role-conflict deniers (N = 8)*	12.5	62.5	0.0	25.0
Affecteds with high symptom scores and no role-conflict denial (N = 13)	61.5	23.1	7.7	7.7
Self-Defined Affecteds with high symptom scores and no role-conflict denial (N = 10)	60.0	10.0	30.0	0.0
Controls with high symptom scores and no role-conflict denial (N = 22)	45.5	40.9	9.1	4.5
Early linked Affecteds (N = 23)	78.3	17.4	4.3	0.0
Early not linked Affecteds (N = 7)	57.1	42.9	0.0	0.0
Late linked Affecteds (N = 17)	52.9	11.8	23.5	11.8
Late not linked Affecteds (N = 9)	44.4	44.4	0.0	11.1
Linked Self-Defined Affecteds (N = 11)	54.5	9.1	36.4	0.0
Not linked Self-Defined Affecteds (N = 6)	16.7	50.0	33.3	0.0
Linked Controls (N = 23)	43.5	34.8	17.4	4.3
Not linked Controls (N = 48)	18.8	43.8	27.1	10.4
Affecteds who were not acquiescent (N = 16)	43.8	37.5	12.5	6.3
Affecteds who were acquiescent (N = 29)	70.0	17.5	7.5	5.0
Self-Defined Affecteds who were not acquiescent (N = 9)	55.6	22.2	22.2	0.0
Self-Defined Affecteds who were acquiescent (N = 8)	25.0	25.0	37.5	12.5
Controls who were not acquiescent (N = 29)	37.9	27.6	24.1	10.3
Controls who were acquiescent (N = 42)	19.0	50.0	23.8	7.1

* There were no self-defined affecteds who were symptom deniers and only one who was a role-conflict denier. The latter is combined with the control role-conflict deniers. She said that the epidemic was "probably caused" by an insect.

definitely was *not* caused by an insect. One of them even said she thought it was caused mostly by excitement and hysteria. The majority of those who clearly rejected the insect cause, however, were controls (six out of nine). Since those who fainted during the epidemic had made the most clear-cut behavioral commitment to the proposition that something very toxic was among them, it is also not surprising that more fainters expressed complete belief in the bug than any other type of affected case, and none of them expressed serious doubt about the cause. We again are faced, however, with the fact that one of those who fainted said she thought an insect was not the cause. She thought it was due to poisonous dyes.³

Among the nonaffecteds, the greatest doubt about the causal importance of an insect was expressed by those who were either symptom deniers or role-conflict deniers. Most impressive about this portion of Table 7.2 is that, among the affecteds, deniers are just as likely to accept the insect theory as the nondeniers. Evidently it was necessary for a denier to have the personal experience and make a public commitment before she would accept the validity of the threat of the bug.⁴ The pattern is clearly different with those who are not deniers by either definition and who readily admit to symptoms. All three categories of women with these characteristics are very likely to acknowledge the importance of the insect as a causal factor in the epidemic. The controls with these characteristics are very different from the controls who are deniers by either definition.

A similar relationship holds if we consider acquiescence. It may be thought that acquiescence is a measure of suggestibility and therefore related to bizarre beliefs. However, Table 7.2 shows that there is no direct relationship between acquiescence and belief in the insect,

³ This woman was a denier by both of our definitions. One of the other affecteds who rejected the insect as a cause was a symptom denier; the other was not a denier by either definition.

⁴ It is also worth noting, however, that the two kinds of affected deniers were somewhat different in this respect. If those deniers who fainted (and thus were most irrevocably committed to the validity of the threat) are set aside, the two types of affected deniers are quite different. Of the 8 role-conflict deniers who did not faint, only 2 expressed complete belief in the bug. Of the 12 symptom deniers who did not faint, 7 believed fully in the bug. It would seem that the very fact of their public acknowledgment of their symptoms necessitated a clear "external" explanation for the symptom deniers, but not for the role-conflict deniers.

but that the relationship depends on the experience in the epidemic. Among the affecteds acquiescence does relate to lasting belief, while in the control group there is an inverse relationship. Among the self-defined affecteds there is also an inverse relationship. The total picture is similar to that of deniers. Those who gave acquiescent responses were more likely to believe in the insect if they had been conspicuous during the epidemic and less likely if they had not been conspicuous.

In addition, we find that those who were affected early in the epidemic have greater faith in the full causal significance of the bug than do those affected later. It is also true that those with social relations with other affected cases were more likely to believe than were those without such relations. It is not surprising that this is so among the controls (or even among the self-defined affecteds), but it is striking that it is also true among the affecteds.

These data indicate that belief in the causal significance of an insect is related to one's part in the epidemic and to one's personal and social characteristics. We find evidence of the importance of denial and acquiescence on the one hand and social relations on the other. They operate in different ways in this case. Social relations with affected cases facilitates both becoming affected and belief in the potency of the insect. Denial facilitates becoming affected but reduces the woman's tendency to believe in the insect *unless* she herself was affected during the epidemic. With but one exception, the *only* deniers of either type who fully believe in the insect are those whose own behavior during the epidemic could only be justified through such a belief. And the more extreme the affected denier's response to the epidemic, the more firmly she believed: only one of the 13 deniers who fainted had any doubt at all that an insect was the cause. This is in striking contrast to 4 of the 8 nondenier fainters who expressed some doubt.⁵

The same kind of relation is true with acquiescence. Respondents who showed tendencies toward reacting to the interview situation itself (as contrasted to the content of the questions) were most

⁵ Respondents can be said to play two "games" in an interview, information-giving and ingratiation (Back & Gergen, 1963). Tendency to play the latter game gives information about the respondent and we are interpreting here the relationship between denial, acquiescence, and consistency of action and belief in this way.

likely to show consistency between belief and action. We might say that they subordinated their belief to justifying their actions, looking not at the facts to which the question was directed, but at the way in which they presented themselves.

In summary, strongly persistent belief is a function of going to the doctor during the epidemic, especially going early or of having friends who did so. It is also a function of a need for self-presentation which we have also seen to be related to being affected at all. Self-presentation, as shown by stereotyped responses in the interview (denial or acquiescence) leads to efforts to be consistent, showing more belief among affecteds and less belief among controls.

PERSONAL CHARACTERISTICS, SOCIAL RELATIONS, AND MODE OF RESPONSE

Several of the earlier findings have suggested that *how* an affected woman responded during the epidemic was an important variable, and we had several cues to factors associated with different modes of response. We differentiated among the affected women according to whether they fainted, almost fainted, or did neither. We reasoned that the woman who fainted was evidently overcome with fear and tension before she could get medical assistance, whereas the others evidently got to the doctor before experiencing such overwhelming emotions. We were thus alerted to look for factors which would encourage a woman to seek help when her difficulties were relatively minor and for factors which would deter a woman from seeking aid until it was too late. Our original conceptualization and some of the early findings suggested several possibilities. Those who were deniers presumably would tend to delay acknowledging a problem and should be more likely to faint, whereas those who easily acknowledge symptoms should be unlikely to do so. Those who had friends who were also affected might be expected to be alerted to the reality of the danger and be more likely to seek aid before they were overwhelmed. Those who had a generally high inclination to adopt the sick role would presumably seek assistance under conditions of less distress than those who normally had a low inclination to seek medical aid. We examined each of these possibilities. The findings are presented in Table 7.3.

TABLE 7.3
Mode of Response of Affected Women by Personal and Social Characteristics

Characteristic	Fainted %	Almost Fainted %	Did Neither %
Role-conflict denial (N = 16)	56.3	12.5	31.3
Deny all symptoms (N = 17)	35.3	17.6	47.1
High symptom scorers (N = 16)	25.0	56.3	18.8
High inclination to adopt sick role (N = 39)	35.9	23.1	41.0
Describe health as "excellent" (N = 9)	66.7	22.2	11.1
Linked with other affecteds (N = 40)	32.5	30.0	37.5
Linked with <i>earlier</i> affecteds (N = 25)	20.0	32.0	48.0
Total Affecteds (N = 56)	37.5	26.8	35.7

As expected, those affecteds who were role-conflict deniers were much more likely than the other affected women to faint. The pattern with respect to symptom denial and admission, however, is not quite what we expected. Although those who easily acknowledged symptoms very seldom fainted, those who denied symptoms did not faint any more frequently than the other affecteds.⁶ We also find that those with a high inclination to adopt the sick role fainted as frequently as the other affected women, although we had expected them to do so less often.

Our first examination of the relationship between social ties with other affecteds and response during the epidemic also appeared

⁶ It is also worth noting that the women who easily acknowledged symptoms were also the most likely (and the deniers are least likely) to be listed as having "almost fainted." When we consider that such a listing in the doctor's records could only have come from the woman's self-report of her response during the epidemic, this pattern is also consistent with our interpretation of the relationship between personal characteristics and kinds of response. Those who easily acknowledged symptoms during the interview were also most likely to acknowledge to the doctor that they had had a very serious upset during the epidemic, even when they had not actually fainted.

to contradict our expectations. If we consider links with any other affected woman, there is no difference between linked women and the others. But if we use as our criterion the presence of social ties with affecteds who reported to the doctor before the case in question, the expected tendency is quite strong, women with such ties tending to faint only about half as often as affecteds in general. This suggests that, although the sequence of affected cases was not an important factor in the interpersonal influence which led a woman to become affected, sequence was important in determining whether or not a woman would seek medical aid before she was overwhelmed by her tension and fainted. Having a close associate who was already affected and had been to the doctor evidently made it easier to seek help before it was too late.

In this analysis, then, the two factors which stand out are role-conflict denial (which evidently delayed a woman's admitting the need for help and thus increased the probability that she would faint) and social ties to earlier affected cases (which seems to have accelerated the tendency to seek aid and thus lowered the probability of fainting). We were surprised to find that symptom denial and inclination to adopt the sick role were not related to the type of response the women exhibited. We knew from an earlier analysis, however, that both of these variables were related to having ties with earlier affected cases. Those with ties to earlier cases tended to be symptom deniers more often and to have a lower inclination to adopt the sick role. It thus seemed possible that there was some kind of interaction effect between having social relations with earlier affecteds and some of our measures of personal characteristics. To test this possibility, we computed the proportion who fainted for each of the major personal characteristic categories, holding social relations constant. The findings are reported in Table 7.4.

Although the patterns are somewhat different, in all three cases we find that when the woman had both social relations with earlier affecteds and the particular personal characteristic, she was least likely to faint. The combination of being a nondenier and having a tie with an earlier case or having a high inclination to adopt the sick role and having such a tie produced the fewest fainters. The interaction effect between social relations and the personal characteristic is most apparent, however, for the two measures of denial. There is

TABLE 7.4

Distribution of Cases of Fainting According to Symptom Denial, Role-Conflict Denial, and Inclination to Adopt the Sick Role, Controlling for the Presence of Social Ties with Earlier Cases

Characteristic	Affecteds	
	Linked %	Not Linked %
Denial of all symptoms	36.4 (11)*	33.3 (6)
Acknowledge some symptoms	7.1 (14)	56.0 (25)
Role-conflict denial	57.1 (7)	55.6 (9)
No role-conflict denial	5.6 (18)	54.5 (22)
Low inclination to adopt sick role	20.0 (10)	71.4 (7)
High inclination to adopt sick role	13.3 (15)	50.0 (24)

* The number in parentheses following each percentage is the number of affected cases in that category. For instance, there are 11 affecteds who are symptom deniers and who have links with earlier affected cases. Of these, 36.4 percent fainted.

a much greater difference between deniers and nondeniers who have links with earlier cases than there is between those with high and low inclination to adopt the sick role who have such links. One is also tempted to interpret the differences in the "not linked" column, but the numbers of cases are so small that this would be quite hazardous. The general pattern, however, is for particular combinations of social and personal characteristics to be associated with varying probabilities of fainting during the epidemic.

An even more fundamental point to be made on the basis of this analysis is that the role of social ties with affected cases is different depending on whether we are trying to understand *how a woman gets sick* or *how she comes to the attention of the medical authorities*. Having ties with any other affected case, whatever the order of reporting to the doctor, tends to be associated with getting sick. But having ties to a case that has already had medical attention tends to be associated with seeking such attention before fainting. We saw in Chapter 6 that the sequence of affected cases did not seem relevant to the interpersonal influence process. In the present analysis