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# LA THÈSE A ÉTÉ MICROFILMÉE TELLE QUE NOUS L'AVONS REÇUE

# Psychological Investigation of Genital Herpes Recurrence: Prospective Assessment and Cognitive-Behavioral Intervention

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# ABSTRACT

Psychological Investigation of Genital Herpes Recurrence: Prospective Assessment and Cognitive-Behavioral Intervention

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Retrospective studies suggest that anxiety and/or depressed mood are associated with disease recurrence in genital herpes patients. The purposes of the present study were to 1) investigate the efficacy of two types of group therapy to relieve psychological distress, modify coping strategies and reduce recurrence rate, 2) determine the background and psychological factors important in explaining the variance in distress, negative attitude about herpes and recurrence rate, 3) investigate the possibility that changes in anxiety, mood or maladaptive coping strategies could precipitate recurrences, and 4) determine the relationship between coping strategies and each of distress, recurrence rate and attitude about herpes. Sixteen subjects with genital herpes received five weeks of either cognitive restructuring or structured discussion group therapy. At baseline, post-treatment and at three months follow-up, subjects were administered measures of attitude about herpes, coping strategies, psychological distress, loneliness and health locus of control. Subjects also made daily reports during the five weeks of treatment regarding their symptoms, mood, level of

anxiety and thoughts about herpes. Neither therapy produced the expected reductions in distress or loneliness. Cognitive restructuring, however, was associated with reduced frequency of disease recurrence. Lower recurrence rates were also associated with avoidant coping, and higher rates were associated with a more negative attitude about the disease and loneliness, which itself was directly related to psychological distress. A major finding was that recurrences were preceded by a higher level of anxiety than was found subsequent to an outbreak. These results provide additional support for the proposal that psychological factors influence health status. The positive relationships found between anxiety and lesion onset and between loneliness and recurrence rate, together with previous evidence that loneliness is negatively related to immune functioning suggest the value of simultaneous examination of psychological factors, recurrences and immunological functioning.

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Reports of the incidence of genital herpes simplex infection vary, but there is concensus that the number of new cases is rapidly increasing, making the disease a considerable public health concern. The Centers for Disease Control (1982) report that in the United States, patient consultation for genital herpes has increased from 3.4 per 100,000 in 1960 to 29.7 per 100,000 in 1979. In addition, they estimate that as many as twenty million people in the United States suffer from genital herpesvirus infection. In fact, genital herpes has been found to be the most frequently occurring sexually transmitted disease in one urban university student population (Sumaya, Marx & Ullis, 1980). Although Canadian statistics are unavailable, it is believed that they do not differ significantly from those generated from sources in the United States (Sacks, 1983).

The Nature of Primary Genital Herpesvirus Infection

Primary infection refers to the disease occurence in individuals who have never before experienced a herpes simplex virus (HSV) infection. Between 10 and 15% of primary genital HSV infections are caused by herpes simplex virus type 1 (HSV-1) which, more typically, is responsible for HSV infections above the waist. The remaining 85 to 90% of genital infections are caused by herpes simplex virus type 2 (HSV-2; Corey, Adams, Brown, & Holmes, 1983; Reeves, Corey, Adams, Vontver & Holmes, 1981).

Corey et al. (1983) found that primary HSV-2 infections are characterized by systemic symptoms, such as low-grade fever, headache and malaise. Predominant localized symptoms include pain, itching, dysuria, tender inguinal adenopathy and urethral or vaginal discharge. Generally, lesions progress from areas of redness and tenderness, to vesicles which rupture, produce painful ulcers, scab and finally heal without scarring (Baker, 1983). The mean number of lesions for primary episodes is 24.3 and 15.5 in patients with HSV-1 and HSV-2 infection respectively, and the mean duration of lesions is 22.7 and 18.6 days with HSV-1 and HSV-2 infection respectively (Corey et al., 1983).

The Nature of Recurrences

After primary genital infection, it is hypothesized that herpesvirus remains latent and migrates into the dorsal root ganglion. Two theories have been proposed to explain the phenomenon of recurrent infection. According to the "ganglion theory", when the latent virus is activated through alteration of the host immune response or through specific stimulation, such as ultraviolet light, it migrates down the axons and produces lesions in the skin supplied by the sensory neuron. Alternatively, the "skin trigger theory" proposes that HSV is produced continuously in the ganglion, migrates to the skin via the nerve every few days where microfoci of infected epidermal

cells develop. Usually, these microfoci are eliminated by immune mechanisms, but occasionally, changes in the skin allow them to grow into visible lesions (Hill & Blyth, 1976).

There is considerable variability in the clinical manifestations of recurrent herpesvirus infections. In general, however, recurrences are less severe than primary infections (Corey et al., 1983; Knox, Corey, Blough & Lerner, 1982). Fifty percent of patients with recurrent disease experience a prodrome consisting of such symptoms as paresthesia, dysethesia or pain radiating into the buttocks and hips. Vesicle formation at new genital sites is common, however lesions tend to be smaller than with primary infections and last only a mean of 10.6 days in women and 9.3 days in men (Corey et al., 1983).

Recurrences tend to occur more frequently after primary infection with HSV-2 than with HSV-1 (Reeves et al., 1981). Corey and his collegues (1983) found that recurrent episodes were reported by 55% of patients after primary HSV-1 infection and 88% of patients following primary HSV-2 infection. The mean rate of recurrence was 1.08 per year after primary HSV-1 infection, and 3.6 per year in patients with primary HSV-2 infections. A study of self-selected, high socioeconomic status genital herpesvirus patients (Knox et al., 1982) found that approximately 68% reported having 5

or more recurrences per year. Twenty-four percent reported monthly recurrent episodes.

The disease is most contagious during primary and recurrent infectious episodes, however, asymptomatic virus shedding has been found in up to 10% of patients (Adam, 1982). This means that an individual with genital herpes can never be certain that s/he is not contagious.

Possible Medical Complications and Sequelae

Severe complications accompanying genital herpesvirus infections are rare, but they include aseptic meningitis (Corey, Adams, Brown & Holmes, 1983) and the spreading of the disease through auto-innoculation (Nahmias & Roizman, 1973; Sacks, 1983). Furthermore, spontaneous abortion and premature delivery in pregnant women with genital herpes have been reported (Nahmias et al., 1971; Whitley, Nahmias, Visintine, Flemming & Alford, 1980), although these findings are now being challenged (Corey et al., 1983).

Potentially more alarming to genital herpesvirus patients have been consistent reports of the infection being transmitted to newborns. The findings indicate such transmission in approximately 40 to 60% of all infants delivered vaginally when primary genital herpes is present at term and five percent when recurrent disease is present (Nahmias & Visintine, 1976).

Fortunately, the risk of neonatal infection has been substantially reduced through careful management of pregnant women with a history of genital herpes (Harger, Pazin, Armstrong, Breinig & Ho, 1982).

Also potentially alarming is the finding that the incidence of cervical cancer is higher in women with genital herpes than in women who have never had the disease (Rapp & Reed, 1976; Rawls, Tompkins & Melnick, 1969). Again, proper management can substantially reduce the risk of cancer (Sacks, 1984). In short, although serious complications can accompany HSV infection, there is little cause for concern on the part of an individual with the disease, as they are either rare or can be controlled.

Medical Treatment of Genital Herpes

Numerous medical therapies have been investigated for the treatment of genital herpesvirus infections (Corey & Holmes, 1983), but most have been found to be ineffective or of questionable value. That is, either controlled trials have not been used to test treatment effectiveness or positive findings have not been replicated. There are, however, two exceptions to the preceding conclusion. First, exogenous administration of interferon has been found to decrease the frequency of reactivation of oral-labial herpes after surgical manipulation of the trigeminal ganglia (Pazin et al., 1978). At present this substance is being evaluated for the treatment

of recurrent genital herpesvirus infection in immunocompetent and immuno-compromised patients (Corey et al., 1983).

Second, acyclovir is perhaps the most promising of all treatments in that both intravenous and oral preparations have been found to be effective in the control of the disease (Corey et al., 1982; Corey, Benedetti & Critchlow, 1982; Portnoy, 1984). Even in this case, however, Guinan (1985) has suggested two drawbacks to use of the medication. Of primary concern is the lack of knowledge regarding the long-term side effects of oral acyclovir in humans. In addition, prolonged suppressive therapy with acyclovir may result in the emergence of strains resistant to this medication. In summary, little medical treatment is presently available for genital herpes and the best remedy may have associated risks.

Possible Precipitating Factors in Recurrence

A relationship has been found between HSV recurrences and certain types of physical stimulation or stress, such as onset of the menses, pregnancy, fever, sunlight, various diseases, local trauma and sexual intercourse (Baker, 1983; Langston, 1983). Other factors often cited as possibly influencing recurrences are wind, heat, fatigue and wearing underwear or pants too tightly (Burt, 1979; Raab & Lorincz, 1981). Recurrence is frequent in conditions of immunosuppression such as lympho-

proliferative and myeloproliferative disorders and hematologic malignancies (Aston, Cohen & Spindler, 1972; Muller, Hermann & Winklemann, 1972).

What has been referred to in vague terms as "emotional stress" also has been implicated as a precipitating factor (Guinan, MacCalman, Kern, Overall & Spruance, 1981; Adam, 1982). For example, a survey of the membership of HELP, an association for people with genital herpes, has found that 83% of respondents cited emotional stress as a factor in their recurrences (American Social Health Association, 1981). Unfortunately, most reports on the relationship between recurrences and emotional or psychological factors have been anecdotal rather than investigative (Blank & Brody, 1950; Schneck, 1947).

There are six studies that are exceptions to the general anecdotal nature of reports dealing with psychological aspects of the disease. One of the most recent is a study of individuals with herpes labialis (Schmidt, Zyzanski, Ellner, Kumar & Arno, 1985) in which it was found that daily hassles, stressful life events and state anxiety were all greater in the week prior to a recurrence than during a dormant period. No significant changes were noted between the two periods in depression, level of social support, trait coping ability or type A behavior. While these results suggest that stress and anxiety play an important role in precipitating herpes virus

recurrences, participant reports were retrospective in nature and, therefore, subject to recall biases.

The second quantitative study was conducted by Katcher, Brightman, Luborsky and Ship (1973). They asked two classes of nursing students to report on their social assets (e.g., education, occupation and activity in social groups) and to report their "typical" mood; that is, "how they usually feel". The results indicated that the frequency of recurrent herpes labialis during the subsequent one year period was positively correlated with the ratings of unhappiness and negatively correlated with social assets.

A later study by Luborsky, Mintz, Brightman & Katcher (1976) examined two groups of eight student nurses who had positive HSV antibody titers. Every day for three months, all subjects were checked for lesions and reported mood and symptoms of herpes labialis. Data were collected during a different three-month period for each group. A systematic relationship was found between mood factors and the onset of herpes labialis recurrence during the first period of data collection, but not in the second, with the combined results of the two groups showing no systematic relationship.

The difference in findings reported by Luborsky et al. (1976) and Katcher et al. (1973) may be accounted for by the difference in the methodology for reporting mood states. The earlier study was retrospective

in that subjects were asked to estimate their typical mood, while subjects in the later study were asked for concurrent mood ratings. Although mood shifts are anecdotally popular explanations of recurrences, they may only occasionally result in a recurrence, while the important or overriding factor may be the general or typical mood state. In other words, chronic rather than acute mood may be the important factor. Alternatively, or in addition, the difference may be due to a greater potential for recall inaccuracies or biases with the retrospective reports of the earlier study.

In another recent study (Goldmeier & Johnson, 1982), subjects were administered the General Health Questionnaire at the time of their initial genital herpes infection and were monitored by mail for recurrences at 14 and 28 weeks afterward. The findings indicated that the recurrence rate for genital HSV infection was significantly lower in so-called normals than in potential psychiatric cases (identified by the General Health Questionnaire) which involved conditions such as generalized anxiety and obsessionality. Although the study has methodological limitations that include lack of medical confirmation of lesions and reliance on retrospective reports, it is of interest to consider the authors' speculation that these psychological conditions may cause increased autonomic arousal, which in turn encourages reactivation of the latent virus. They also suggest that either chemical or

psychological treatments aimed at modifying the autonomic sympathetic response may be beneficial in reducing recurrence rates.

Taylor (1978) presents some suggestive evidence that stress, as measured by life change events, is correlated with the frequency of recurrence of genital herpes in women. The following five groups were studied: (a) women with a high recurrence rate for genital herpes (four or more episodes in the previous year), (b) women with a low recurrence rate (fewer than four episodes in the previous year), (c) women with chronic vaginitis, (d) women with both chronic vaginitis and genital herpes (recurrence rate unspecified), and (e) normal controls. All subjects were given a structured interview and questionnaires to assess recent stressful life change events, attitudes about genital herpes, demographic information and sexual functioning. All information was retrospective. There was no overall significant difference in stressful life changes as indicated by analysis applied to the five groups. A planned comparison between the high and low frequency genital herpes subjects, however, indicated that the high recurrence subjects reported a greater number of stressful life events during the preceding year. This suggests a relationship between stress and recurrence rate, although the causal connection between the two is unclear. In addition, it is possible that a recall bias existed such that sufferers who

recalled a frequent number of recurrent episodes also recalled a larger number of life change events.

A more rigorously controlled study by Rasmussen, Marsh and Brill (1957) used an animal model to investigate herpesvirus infection. In their first experiment, rats in the experimental condition were initially subjected to a stress condition of avoidance learning using shock. This training was administered for a period of six hours per day for either 1, 14 or 28 days, after which they were innoculated with the HF strain of herpes simplex virus. Control rats were subjected to the same living and handling conditions and to the presentation of all stimuli used in avoidance learning, except the shock. Significantly higher mortality rates were found in rats stressed for 28 days than in control rats, suggesting that stress predisposes an animal to suffer more severely from herpes simplex virus. The results were replicated in a second experiment in which the stress procedure was changed to physical restraint for six hours per day. These animal studies, as compared to the human studies previously reviewed, provide stronger evidence for the hypothesis that stress can augment symptoms suffered from HSV infection. The limitation remains, however, that applicability of these findings to humans can not simply be assumed.

Like this animal model, studies investigating the relationship between

psychological factors and the frequency of illness episodes in general, provide valuable but indirect evidence for the hypothesized effect of psychological stress on the frequency and severity of herpesvirus recurrence. For example, students with a low number of stressful life events have been found to report a low general illness rate, while students with a high number of life events report high numbers of illness episodes (Marx, Garrity & Bowers, 1975). Boyce et al. (1977) examined 58 children for respiratory illness each weekday during a one-year period. Those from families with a high degree of life-change stress during the study had more severe and enduring respiratory illnesses than did other children. More convincing evidence comes from a study by Canter (1972) in which male subjects were exposed to an aerosol containing an infectious agent and then asked to record symptomatology. Subjects classified as psychologically vulnerable on the basis of several inventories had a significantly greater number of symptoms than did nonvulnerables. These studies suggest that psychologically distressed individuals and those who are subjected to higher degree of life-change stresses are more susceptible to experiencing illness symptoms (although, of course, they may simply be more inclined to report them).

Possible Mechanism Linking Psychological Factors and Frequency of Recurrence

It has been proposed that psychological stress may result in increased frequency of herpesvirus recurrences through an immunosuppressive effect (e.g., Schmidt et al., 1985). As previously stated, immunosuppression can potentiate the chronicity of infection (Aston, Cohen & Spindler, 1972; Muller, Hermann & Winklemann, 1972) and inadequate cell-mediated immunity has been found to substantially prolong the course of the disease (Gange, de Bats, Park, Bradstreet & Rhodes, 1975; Kaufman, Gardner, Rawls, Dixon & Young, 1973). Psychological factors known to affect immune mechanisms include bereavement, which has been found to be associated with depressed lymphocyte function (Bartrop, Lazarus, Luckhurst, Kiloh & Penny, 1977) and loneliness (Kiecolt-Glaser, Speicher, Holliday & Glaser, 1984), which has been found to be correlated with lower B-lymphocyte transformation responses to mitogenic stimulation by Epstein-Barr virus (a member of the herpes family of viruses). A relationship has also been found between a decline in natural killer activity and the combination of high levels of stress and poor coping strategies (Locke, Hurst, Heisel, Kraus, & Williams, 1978). In short, although the direction of causality is unclear, negative mood states frequently have been associated with impaired immune functioning. A more detailed

review of the relationships among psychological factors, the immune system and suseptibility to infectious disease is provided by Jemmott and Locke (1984).

Although available evidence provides general support for the hypothesis that psychological stress can reduce immune responses and result in a recurrence of HSV infection, recurrence, as an unpleasant event, may itself be a psychological stress leading to further depression of immunological responses.

Psychological Adjustment in Individuals with Genital Herpes

It is not surprising that at least some individuals with the disease experience a problematic psychological adjustment to herpes. Press reports have both created alarm with regard to medical complications and reinforced an image of stigma (e.g., Wallis, Redman & Thompson, 1982). In addition, genital herpes has no cure, is at least a nuisance in its recurrence, and is communicable, sometimes at unpredictable times when lesions are not present. Although, at present, there are no prospective investigations of the psychological sequelae of genital herpes, one survey report, one anecdotal report and a study of the factors which correlate with adjustment in individuals with genital herpes are available.

The 1981 survey conducted by the American Social Health Association

(ASHA) found that over 53% of respondents reported conscious avoidance of potentially intimate situations because of herpes. Nearly 10% reported celibacy because of the disease. Approximately 70% reported "a definite sense of isolation" and 84% attributed periodic episodes of depression to the disease. Although the survey respondents may have comprised a biased sample (e.g., the most distressed individuals), these findings suggest that having genital herpes can interfere with interpersonal relations and a sense of well-being.

Drob's (1984a) anecdotal report based on his experience as a psychologist treating clients with genital herpes is consistent with the findings of the ASHA survey. He observed difficulties in five different areas of life: sexual functioning, interpersonal relations, emotional life, self-concept and work/school performance. His clients reported feeling less sexually desirable, experiencing less sexual pleasure, feeling conflicted over the issue of disclosure to potential sexual partners and fearing rejection because of the disease. Drob observed that the legitimate fear of transmitting the disease sexually and the more irrational fear of transmitting it through other less intimate means (e.g., toilet seats) contribute to a tendency toward social isolation. Drob also noted that some of his clients decided to become celibate for long periods of time as a result of the disease.

Drob (1984a) has reported that the stigma attached to genital herpes is responsible for many clients not informing friends and family about it. The result of this reaction has been that clients have cut themselves off from the support they otherwise may have obtained. He also has observed that common reactions include depression, obsessive worry about medical sequelae, and feelings of guilt and anger over having contracted a sexually transmitted disease. Many clients report a lowering of self-esteem because of the disease, stating that they feel ugly, damaged, inferior or contaminated. Although it is exceptional, painful physical symptoms and obsessive rumination about the illness can sometimes interfere with work or school performance. Drob states that for women, the correlation of genital herpesvirus infection with an increased risk of cervical cancer and the worry of neonatal complications can create an added emotional burden, despite the low probability of these events occurring.

Drob's observations have been valuable as preliminary information in understanding the psychological difficulties sometimes accompanying the contraction of genital herpes. He has, however, presented his observations as psychological consequences of the disease without providing data to support his belief that (a) they are consequences of the disease and not merely correlates, or (b) that they occur with greater frequency in

individuals with genital herpes than in the general population. Furthermore, there is no evidence that these factors are generalizable beyond individuals who seek help for the disease. Future research should clarify these issues.

There has been one study to date that has investigated the concurrent factors associated with adjustment in individuals with genital herpes. Manne and Sandler (1984) administered measures of social support, coping styles (measured by the Ways of Coping Checklist; Folkman & Lazarus, 1980), stressful thoughts about the disease (measure unspecified), disease management strategies, depression, individual concern about the disease, self-esteem and sexual functioning. They found a significant positive correlation between social support and both self-esteem and overall adjustment. Stressful thoughts about having herpes and the coping method of wishful thinking were both positively correlated with depression and concern about herpes, and were negatively correlated with self-esteem and sexual functioning. Regression analysis indicated that stressful thoughts accounted for 38% of the variance in the overall level of adjustment and that wishful thinking and social support accounted for an additional 5% each. In contrast, the combination of the length of time since the initial genital herpes infection and the severity of infection accounted for only 1.8% of the variance in overall adjustment.

Although this study cannot provide unambiguous evidence about the psychological sequelae of contracting genital herpes, it does indicate that individuals who are not adjusting well have especially negative attitudes about the disease, seek relief through fantasies (i.e., that they did not really have the disease) and lack social support. In addition, these factors seem to be more important to adjustment than experience with or severity of the disease. This set of findings is consistent with the anecdotal accounts reported by Drob (1984a) concerning a feeling of isolation and negative thoughts about the disease or its perceived effect on clients' lives.

The report by Drob (1984a), the survey by the ASHA (1981) and the study by Manne and Sandler (1984) all indicate that at least some individuals with genital herpes experience difficulties adjusting to the fact that they have contracted the disease. These reports suggest that factors contributing to maladjustment include (a) excessively negative thoughts about the disease, (b) use of wish-fulfilling fantasy as a coping strategy, (c) social isolation and lowered self-esteem due to a perceived social stigma, (d) concern, sometimes irrational, about transmitting the disease to others, (e) excessive fear of medical sequelae or complications as a result of the disease, and (f) the often unfounded belief that patterns of personal interaction and sexual functioning must be altered drastically or eliminated altogether.

Psychological Treatment

There are as yet no controlled investigations of psychological treatments for the distress experienced by individuals suffering from genital herpes. The one descriptive report of therapy with these individuals (Drob, 1984a) was based on the belief that the recurrence rate of the disease is directly affected by psychological variables and that psychotherapy and/or stress management can reduce it. This view is supported by the findings of the American Social Health Association survey (1981) that 83% of those who responded cited stress as a factor in their recurrences. In addition, respondents reported that learning to manage stress was the preferred treatment for the control of recurrences.

Drob (1984a) provided counseling and information directed toward helping clients acknowledge and accept a loss of sexual freedom, but to confine this loss to some areas of sexual functioning and only during contagious periods. Drob also employed the techniques of cognitive therapy (cf., Beck, 1972) and rational emotive therapy (cf., Ellis, 1962) to challenge clients' distorted belief systems. He considered these methods to be particularly useful because, according to him, negative affect experienced by herpes sufferers is due to faulty cognitions about themselves or about the disease. Examples he has cited include individuals believing that they are

"contemptible" or "unmarryable". Drob proposed that disputing these beliefs would lead to improvements in the ability to accept limitations without exaggerating, overgeneralizing or engaging in some other form of distortion. Assertiveness training was also used to help individuals effectively and honestly inform potential sex partners, friends, family, etc. about their disease. Drob proposed that a group format for therapy was especially useful for herpes clients because (a) it broke the feelings of isolation many sufferers reported, (b) it provided a forum for the exchange of information and discussion of ethical issues, (c) it provided an opportunity for exposure to more adaptive role-models, and (d) it allowed members to challenge each other's various forms of denial about themselves and the disease.

The Present Study

There were four primary purposes of the present study. The first was to investigate the efficacy of two forms of psychological group therapy to (a) reduce the sense of social isolation, emotional distress and negative attitude reported to accompany contraction of the disease, (b) modify coping strategies, and (c) reduce the rate of recurrence of genital herpes.

The two forms of therapy investigated in the study were a structured discussion (SD) group and a cognitive restructuring (CR) group. Both methods provided the opportunity to reduce the isolation many of these

individuals report, to provide support among members, and to discuss and challenge irrational ideas. The SD group provided only this opportunity, while the CR group also included the introduction of systematic cognitive restructuring (Ellis, 1962), role-playing (e.g., Goldfried & Davidson, 1976) and homework assignments into the therapy.

Cognitive restructuring was chosen as one of the therapies because of the consistent reports in the literature that many genital herpes sufferers hold exaggerated or unfounded fears and negative beliefs about themselves and the disease and that this kind of negative thinking correlates with poorer adjustment. Challenging these irrational beliefs and fears was intended as a way of bringing individuals' emotional and cognitive reactions into a more realistic perspective. Furthermore, cognitive restructuring has been found to be effective with other medically related problems such as headache (Blanchard & Andrasik, 1982) and irritable bowel syndrome (Latimer, 1981). Ellis' (1962) model for cognitive restructuring was chosen specifically for its high degree of structure and its ease of communication. In addition, this approach has been used with apparent success with genital herpes clients in the past (Drob, 1984a).

The structured discussion group was chosen as the control intervention in this study to determine the advantage, if any, of cognitive

restructuring over provision of the opportunity to share a common experience, discuss common difficulties and thereby alter feelings of isolation. Both groups were expected to improve during the course of the study in terms of feelings of loneliness or social isolation. In addition, members of the cognitive restructuring group were expected (a) to improve with regard to levels of distress and attitude about the disease, (b) to feel more personal responsiblity for their health status, (c) to demonstrate a more cognitive method of coping, (d) to be more focused on the problem of the disease in their coping efforts, and (e) to experience a reduction in recurrence rate.

The second purpose of the study was to determine the background and psychological factors important in explaining the variance in distress, negative attitude about herpes and recurrence rate among genital herpes sufferers. This goal represented an attempt to replicate and extend the findings of Manne and Sandler (1984) concerning positive associations between social support and adjustment and between negative thoughts about the disease and both depression and lack of adjustment, and of Drob (1984a) concerning a positive association between distress and both worry and a negative attitude about herpes. In addition, this goal represented an attempt to address the conflicting findings of Schmidt et al. (1985) that

depression is not related to recurrence rate, and of Katcher et al. that unhappiness is positively correlated with recurrence frequency.

The third purpose of the study was to investigate the possibility that acute changes in mood and/or the presence of maladaptive coping styles can precipitate herpes recurrence. To this end, mood, anxiety level and coping strategy were monitored daily and their values before and after a recurrence were compared. The prospective nature of these data constituted an improvement over most previous studies (e.g., Schmidt et al., 1985; Taylor, 1978). As an extension of this inquiry, the association of recurrence rate to chronic depression, anxiety and obsession-compulsion also was investigated. This was undertaken in an attempt to replicate and extend the findings of Katcher et al.(1973) and Goldmeir and Johnson (1982).

The fourth purpose of the study was to determine whether certain coping strategies are associated with less psychological distress, a lower recurrence rate and/or a more positive attitude about herpes. Evidence of this type was sought as an initial step toward incorporation of specific coping strategies into treatment.

## Method

### Subjects

Subjects were recruited by way of referral from health professionals

connected with (a) a community health service, (b) sexually transmitted disease clinics at three major hospitals, and (c) two university student health services. An additional source of subject recruitment was a series of advertisements presented in newspapers, on the radio and on posters displayed on two major university campuses (Appendicies A and B). A total of 34 individuals who reported a diagnosis of genital herpes that was confirmed by viral analysis inquired about the group treatment. Eight elected not to participate for reasons that included time conflicts and concern about self-disclosure in a group. The remaining 22 individuals completed an initial questionnaire battery.

During the course of the study, no subjects received experimental oral acyclovir or any other medication known to affect the recurrence rate of the disease. None had ever been hospitalized for mental health reasons, but four subjects, two in each treatment group, had been in individual therapy within the one-year period prior to the beginning of the study. Of these four, three continued in individual therapy during at least portions of the study. One subject discontinued participation in the study before it began and five others discontinued prior to the end of all therapy sessions.

## Group Assignment

An attempt was made to assure the similarity of groups with respect

to gender, individual duration of the disease and stability of sexual relationships. These variables were considered to be possible confounding factors on the basis of evidence for gender differences in the manifestation of genital herpes (Corey et al., 1983), and speculation that having more experience with the disease and being accepted sexually by another person could have an effect on attitude about and adjustment to herpes (Drob, 1984a).

Subjects were divided into four categories within each sex: (a) those who had a primary infection within the preceding four-month period and who were involved in what they considered to be a steady sexual relationship, (b) those who had a primary infection that occurred more than four months earlier and who were involved in a steady sexual relationship, (c) those who had a primary infection within the preceding four-month period and who were not involved in a steady sexual relationship, and (d) those who had a primary infection that occurred more than four months earlier and who were not involved in a steady sexual relationship. Within each category and each sex, subjects were randomly assigned to either a cognitive restructuring (CR) group or a structured discussion (SD) group.

Random assignment was violated for four subjects who were unable to attend sessions on the evening for the group to which they originally had

been assigned. In addition, one subject was added to the CR group after random assignment had been completed. This subject replaced one who withdrew from the study before group meetings began. All four treatment cohorts were initially assigned one male subject. One of these subjects in a CR group discontinued participation in the study, resulting in a cohort composed of males only.

## Procedure and Measures

Treatment sessions were run in concurrent sets during two different time periods. In the first set, there were six subjects in the CR group and five in the SD group. No subjects in this set dropped out after the study began. In the second set, there were five subjects in both treatments. During the course of meetings, three subjects dropped out of the CR group and two dropped out of the SD group. In all, eight subjects in both treatments completed the study. All sessions and assessments were conducted by the same clinical psychology graduate student (L.M.).

### Initial Contact and Consent

All individuals interested in participation in the group treatment met alone with the group leader for one session. Each received a description of the format of the group and discussed their goals of treatment in order to assure that their expectations were congruent with the therapy being

offered. In addition, the goals of the study were explained and individual consent for participation was sought. Subjects read and signed a consent form (Appendix C) that provided assurance of confidentiality for all information obtained in the study and explained the conditions of participation and its voluntary nature.

Baseline Assessment

Baseline assessment began with the administration of a form for demographic and background information (Appendix D). The Background Information Form was used to gather information regarding subjects' age, marital status, education, previous involvement in therapy, medication use, length of time since primary infection, knowledge as to who transmitted herpes to them, prior knowledge that their contact had the disease, contraceptive method, number of current and past sexual partners, and level of and satisfaction with social support.

Next, a questionnaire battery (Appendix E) was administered. This battery was comprised of the following measures:

Genital Herpes Questionnaire (GHQ). This is a 25-item measure of subjects' thoughts about genital herpes as it affects them in five areas of life: sexual functioning, interpersonal relations, emotional functioning, self-concept and work/school (Drob, 1984b). Higher scores indicate a more

positive attitude about herpes. Drob (1984a) has used this measure in his clinical assessments, but he has not reported any data gathered from its use, therefore, reliability and validity information are not available.

Ways of Coping Checklist - Revised (WOC-R). This measure is a 66-item checklist containing a wide variety of strategies people use to deal with problematic situations (Folkman & Lazarus, 1985). Subjects are asked to indicate on a four-point Likert scale, the extent to which they use each of the strategies. Nine separeate scales have been derived from the checklist (Folkman & Lazarus, in press). The following six scales have been empirically derived using factor analysis: problem focused coping, wishful thinking, detachment, seeking social support and focusing on the positive. Three additional scales have been derived on a theoretical basis: self-blame, tension-reduction and keep to self. Subjects were asked to complete the questionnaire in accordance with how they deal with recurrences of genital herpes.

Coping Scale - Genital Herpes Version (CS-H). This 19-item measure is a variation of the coping scale used by Kaloupek, White and Wong (1984), which they derived from the Cope Scale reported by Billings and Moos (1981). Only questions 9 and 10 of the Kaloupek et al. scale needed to be altered in order to apply to the situation of having herpes. The following

factors have been derived from this measure using principal components analysis (Kaloupek et al., 1984): worry, suppression, behavioral action, rational cognition and denial. Subjects were asked to complete this scale in accordance with how they deal with recurrences of genital herpes. This scale was included in addition to the WOC-R to determine whether similar information could be derived from a less time-consuming measure.

Hopkins Symptom Checklist (HSCL). The HSCL is a 60-item symptom measure that reflects psychological distress. It has shown good reliability and validity and has been used primarily to assess psychotherapy outcome with psychiatric outpatients (Derogatis, Lipman, Rickels, Uhlenhuth & Covi, 1974). The following symptom factors measured by this instrument have been derived through factor analysis: somatization, obsession-compulsion, interpersonal sensitivity, depression and anxiety.

UCLA Loneliness Scale - Revised (LS-R). This scale is a 20-item measure of loneliness or social isolation (i.e., the degree to which an individual feels not understood and not part of a group of friends) which has been shown to have good concurrent and discriminant validity (Russell et al., 1980). It has been revised, using a university student population, to correct for problems in the areas of response bias, the influence of social desirability and discriminative independence from the similar concepts of self-esteem

and depression (Russell, Peplau & Cutrona, 1980). Higher scores on this measure indicate higher levels of loneliness.

Multidimensional Health Locus of Control Scale (HLC). This measure is an 18-item reliable and valid measure of beliefs regarding three possible attributions for health-related behaviors: internality, powerful others and chance (Wallston, Wallston & DeVellis, 1978). It is a revised version of the Health Locus of Control Scale (Wallston, Wallston, Kaplan & Maides, 1976). The two equivalent forms of this scale were administered.

Information Session

The initial group session provided information about the nature of the herpes simplex virus, the nature and symptoms of both primary and recurrent infection, modes of transmission of the virus to others, medical treatment, complications and sequelae. This session was identical for all CR and SD groups in order to assure that all subjects were aware of the symptoms of the disease and potentially were able to apply the same criteria to assess the frequency of their recurrences. At the end of the session, all subjects were asked to estimate the frequency and duration of their recurrences during the previous one year, four month and five week periods.

Daily Reporting

Beginning the day after the information session and extending for the

duration of therapy, all subjects were asked to report daily their symptoms of genital herpes, their mood and their level of anxiety the preceding day, and their current thoughts about having herpes. They were provided with a Daily Reporting Form (Appendix F) that served as a guide for their reports, which were phoned in to and recorded by an automatic telephone answering machine. During the first week of daily reporting, subjects were prompted by a telephone call from the therapist if they had failed to make a report that morning. During subsequent weeks, subjects were prompted by telephone if they had failed to make a report two mornings in succession. The direction of anxiety scores was reversed from that on the Daily Report Form for all analyses of mood and anxiety data in order that higher scores for both mood and anxiety would indicate higher levels of distress.

Therapy Sessions

Following the information session, groups received five weekly sessions of either cognitive restructuring (CR) or structured discussion (SD). Both therapy groups involved the same amount of contact with the therapist and the topic of discussion each week was predetermined and was the same for both groups. The topics were (a) subjects' initial reactions to having contracted the disease and any changes in these initial reactions over time, (b) difficulties encountered informing friends and family members about

having the disease, (c) problems involved in telling a potential sexual partner about the presence of the disease, (d) issues arising from sexual abstinence during recurrences (e.g., frustration experienced by them or their partners), and (e) how herpes has altered their views and behavior. The final session for both groups included (a) a review and assessment of treatment goals, (b) preparation for potential setbacks in stressful situations or return of feelings of self-blame, bitterness, etc., and (c) discussion of plans to accomplish any remaining goals. A more detailed description of the protocol for both groups during the five week treatment period is presented in the following sections. Further description of the CR group therapy is also provided in Appendix G.

Cognitive Restructuring Group. Irrational thoughts were identified through discussion of each topic, and role-playing was used to identify key aspects of difficult interpersonal situations. Each irrational thought and each situation was then discussed in terms of Ellis' (1962) model for cognitive restructuring. Specifically, subjects were instructed that their belief system, not the problematic situation, is primarily responsible for the emotional consequences they may experience. They were taught to recognize beliefs that are not reality-based (i.e., irrational beliefs), especially those that lead to negative mood states. These irrational beliefs included ones about

themselves (e.g., "I am sexually undesirable now that I have herpes"), about the situation (e.g., "I won't pass on herpes to this person because the only symptom I have now is itching") and about the potential reaction of other people in the situation (e.g., "No matter what I do, I'm going to be rejected by this person if I tell them I have herpes"). CR subjects were then taught to dispute or challenge the authenticity of irrational thoughts by questioning the evidence for them and by replacing them with thoughts more consistent with available evidence (i.e., rational thoughts). Subjects were also taught that replacing irrational thoughts with rational ones would lead to more positive affective, behavioral and cognitive outcomes. After a situation was analysed in terms of Ellis' model, it was again role-played with irrational beliefs replaced by rational ones and negative emotional consequences replaced with more positive outcomes. Thus, there was opportunity to practice new responses derived from the model.

Weekly homework was assigned in order to provide additional practice with Ellis' model. The homework involved recording affectively difficult situations, accompanying irrational beliefs, consequences, disputes, replacement rational beliefs and new effects (see Appendix H). These situations were not necessarily related to having herpes and records were not discussed in the group meetings.

Structured Discussion Group. The primary function of the SD group was to provide group members with the opportunity to discuss their feelings and thoughts related to their experience with genital herpes. The function of the group leader was to assure that the discussion remained on topic and that all participants had an equal opportunity to express themselves. The primary differences relative to the CR group were: (a) no formal attempt was made to challenge irrational beliefs, (b) role-playing was not used, and (c) homework was not assigned.

Post-Therapy Assessment

The second assessment was conducted during an individual session within one week following the final therapy meeting. All subjects completed the same questionnaire battery which had been administered at baseline. In the case of the HLC, the alternate of the version administered at baseline was completed at post-therapy, with the order of administration of the two forms counterbalanced within group.

Weekly Reporting

Following the 35 days of daily recording, all subjects were asked to relate once per week for 12 weeks, their symptoms of genital herpes, mood, level of anxiety and thoughts about having herpes. Each account was to reflect the preceding week. Subjects were provided with a Weekly

Reporting Form (Appendix I) that served as a guide for their reports, which were recorded by the telephone answering machine that was used for the earlier daily reports.

Subjects sometimes had recurrences which lasted from one report to another, and these longer-lasting recurrences could not be distinguished from two separate recurrences on the basis of the reporting method. The potential inaccuracy in determining recurrence rate from these data led to a decision to not include them in the statistical analysis.

Follow-up Assessment

An individual session was held within one week following the final weekly report and subjects once again completed the questionnaire battery that had been administered at baseline and at post-therapy. In the case of the HLC, the same form administered at baseline was again administered. Subjects were asked to complete the questionnaires in terms of their experience since their last assessment. Finally, they were asked to estimate their recurrence rate during the preceding 12 weeks.

## RESULTS

### Therapy Dropouts

Comparison of the six therapy dropouts and the 16 subjects who completed the study was accomplished by means of a series of *t* tests

applied to background and questionnaire variables from the baseline assessment. The only significant difference found between the groups in terms of background information was in the number of recurrences experienced within the one-year period preceding the initial interview. Of the subjects who had genital herpes for at least one year, dropouts had significantly fewer recurrences ($M$= 3.0) than did subjects who completed the study ($M$= 11.5), $t(8) = 2.43$, $p < .05$. In terms of questionnaire variables, dropouts reported significantly more depression on the HSCL ($M$= 28.2 vs 21.9), $t(20) = 2.26$, $p < .05$, and more worry on the CS-H ($M$= 5.5 vs 4.0), $t(20) = 2.77$, $p < .05$.

Selection of Representative Background Variables

In order to reduce the number of dependent variables to a representative set, principal components analysis (unities on the diagonal; no iteration) with varimax rotation was performed on the background data supplied by the original 22 subjects. The principal components method was selected over other factoring methods due to its relative freedom from restrictive assumptions and the direct nature of the data transformation involved. Subjects' satisfaction with friends, family members, partners, doctors and community resources were not included in this analysis as these data were not available for the several subjects who did not discuss the topic

with other people. Determination of the factor solution was based on the eigenvalue-one criterion in combination with the Scree test (Catell, 1966). A cutoff of 0.50 (i.e., shared variance of 25% or more) was used for inclusion of a variable in a factor. This cutoff was chosen to insure that variables were well related to the factor in question (Comrey, 1973). Five factors were extracted and the loadings of variables on each of these factors, communalities, and the percent of variance accounted for by each factor are shown in Table 1. (A complete listing of the factor solution is provided in Appendix J).

The following 10 variables were chosen for use in subsequent analyses: age, sex, education, knowledge prior to intercourse that their partner had herpes, number of doctors and also number of friends talked with about the disease, number of months since first infection, current involvement in a sexual relationship, number of lifetime sexual partners, and involvement in psychological therapy within the last year. All variables were selected on the basis of their high loading on their respective factors and/or their assumed potential as an influence on subjects' recurrence rate, attitude about herpes and overall distress level. In particular, the variables sex and the number of physicians with whom the disease was discussed were included because of their similarity with variables used by Manne and

Table 1. Factor Loadings, Communalities ($h^2$) and Percent of Total Variance for Six Factor Principal Components Solution for Background Data

| | Factors | | | | | | |
|---|---|---|---|---|---|---|---|
| Variables | 1 | 2 | 3 | 4 | 5 | 6 | ($h^2$) |
| Months Since First Infection | .82 | | | | | | (.77) |
| Current Knowledge of Herpes Source[a] | .58 | | | | | | (.82) |
| Prior Knowledge of Herpes Source[a] | .82 | | | | | | (.77) |
| No. of Family Members Talked With Re Herpes | .80 | | | | | | (.78) |
| No. of MD's Talked With Re Herpes | .78 | | | | | | (.88) |
| No. of Lifetime Sexual Partners | | .79 | | | | | (.62) |
| No. of Current Sexual Partners | | .68 | | | | | (.84) |
| No. of Partners Talked With Re Herpes | | .75 | | | | | (.54) |
| Involved in a Sexual Relationship[a] | | | -.73 | | | | (.68) |
| In Psychological Therapy Last Year[a] | | | .73 | | | | (.79) |
| Marital Status[b] | | | .76 | | | | (.82) |
| Age | | | | -.88 | | | (.51) |
| Past Involvement in Therapy Groups[a] | | | | .73 | | | (.77) |
| Contraceptive Method[c] | | | | .58 | | | (.80) |

continued . . .

Table 1 continued

| Variables | Factors 1 | 2 | 3 | 4 | 5 | 6 | ($h^2$) |
|---|---|---|---|---|---|---|---|
| Years of Education | | | | | -.80 | | (.53) |
| Psychoactive Medication[a] | | | | | .60 | | (.47) |
| Used Community Resources[a] | | | | | .60 | -.54 | (.80) |
| Sex[d] | | | | | | -.56 | (.59) |
| No. of Friends Talked With Re Herpes | | | | | | .86 | (.89) |
| Percent of Variance | 20.2 | 16.9 | 13.6 | 11.6 | 9.2 | 6.3 | |

[a] 1- yes, 2-no
[b] 1- living together or married, 0- single, separated, divorced or widowed
[c] 0- none, 1- condom, diaphram, contraceptive foam or jelly, 2- oral contraception or IUD
[d] 1- female, 2- male

Sandler (1984). In addition, the variable current involvement in a sexual relationship was chosen rather than the variable marital status as being more germane to the question of sexual lifestyle.

## Selection of Representative Questionnaire Variables

The number of questionnaire variables was reduced to a representative set by way of the same analysis and theoretical considerations applied to the background data. Seven factors were extracted through the principal components analysis. The loadings of variables on each of these factors, communalities, and the percent of variance accounted for by each factor are shown in Table 2. (A complete listing of the factor solution is provided in Appendix K.)

The following 10 variables were selected for use in subsequent analyses: the total HSCL score, the total GHQ score, HLC internal control, WOC-R problem focus, the LS-R score, and each of the CS-H subscales (worry, suppression, behavioral action, rational cognition and denial). Total HSCL and GHQ scores were selected because the subscales for each, with the exception of GHQ-work/school, loaded highly on single factors that were representative of overall distress level and attitude about herpes, respectively. The HLC internal control score was selected as the locus of control index because of its unique loading on one factor. WOC-R problem

Table 2. Factor Loadings, Communalities ($h^2$) and Percent of Total Variance for Seven-Factor Principal Components Solution for Questionnaire Data

| | Factors | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Variable | 1 | 2 | 3 | 4 | 5 | 6 | 7 | ($h^2$) |
| GHQ self-concept | .89 | | | | | | | (.87) |
| GHQ sexual | .86 | | | | | | | (.78) |
| GHQ interpersonal | .84 | | | | | | | (.91) |
| GHQ emotional | .66 | | | | | | | (.86) |
| Loneliness Scale | -.58 | | | | .53 | | | (.81) |
| CS-H suppression | -.50 | | | | | | | (.58) |
| HSCL anxiety | | .85 | | | | | | (.88) |
| HSCL somatization | | .84 | | | | | | (.86) |
| HSCL obs-comp. | | .79 | | | | | | (.88) |
| HSCL depression | | .69 | | | | | | (.81) |
| HSCL sensitivity | | .58 | | | | | | (.84) |
| CS-H behavioral action | | | -.88 | | | | | (.88) |
| WOC-R keep to self | | | .68 | | | | | (.84) |
| WOC-R seek support | | | -.66 | | | | | (.78) |
| CS-H denial | | | .65 | | | | | (.78) |
| HLC control by powerful others | | | .60 | | | | | (.78) |
| WOC-R detached | | | .51 | | | | | (.72) |
| WOC-R problem focus | | | | .83 | | | | (.83) |
| WOC-R positive focus | | | | .76 | | | | (.86) |
| WOC-R reduce tension | | | | .71 | | | | (.85) |
| WOC-R self-blame | | | | .70 | | | | (.71) |
| GHQ work/school | | | | | -.75 | | | (.64) |
| CS-H cognition | | | | | .62 | | | (.83) |
| HLC control by chance | | | | | .53 | | | (.76) |
| CS-H worry | | | | | | .81 | | (.78) |
| WOC-R wishful | | | | | | .55 | | (.66) |
| HLC internal control | | | | | | | .88 | (.89) |
| Percent of Variance | 27.3 | 14.0 | 13.9 | 7.8 | 6.3 | 6.0 | 4.8 | |

focus was chosen because it loaded most highly on a factor composed of four of the seven WOC-R subscales. Loneliness was selected because of its previous relationship with reduced immune functioning (Kiecolt-Glazer, Speicher, Holliday & Glaser, 1984). Unlike the WOC-R subscales, each of the five CS-H subscales were selected because, for the most part, they loaded highly on separate factors and were apparently reflecting distinct types of coping styles.

Quantification and Categorization of Process Coping Data

In order to quantify process coping, daily reported thoughts for each subject were transcribed and then coded by three independent raters for method and for focus of coping. These ratings were accomplished according to definitions which were derived from Kaloupek et al. (1984), and were re-worded specifically for herpes (Appendices L and M). Each thought was classified as representative of either a cognitive, behavioral or avoidant method of coping, and as either problem focused, emotion focused or unfocused. A particular classification was adopted if at least two raters agreed. If there was complete disagreement, consensus was arrived at through discussion. A total of 560 subject responses were coded. There was complete agreement in 71% of the instances for method and 69% for focus categories. Two raters agreed in 27% of the instances for method and 30%

for focus. No initial agreement occurred in 2% of the instances for method and in 1% for focus.

In order to simplify the daily coping data, subjects were classified according to both their predominant method and predominant focus of coping over the 35 days of daily recording. With regard to method of coping, all subjects were classified as either predominantly avoidant or behavioral; no subjects were predominantly cognitive in their method of coping. As previous studies (e.g., Kaloupek et al., 1984) have shown avoidant and behavioral categories to be inversely related to a substantial degree, subjects were classified as either predominantly avoidant or non-avoidant for process coping analyses. With regard to focus of coping, changes in problem focus were of special interest because a main goal of CR therapy was to maintain the focus of coping on the problem, rather than on the emotional aspects of the disease or on other issues. For this reason, subjects were classified as either problem focused or non-problem focused for process coping analyses. The classification variables reflecting avoidant and problem focused categories were also used in regression analyses and in comparisons between assessment periods.

## Sample Characteristics

Mean age for the 16 principle subjects was 29.7 years (*SD*= 10.4),

mean number of years of education was 14.9 (*SD*= 2.4), mean number of lifetime sexual partners was 16.6 (*SD*= 19.0) and mean number of months since first infection was 16.4 (*SD*= 14.9). Three subjects were male. Nine subjects were involved in steady sexual relationships, while the remaining seven were not. Ten knew from whom they had contracted the disease, while the remaining six did not. The mean loneliness score at baseline was 39.4 (*SD*= 10.32). *T*-test analysis comparing this mean to the mean of 36.5 found in normal subjects (Russell et al., 1980)[1], indicates no significant difference between the groups ($p > .05$).

Comparison between the CR and SD groups was accomplished by means of a series of *t* tests applied to all background information and the 10 representative questionnaire variables. This series of analyses was performed without adjustment of the probability values, thereby providing a relatively liberal examination of the data. The only initial significant differences between the groups were found in the number of sexual partners with whom subjects had discussed the presence of herpes and in overall distress levels. SD group members reported discussion with significantly more partners than did CR group members (*M*= 1.9 vs 1.0), $t(14) = 2.20$, $p < .05$ and significantly lower levels of psychological distress on the HSCL than did CR group members (*M*= 70.4 vs 91.1), $t(14) = 2.95$, $p < .01$. The HSCL

data reported by Derogatis et al. (1974) were used to compare the present distress scores with normal, anxious and depressed groups.[2] *T*-test analyses indicated that the SD group reported significantly more distress than the normal group ($M$= 70.4 vs 51.04), $t(14) = 2.33$, $p < .05$, but significantly less distress than the anxious group ($M$= 70.4 vs 90.56), $t(14) = 2.43$, $p < .05$ and the depressed group ($M$= 70.4 vs 102.85), $t(14) = 3.90$, $p < .01$. The CR group was found to report significantly more distress than the normal group ($M$= 91.1 vs 51.04), $t(14) = 7.31$, $p < .05$, but there was no significant difference between the CR group and the anxious and depressed groups (both $p > .05$).

## Treatment Outcome

A primary goal of the study was to determine whether the two therapy methods produced different psychological changes, changes in coping style that correspond to the specific intervention features and/or changes in recurrence rate. The following analyses were performed in order to examine these questions.

### Questionnaire Data

With regard to psychological changes, two-way (Group X Time) analyses of covariance were performed on each of the 10 representative questionnaire variables at post-therapy and at follow-up. The covariate for

each analysis was the score for the respective variable at baseline. Results indicated a main effect for group membership with regard to internal health locus of control, $F(1,13) = 9.74$, $p < .01$. Examination of adjusted marginal means, as displayed in Table 3, reveals that SD group members attributed their health status less to personal responsibility than did CR group members.

Within group $t$ tests were performed on each of the 10 representative questionnaire variables to determine whether there were changes from baseline to post-therapy. Results indicate that over this time period, the CR group scores increased on the CS-H Behavioral Action factor ($M$= 1.4 to 2.2), $t(7) = 3.86$, $p < .01$ and on the HLC internal factor ($M$= 25.5 to 28.2), $t(7) = 2.40$, $p < .05$. Although no significant differences were observed in the SD group, the difference between baseline and post-therapy scores approached significance on attitude about herpes ($M$= 73.0 to 78.2), $t(7) = 2.16$, $p < .10$, and on the CS-H Behavioral Action factor ($M$= 2.2 to 2.6), $t(7) = 2.05$, $p < .10$.

Process Coping Data

Separate two-way (Group X Time) analyses of variance were performed on the frequency of avoidant and of problem focused thoughts during the first vs last 14 days of daily recording. This analytic strategy was

applied to determine whether there was a difference between SD and CR groups in terms of coping actions developed during the treatment period. With regard to avoidant coping, results indicated a main effect for time, $F(1,14) = 7.14$, $p < .02$. Examination of marginal means, as displayed in Table 4, reveals an overall increase in avoidant coping from the first 14 days of daily reporting to the last 14 days. With regard to problem focus, results indicated a significant Group X Time interaction, $F(1,14) = 6.95$, $p < .02$. Cell and marginal means for this analysis are presented in Table 5. Post-hoc Tukey tests revealed that the SD group became less problem focused from the first 14 days to the last 14 days, while there was no significant change over time for the CR group.

Fisher's exact test of significance (Bradley, 1968) was used to determine whether there was an overall difference in recurrence rate between the treatment groups from the first to the last 14 days of recording, corresponding to the the differences in coping strategy changes between the two groups during the same period. No significant difference was found. Cell and marginal values for this analysis are presented in Table 6.

Recurrence Rate Data

Two-way (Group X Time) analysis of covariance was performed with the five-week recurrence rate reported at baseline as the covariate, the

**Table 3. Adjusted Cell and Marginal Means for ANCOVA for HLC Internal Control**

| Time | Group: SD | Group: CR | |
|---|---|---|---|
| Post-Therapy | 24.9 | 27.4 | 26.1 |
| Follow-Up | 22.3 | 27.7 | 25.0 |
| | 23.6 | 27.6 | |

**Table 4. Cell and Marginal Means for ANOVA for Avoidant Coping**

| Time | Group: SD | Group: CR | |
|---|---|---|---|
| First 14 Days | 6.6 | 7.9 | 7.2 |
| Last 14 Days | 10.6 | 8.5 | 9.5 |
| | 8.6 | 8.2 | |

**Table 5. Cell and Marginal Means for ANOVA for Problem Focused Coping**

| Time | Group: SD | Group: CR | |
|---|---|---|---|
| First 14 Days | 5.7 | 4.7 | 5.2 |
| Last 14 Days | 2.2 | 5.5 | 3.8 |
| | 3.9 | 5.1 | |

**Table 6. Cell and Marginal Values for Fisher's Exact Test of Significance for Recurrence Rate**

| Time | Group: SD | Group: CR | |
|---|---|---|---|
| First 14 Days | 8 | 9 | 17 |
| Last 14 Days | 4 | 7 | 11 |
| | 12 | 16 | |

five-week rate according to daily reports as the post-therapy figure and the frequency reported at the final interview as the follow-up figure. This final figure was pro-rated so as to reflect recurrence rate over a five-week period. Although there were no significant main effects for time or for group, the group by time interaction approached significance, $F(1,14) = 3.72$, $p < .10$. Examination of the adjusted cell means, as displayed in Table 7, reveals that recurrence rate remained relatively stable for the SD group but decreased over time for the CR group. Although within group $t$ tests on the adjusted means revealed no significant differences (all $p > .05$), similar $t$ tests on the unadjusted means revealed a significant decrease in recurrence for the CR group, ($M = 2.5$ vs 1.4), $t(7) = 3.21$, $p < .05$.

## Variables Associated with Attitude About Herpes, Distress and Recurrence Rate

The second purpose of the study was to determine the ability of background, psychological and process coping variables to explain the variance in (a) attitude about herpes, (b) distress level, and (c) recurrence rate among genital herpes sufferers. A series of regression analyses were performed to address these questions, with the variable "group" entered into the equation first to control for the contribution of differential treatments. In no case did this variable make a significant contribution to the regression

**Table 7. Adjusted Cell and Marginal Means for ANCOVA for Five-Week Recurrence Rate**

| Time | Group: SD | Group: CR | |
|---|---|---|---|
| Post-Therapy | 1.9 | 2.6 | 2.2 |
| Follow-Up | 2.1 | 1.5 | 1.8 |
| | 2.0 | 2.0 | |

equation. Consequently, all analyses were repeated without "group" as a predictor variable. Variables were included in a regression equation only if the associated increment in variance was reliable ($p < .05$).

Background Data

A stepwise regression analysis was performed to determine the variance accounted for by the 10 representative background variables and subjects' estimates of recurrence frequency during the five-week period prior to the beginning of the study. Subjects' attitude about genital herpes was represented by their total score on the GHQ at baseline, and their distress level was represented by their total score on the HSCL, also at baseline. Recurrence rate during the five weeks of daily reporting was used as the index of recurrence rate. Results of all three analyses are summarized in Table 8.

Only therapy involvement within the preceding year and subjects' estimates of recurrence frequency during the five-week period prior to the study accounted for a significant proportion of the variance in subjects' attitude about herpes at baseline. The regression coefficients indicate that subjects not in therapy during the one-year period prior to the study and those who had a lower recurrence rate during the five-week period prior to the study, tended to have a more positive attitude about herpes. The overall

Table 8. Stepwise Multiple Regression Analyses on Attitude, Distress and Recurrence Rate Measures with Background Variables as Predictors

| | Total baseline GHQ score[a] | | | Total baseline HSCL score[b] | | | Recurrence During Treatment | | |
|---|---|---|---|---|---|---|---|---|---|
| Variable | $\Delta R^2$ | F[c] | β[d] | $\Delta R^2$ | F[c] | β[d] | $\Delta R^2$ | F[c] | β[d] |
| In Therapy Last Year | .50 | 14.03 | -.84[e] | | | | | | |
| Recurrence 5 wks prior | .13 | 4.63 | -.39 | | | | | | |
| | Total $R^2$ = .63 | | | | | | | | |
| Involved in a Relationship | | | | .44 | 11.20 | -.86[e] | | | |
| Knowledge that Partner Had Disease | | | | .25 | 10.83 | -.54[e] | | | |
| | | | | Total $R^2$ = .69 | | | | | |
| Age | | | | | | | .34 | 7.32 | -.47 |
| No. of Friends Talked With | | | | | | | .17 | 4.57 | .43 |
| | | | | | | | Total $R^2$ = .51 | | |

[a] Higher scores denote a more positive attitude.

[b] Higher scores denote more overall distress.

[c] F value for the individual predictor variable.

[d] Standardized β weight

[e] Higher scores denote a "yes" answer.

regression equation was significantly predictive of attitude: $F(2,13) = 11.54$, $p < .01$.

Knowledge prior to intercourse that their partner had herpes and presence of a stable sexual relationship were the only variables accounting for a significant proportion of the variance in subjects' overall level of distress. The regression coefficients indicate that subjects who had not known that their partner had the disease and those who were not in a steady relationship at baseline tended to have an overall higher level of distress at baseline. The overall regression equation was significantly predictive of level of distress: $F(2,13) = 14.94$, $p < .01$.

The variables age and number of friends with whom herpes was discussed accounted for a significant proportion of the variance in subject's recurrence rate during the five-week daily reporting period. The regression coefficients indicate that younger subjects and those who talked with more friends about having herpes tended to have a higher recurrence rate. The overall regression equation was significantly predictive of recurrance rate: $F(2,13) = 6.88$, $p < .01$.

Questionnaire Data

Three stepwise regression analyses were performed to determine the amount of variance accounted for by the 10 representative questionnaire

variables relative to attitude about herpes, distress level, and recurrence rate during treatment. Attitude about genital herpes was represented by the total score on the post-therapy GHQ and overall distress level was represented by the total score on the post-therapy HSCL. Recurrences during the five weeks of daily reporting during the study were used as the criterion measure of recurrence rate. Results of all three analyses are listed in Table 9.

Only the total GHQ score at baseline and the CS-H Behavioral Action factor accounted for significant proportions of the variance in subjects' attitude about herpes at the post-therapy period. The regression coefficients indicate that subjects who initially had a more positive attitude about herpes and who reported greater use of behavioral action as a coping strategy tended to have a more positive attitude about herpes at post-therapy. The overall regression equation was significantly predictive of attitude: $F(2,13) = 15.25$, $p < .01$.

Initial loneliness was the only variable accounting for a significant proportion of the variance in subjects' overall distress level at the post-therapy period ( $F(1,14) = 19.24$, $p < .01$). The regression coefficients indicate that subjects who reported more loneliness at baseline tended to report higher levels of distress at post-therapy.

Table 9. Stepwise Multiple Regression Analyses on Attitude, Distress and Recurrence Rate Measures with Questionnaire Variables as Predictors

| | Total post-therapy GHQ score[a] | | | Total post-therapy HSCL score[b] | | | Recurrence During Treatment | | |
|---|---|---|---|---|---|---|---|---|---|
| Variable | $\Delta R^2$ | F[c] | β[d] | $\Delta R^2$ | F[c] | β[d] | $\Delta R^2$ | F[c] | β[d] |
| Total GHQ baseline score | .56 | 18.21 | 0.64 | | | | | | |
| CS-H Action | .14 | 5.91 | 0.38 | | | | | | |
| | Total $R^2$ = .70 | | | | | | | | |
| Loneliness | | | | .58 | 19.24 | 0.76 | | | |
| | | | | Total $R^2$ = .58 | | | | | |
| CS-H Denial | | | | | | | .21 | 3.84 | -1.23 |
| Total GHQ baseline score | | | | | | | .17 | 3.65 | 1.15 |
| Loneliness | | | | | | | .38 | 19.24 | 1.02 |
| CS-H Action | | | | | | | .09 | 6.44 | -0.37 |
| | | | | | | | Total $R^2$ = .85 | | |

[a] Higher scores denote a more positive attitude.

[b] Higher scores denote more overall distress.

[c] F value for the individual predictor variable.

[d] β = standardized β weights

The CS-H Denial and Behavioral Action factors, GHQ total score and Loneliness were the four initial variables accounting for significant proportions of the variance in subjects' recurrence rate during the five-week daily reporting period. It should be noted that Loneliness did not account for a significant proportion of the variance until CS-H Denial and total GHQ had been entered into the equation. The regression coefficients indicate that in the context of less endorsement of denial as a coping strategy and a more positive attitude about herpes at baseline, subjects who were lonely and who endorsed less behavioral action as a coping strategy tended to experience a higher recurrence rate. The overall regression equation was significantly predictive of recurrence rate: $F(4,11) = 15.76$, $p < .01$.

Process Coping Data

Three stepwise regression analyses were performed to determine the amount of variance accounted for by coping method and focus relative to attitude about herpes, distress level, and recurrence rate. The two predictor variables were number of thoughts categorized as avoidant and the number categorized as problem focused during the 35 days of daily reporting. Attitude about genital herpes was represented by the total score on the post-therapy GHQ and distress level was represented by the total score on the post-therapy HSCL. Recurrences during the five weeks of daily reporting

was used as the index of recurrence rate. No method or focus of coping variables accounted for a significant proportion of the variance in subjects' overall distress level, attitude about herpes or recurrence rate.

## Mood, Anxiety and Process Coping as Predictors of Recurrences

The third goal of the study was to determine whether differences existed in mood, anxiety level and coping strategy before and after a recurrence. Data from all 16 principal subjects were pooled together for these analyses to increase statistical power and because it was hypothesized that, although there may have been a differential effect of SD and CR therapies on these variables, their relationship to recurrence onset would not be altered.

### Mood and Anxiety

*T* tests for correlated samples were used to compare both mood and anxiety scores averaged over the four-day period before a new lesion onset with comparable scores averaged over the four-day period after a lesion healed. These periods were compared to determine whether subjects were relatively more sad and/or anxious before lesion onset thereby addressing the hypothesis that increases in negative emotional states can precipitate recurrences.

The recurrence episodes used in these analyses were limited to those where there were both four days free of lesions, scabs and associated pain prior to a new lesion onset, and four days subsequent to the recurrence which were similarly free of these symptoms. Only 12 subjects had recurrences which met these criteria. Ten of these subjects had only one recurrence that met the criteria for inclusion; one subject had two and another had three suitable recurrences. Scores for the two subjects who had multiple recurrences were averaged over all recurrences so that each subject contributed data only once to each analysis.

No significant difference was found between pre- and post-lesion mood scores ($p > .05$), but subjects reported significantly higher anxiety during the four days prior to a new lesion onset ($M = 3.6$) than during the four days after healing ($M = 3.1$), $t(11) = 2.37$, $p < .05$.

Higher anxiety and/or sadness prior to lesion onset could be due to the presence of a prodrome, therefore, anxiety and mood scores prior to the presence of prodromal symptoms (e.g., tingling and itchiness) were compared, respectively, with mood and anxiety scores subsequent to the presence of any symptoms. Subjects' recurrences often occurred very close to each other, consequently it was not always possible to find four days between recurrences which were completely symptom-free. Of the 16

subjects, only five had a recurrence which was both preceded and followed by at least four symptom-free days. *T* tests were used to compare pre- and post-lesion anxiety and mood, respectively, for these subjects alone. Results indicate that there was no significant difference between pre- and post-lesion mood ratings, however, pre-lesion anxiety ratings (M = 3.3) were again significantly higher than post-lesion anxiety ratings ($M = 2.5$), $t(4) = 4.35$, $p < .02$.

Coping

All four-day periods preceding and following a recurrence were coded for predominant method (avoidant, non-avoidant or mixed) and predominant focus of coping (problem focused, non-problem focused or mixed). A period was coded as predominant for avoidant method if at least three of the four thoughts reported daily within the period were coded as avoidant. Periods were coded in a similar manner for non-avoidant method, problem focus and non-problem focus. A period was coded as mixed method or mixed focus when there was an equal number of daily thoughts coded as avoidant and non-avoidant or as problem focused and non-problem focused, respectively. Categorizations for two subjects who had multiple recurrences were made on the basis of the combined data for all recurrences so that each subject contributed data only once to each analysis. Periods with no

predominant method or focus of coping were eliminated from analyses because cell values were too small to perform Chi Square analyses and Fisher's exact test can only be performed with 2 X 2 designs. Fisher's exact test of significance was applied to determine whether there was a difference in both predominant coping method (Predominant Method x Time) and predominant focus of coping (Predominant Focus x Time) before and after recurrences. No significant differences were found in either analysis ($p >$ .05).

## Chronic Anxiety, Depression and Obsession-Compulsion as Explanations of Recurrence Rate

Goldmeier and Johnson (1982) and Katcher et al. (1973) found that subjects suffering more from generalized anxiety, obsessionality or depression experienced higher rates of recurrence. This possibility was tested in the current study by dividing subjects into high and low scoring groups by way of a median split procedure, performed on their baseline HSCL scores for anxiety, obsession-compulsion and depression. This procedure replicated that used by Goldmeier and Johnson (1982). *T* tests were used to compare the groups on five recurrence rate scores for periods during the year, four months and five weeks preceding therapy and during the five weeks of and three months following treatment. No significant

differences were found between any of the high and low scoring groups for any of the recurrence rate periods (all $p > .05$). In order to replicate the procedure used by Katcher et al. (1973), correlational analyses also were applied to examine the relationship between the five recurrence rate scores used in the previous analyses and baseline HSCL scores for anxiety, obsession-compulsion and depression. The only significant finding was a negative correlation between depression scores and subjects' estimates of their recurrence rate during the preceding year ($r = -.81$, $p < .05$, $n = 8$).

## The Relationship Between Coping Strategies and Both Psychological Distress and Recurrence Rate

### Avoidant Vs Non-Avoidant Subjects

Subjects who were predominantly avoidant in their method of coping with herpes during the 35 days of daily recording were compared to those who were predominantly non-avoidant with regard to their baseline, post-therapy and follow-up recurrence rates and their scores on the 10 representative questionnaire variables. The purpose of these analyses was to determine whether coping strategy was associated with recurrence rate or psychological adjustment at any of the assessment points.

Although no significant differences were found at baseline, the difference between avoidant ($M = 74.7$) and non-avoidant subjects ($M =$

90.8) with regard to their total HSCL score approached significance, $t(14) = 1.97$, $p < .10$. This result suggests that at baseline, avoidant subjects were generally less distressed. At post-therapy, the only reliable finding was that avoidant subjects endorsed worry as a coping strategy significantly less ($M = 3.4$) than did non-avoidant subjects ($M = 5.0$), $t(14) = 2.70$, $p < .05$.

At follow-up the only significant difference between avoidant subjects and non-avoidant subjects was with regard to total GHQ score ($M = 85.0$ and 71.0), $t(14) = 2.90$, $p < .05$, indicating that avoidant subjects were more positive in their attitude about herpes. The difference between avoidant and non-avoidant subjects with regard to recurrence rate ($M = 1.3$ and 2.6), $t(14) = 1.79$, $p < .10$ and total HSCL score ($M = 64.7$ and 82.0) $t(14) = 1.92$, $p < .10$ approached significance[3]. This suggests that, at follow-up, avoidant subjects presented a more positive attitude about herpes, had fewer recurrences and were less distressed overall.

Problem Vs Non-Problem Focused Subjects

Subjects who were predominantly problem focused in their coping with herpes during the 35 days of daily recording were compared to those who were predominantly non-problem focused in a fashion directly parallel to that used to compare predominantly avoidant and predominantly non-avoidant subjects. At baseline and at post-therapy, problem focused

subjects were found to score significantly lower on the CS-H Behavioral Action factor than did non-problem focused subjects ($M$= 0.8 vs 2.4), $t$ (14) = 4.96, $p$< .01 and ($M$= 1.8 vs 2.8, $t$ (14) = 3.33, $p$ < .01. At post-therapy, problem focused subjects also had significantly lower total GHQ scores ($M$ =69.0) than did non-problem focused subjects ($M$= 82.2), $t$(14) = 2.28, $p$ < .05, indicating that their attitude was less positive about herpes post-therapy.[4] No significant differences were found at follow-up, however, the difference between problem focused subjects ($M$= 29.0) and non-problem focused subjects ($M$= 22.6) on the HLC internal locus of control factor approached significance, $t$(14) = 2.04, $p$ < .10.

## DISCUSSION

The major findings of this study are that:

(1) both therapies failed to produce the expected reduction in social isolation, as reported on the LS-R, and in psychological distress, as measured by the HSCL;

(2) the CR group failed to produce the expected increase in cognitive methods of coping (as derived from daily reports);

(3) CR therapy was associated with reports of lower recurrence rates at follow-up;

(4) higher levels of psychological distress, as measured by the HSCL at

post-therapy, were associated with higher levels of social isolation reported on the LS-R at baseline;

(5) a more positive attitude about herpes, as measured by the GHQ at baseline, was associated with lower recurrence rates during therapy, and an increase in positive attitude from baseline to post-therapy was evidenced in the SD group;

(6) higher recurrence rates during therapy were associated with higher levels of social isolation as reported on the LS-R at post-therapy;

(7) self-rated anxiety was significantly greater before than after a recurrence; and

(8) psychological adjustment, as measured by the HSCL and/or GHQ, was associated with predominantly avoidant coping and not with predominantly problem focused coping. The following discussion will address these findings in their relative order of importance.

The majority of findings concern recurrence rate. Of these, the most reliable is that anxiety is significantly greater during the four-day period prior to a recurrence than during the corresponding period subsequent to one. The difference exists even in the absence of prodromal evidence that a recurrence is beginning. This result suggests that the anxiety is due to factors unconnected with direct anticipation of an outbreak and, therefore, is

a possible precipitant of new lesions. It is consistent with the increasing evidence that psychological factors can influence the expression of disease, likely through interaction with immune functioning (Dorian, Keystone, Garfinkel & Brown, 1981; Jacobs, Spilken & Norman, 1969; Kasl, Evans & Neiderman, 1979).

Not only is the finding with regard to anxiety reliable, but no other measures show a pre-post recurrence difference and no measures of general characteristics are able to predict recurrence rate. This includes no significant difference between pre- and post-recurrence mood or coping strategies and the lack of predictive value of chronic anxiety, depression and obsession-compulsion. It should be noted that the difference between pre- and post-recurrence anxiety is small in absolute magnitude. This suggests that subtle differences in anxiety can precipitate a recurrence, therefore, gross measures of general characteristics are probably inappropriate for the investigation of the relationship between recurrence and anxiety.

The preceding findings are consistent with those of Schmidt et al. (1985). These investigators found that anxiety is elevated one week prior to a recurrence of herpes labialis as compared to during a dormant stage, but that no difference exists in chronic depression levels and chronic coping strategies between the two periods. They contrast the results of Katcher et

al. (1973) and Goldmeier & Johnson (1982) who found a positive relationship between recurrence rate and measures of chronic depression, obsession-compulsion and anxiety. This difference may be due to several factors, such as incomparability of psychological measures, subtle differences in methodology, and dissimilarity in the sample of subjects studied. At present, no definitive differrence is evident.

A second major finding of this study is that lower recurrence rates are reported at follow-up by subjects in the CR group. This finding may be due to the fact that the primary function of cognitive restructuring is to instruct clients that their belief system, not the problematic situation, is responsible for the consequences they experience. This emphasis on personal control over situations and emotional reactions may have influenced recurrence rates through some unknown mechanism. This speculation is supported by the finding that there was an increase in reports of internal health locus of control in the CR group, but not the SD group.

Of equal importance is the finding that higher recurrence rates are associated with higher reported levels of loneliness. It should be noted that this relationship exists only in the context of less endorsement of coping by denial and a more positive attitude about herpes. In other words, loneliness apparently only has a positive relationship to recurrence rate in

circumstances where the impact of attitude and denial has been accounted for. This may reflect a substantive influence or it may be that these two variables act as a kind of control for response bias in reporting.

In any case, the loneliness finding is consistent with the report of Kiecolt-Glaser et al. (1984) that loneliness is negatively related to immune functioning, which may then influence recurrence rate. Kiecolt-Glaser et al. (1984) hypothesized that distress may be the element of loneliness that exerts an effect on the immune system, however, their low-loneliness group did not describe themselves as significantly more distressed. Consistent with this hypothesis, however, the current subjects who experienced the most psychological distress were the individuals who scored higher on the LS-R and those who were not involved in a steady sexual relationship. The factors responsible for the difference between this and the Kiecolt-Glaser et al. (1984) study are unknown, however, incomparability of psychological measures and dissimilarity in the sample of subjects studied are two possible explanations.

Also of interest is the finding that individuals with a more negative attitude about herpes at post-therapy, reported a more negative attitude at baseline,[5] have a higher recurrence rate, but take fewer concrete steps in dealing with it (e.g., examining themselves regularly for the presence of

lesions or talking with others about it). In addition, these individuals appear to be distressed enough by the disease to seek individual therapy for it. These data may reflect that a vicious cycle is created whereby high recurrence rates elicit more negative thoughts about the disease which in turn, somehow increase recurrence rates. In addition, this cycle may contribute to and/or be perpetuated by coping strategies which do not include taking concrete steps in dealing with recurrences.

Findings of secondary interest with regard to recurrence rate are that more frequent outbreaks are associated with being younger, having a less negative attitude about the disease, talking with more friends about herpes, and less endorsement of both denial and behavioral action as coping strategies. It is not clear why being younger is an associated variable, but it has been noted that recurrence rate sometimes decreases with increasing time since initial infection (Sacks, 1983). Although age must necessarily be associated with the passage of time, the number of months since first infection was not found to be associated with recurrence rate. Therefore, perhaps age is correlated with an unmeasured third variable which is also correlated with recurrence rate.

A less negative attitude about the disease at baseline is associated with higher recurrence rates as assessed throughout therapy. In contrast, a

regression analysis with attitude about herpes at baseline as the criterion variable and recurrence estimates prior to therapy as one of the predictor variables found that, in the context of therapy during the prior year, higher recurrence rates are associated with a more negative initial attitude. The shift in the relationship of baseline attitude to recurrence rate from baseline to post-therapy may be due to the therapeutic process intervening between the two measurement periods, or to the difference in the type of report of recurrence frequency; that is, the difference in retrospective recurrence reports at baseline and prospective therapy reports.

Higher recurrence rates are also associated with a lack of knowledge prior to intercourse that a partner had herpes. The lasting sense of betrayal that was revealed during treatment sessions by individuals with this experience may be a particular source of distress capable of affecting recurrence rates. This finding should be clarified by future research directed toward determining the types of anxiety-provoking events or emotional reactions capable of evoking recurrences.

Individuals with higher recurrence rates also report talking with more friends about the disease. This finding is understandable in that numerous outbreaks are likely a source of irritation, bringing the disease more frequently to mind, thereby making it an issue for discussion. Alternatively,

talking with more friends may reflect an unhealthy preoccupation, which may contribute to an increase in the frequency of recurrences. In fact, a vicious cycle may be operative whereby higher recurrences result in talking with more people about the disease, this preoccupation or non-avoidant behavior itself eliciting more recurrences.

It is unclear why individuals with high recurrence rates would score lower on the CS-H Behavioral Action factor. The three questions composing the measure of behavioral action concern talking with friends and family members about the disease, talking with others who have herpes, and genital self-examination. This result seems to contradict the finding that individuals with higher recurrence rates report talking with more friends about the disease. Inclusion of family members as people to talk with about the disease, however, may have made a difference in how subjects responded. In addition, individuals with a high rate of recurrence may engage less in genital self-examination as their experience with the disease has taught them other (e.g., prodromal) signs that indicate the presence of a recurrence.

In contrast, it is not surprising that subjects with high recurrence rates would score lower on the CS-H Denial factor. The questionnaire items that address denial concern not talking with others about the disease, not

worrying, and trying to see the positive aspects of the disease. Individuals with high recurrences report confiding in a greater number of people, and they probably find it more difficult to look on the positive side and not worry about their condition. Furthermore, confiding in others, worry and/or not seeing the positive side of the disease may somehow contribute to higher recurrence rates.

Denial is one form of the avoidant coping that was coded from daily reports. In dealing with herpes, subjects who used avoidance as a primary coping method reported less distress at baseline and at follow-up, a more positive attitude about the disease at post-therapy and at follow-up, less worry at post-therapy and fewer recurrences at follow-up. These results indicate that individuals who avoid talking or thinking about the disease, or who at least do not ruminate about it, fare better from both a psychological and a medical point of view. Previous research has found that people who are forced to deal with relatively uncontrollable chronic illnesses are less psychologically distressed if their primary coping strategy is one of avoidance or denial. For example, Meyerowitz (1983) found that there was an inverse relationship between cancer-specific denial and distress in women treated for breast cancer. Miller, Brody, Leinbach, LaPorte and Summerton (1984) also have found that hypertensives characterized by an

avoidant coping style were less depressed than information-seeking hypertensives.

Another major finding of this study is that, in dealing with herpes, subjects who are predominantly problem focused edorse behavioral action less as a coping strategy at baseline and post-therapy, show a more negative attitude about herpes post-therapy, and indicate a greater sense of personal responsibility for their health status at follow-up. This pattern of relationships seems to describe individuals who feel responsible for their health status, find themselves focusing on the problems associated with having herpes, and become frustrated with the limited behavioral control they have over the situation. A sense of personal responsibility or desire to take action has previously been associated with poorer adjustment in situations where control is non-existant or minimal. For example, a sense of personal responsibility, or internal locus of control, has been found to be associated with poorer adjustment in the institutionalized elderly (Felton & Kahana, 1974). Also, residents of Three Mile Island who endorsed problem focued coping in dealing with the chronic, uncontrollable conditions resulting from the nuclear accident there, reported more psychological distress than those who reported less problem focused coping (Collins, Baum & Singer, 1983).

Both forms of therapy failed to reduce the sense of social isolation or general psychological distress. The mean loneliness score at baseline for the present sample was not different from the mean found in normal subjects (Russell, Peplau, & Cutrona, 1980), contrary to Drob's (1984) report of elevated loneliness levels among individuals with genital herpes. The failure to find a reduction in loneliness scores, therefore, may be due to a floor effect.

There are at least two possible explanations for the additional failure of treatment to reduce psychological distress. The first is inadequate length of treatment. Consistent with this idea was the request of all groups for booster sessions once the course of therapy was complete. Lack of adherence to therapeutic demands may provide a second explanation. Failure on the part of six of the eight CR members to complete homework assignments may indicate that they were not applying the restructuring techniques to the full extent. Difficulties with compliance were also experienced with regard to daily reports. Although records of the frequency of prompting for late reports were not kept, it was noted that four subjects required repeated reminders. Future research using telephone reports might benefit from the recording of the frequency of prompting for each subject as a measure of compliance. Inadequate length of treatment and

lack of adherence to therapeutic demands would also serve to explain why an increase in cognitive coping methods was not shown in the CR group.

Two qualifications to the interpretation of these results must be noted; the first regards generalizability. Subjects were predominantly female and potentially important differences were found between the individuals who remained in the study and those who did not. The six therapy dropouts were more depressed, more worried and had lower recurrence rates than the 16 subjects who completed the study. These factors may indicate that the results of this study are not generalizable beyond female sufferers with a relatively high frequency of genital herpes recurrence who seek help for their disease-related distress.

Second, this research was considered exploratory because there are very few studies concerning psychological adjustment to this disease and no previously published research has reported psychological treatment outcome data with genital herpes clients. For this reason, a certain latitude was exercised with regard to analyses, including a principal components analysis performed with fewer subjects than the considered statistical requirement (Tabachnick & Fidell, 1983) and a fairly large total number of analyses performed without adjustment for Type I error. This liberal exploration of the data has provided the basis for several suggestions with regard to

research on the psychological treatment of individuals with genital herpes and the relationship between psychological factors and recurrence rate.

While it may be true that individuals who seek psychological help because of genital herpes hold unrealistic, exaggerated views about themselves and the disease (Drob, 1984), they do not benefit as expected from cognitive restructuring in terms of reduction of the level of psychological distress or improvement in attitude about the disease. While the failure to show such effects may be due to the limitations of the current procedures, future research should specifically assess the degree to which herpes sufferers hold irrational beliefs.

Adjustment to a chronic illness that has the potential to interfere with sexual functioning and interpersonal relationships is likely to involve several areas of difficulty which require variations in therapeutic and coping strategies. Taylor (1983), for example, suggests that adjustment to potentially chronic, threatening events, such as breast cancer, revolves around three themes: the search for meaning in the experience, an attempt to regain mastery over one's life and over the event, and an effort to restore self-esteem. She suggests that the ability to maintain illusions with regard to to these issues,the opposite of cognitive restructuring, serves to buffer the disease's threat.

Illusion regarding all three of the issues noted by Taylor may be adaptive because it provides acceptable explanations which do not impede, and perhaps even enhance, the individual's functioning. For example, some subjects reported believing, without the benefit of supportive data, that their recurrences were triggered by lack of sleep. They also stated that this belief provided a sense of control, or at least predictability, over the disease. Cognitive restructuring applied to this issue, and to others like it, may be maladaptive in the sense that more reality-based explanations leave little room for feelings of hope or control.

Likewise, because the problem of having herpes is not unidimensional, it is unlikley that the same coping strategy can be beneficially applied to all aspects of the probelm. For example, cognitive and/or behavioral coping methods may be helpful when applied to difficulties amenable to change, but may be maladaptive for those about which little can be done. Future research would benefit from more sensitive measures that assess coping in relation to the particular aspects of the problem to which it is applied. The relative non-specificity of the current coping measures may help to explain what appear to be contradictory results with regard to the relationship between recurrence rate and coping strategies. Specifically, a negative relationship was found between reecurrence rate and both denial and

avoidant coping, yet an increase in avoidant coping was not accompanied by a reduction in recurrence rates in the SD group. Furthermore, the CR group reported a reduction in recurrence rates without the concomitant reduction in problem focused coping that was shown by the SD group. More specific measures of coping strategies might reveal that avoidant and problem focused coping were appropriately applied only in the CR group.

In summary, neither therapy produced the expected reductions in reported levels of psychological distress or loneliness. The CR procedure, however, was associated with reduced frequency of genital herpes recurrence. Lower recurrence rates were also associated with denial and avoidant coping, and higher rates were associated with a more negative attitude about the disease and loneliness, which itself was directly related to psychological distress. A major finding was that recurrences were preceded by a higher level of anxiety than was found subsequent to an outbreak. These results provide additional support for the proposal that psychological factors influence health status. In addition, the findings of positive relationships between anxiety and lesion onset and between loneliness and recurrence rate, together with previous evidence that loneliness is negatively related to immune functioning (Kiecolt-Glaser et al., 1984) suggest the value of simultaneous examination of psychological factors, recurrences

and immunological functioning. Investigations of the interactive effects of psychological variables, disease expression and immunological status are sparse (McClelland, 1985) and could benefit from the model provided by genital herpes. This disease's comparatively frequent recurrence rate and relative prevalence in the general population makes its study both valuable and convenient. Future research would benefit from thorough prospective psychological assessment, frequent immunological assessment and confirmation of recurrences by viral culture.

## Endnotes

1. As the standard deviation for the Russell et al. (1980) sample was not available, the standard deviation for the present sample was substituted in calculation of the standard error for the *t*-test analysis.

2. As the standard deviations for the Derogatis et al. (1974) groups were not available, the standard deviations for the present groups were substituted in calculation of the standard errors for the *t*-test analyses.

3. In addition, at baseline, the difference between avoidant subjects ($M = 78.0$) and non-avoidant subjects ($M = 63.5$) with regard to their total GHQ score approached significance, $t(14) = 2.03$, $p < .10$. At post-therapy, the difference between avoidant and non-avoidant subjects with regard to total GHQ score ($M = 81.7$ and 69.8, $t\ (14) = 1.98$, $p < .10$) and endorsement of denial as a coping strategy ($M = 2.4$ and 1.5, $t\ (14) = 2.07$, $p < .10$) approached significance.

4. In addition, at post-therapy, the difference between problem focused subjects ($M = 2.5$) and non-problem focused subjects ($M = 2.9$) on the CS-H Rational Cognition factor also approached significance, $t(14) = 1.87$, $p < .10$.

5. Of the three multiple regression analyses on attitude, distress and recurrence rate at post-therapy with baseline questionnaire variables as

predictors, the criterion variable was reliably predicted by its baseline counterpart only for attitude. This pattern of findings suggests that similar attitude changes were shown by all subjects from baseline to post-therapy and that changes over the same period for distress and recurrence rate were inconsistent across subjects. Although the reason for this difference in the predictive value of baseline counterparts of the criterion variable is unclear, distress levels may be more responsive to changing environmental conditions than is attitude about herpes. In the case of recurrence rate, inconsistency may be due to differences in reporting methods from baseline to post-therapy.

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# Appendix A

## Newspaper Advertisement for Herpes Groups

Small groups are being formed at the Guy Metro C.L.S.C. for people with genital herpes. The purpose of these groups is to provide information about the disease and to discuss personal problems related to having it. Interested individuals can contact Lydia McLarnon at 842-4972.

Appendix B

Poster Advertisement

# COPING WITH HERPES

Small groups are being formed at the Guy Metro C.L.S.C. (a local community clinic) for people with genital herpes. The purpose of these groups is to provide information about the disease and to discuss personal problems related to having it. There is no cost for this service. Interested individuals can contact:

Lydia McLarnon
Telephone: 842-4972

Groups will be starting before the end of February.

# Appendix C

## Consent Form

Lydia McLarnon and Dr. Kaloupek of the Concordia University Department of Psychology are conducting a research study in conjunction with the C.L.S.C. to determine the benefits of participating in a group conducted (i) to provide information about genital herpes, and (ii) to deal with personal difficulties which can arise due to having the virus.

We would like to have you participate in this study. As part of this project, you will be asked to do the following:

(1) Complete a series of questionnaires during an initial interview.
(2) Attend an initial group meeting designed to provide information about genital herpes.
(3) Participate in group meetings to be held once a week for five weeks following the initial group meeting. These meetings will be recorded for purposes of the study.
(4) Report daily by phone, very brief information regarding your symptoms, mood and thoughts about herpes for five weeks following the first group. You will also be asked to report this information once per week for twelve weeks following the last group meeting.
(5) Complete another series of questionnaires immediately after the groups have finished and again three months later.

You may not be offered immediate participation in a group, but instead may be asked to wait between 3 to 8 weeks for another group to start. In this case, you will be asked to do the following:

(1) Attend a group session designed to provide information about genital herpes.
(2) Report daily by phone for five weeks, information regarding your symptoms, mood and thoughts about herpes.
(3) Complete another series of questionnaires following this five week period.

Should you miss reporting daily or weekly information or should you miss a group meeting or an appointment with Lydia McLarnon, she may attempt to contact you by phone.

All information provided by you will be kept strictly confidential, and only the research team members working on this project will have access to it. To insure this fact, you name will not appear on any of the questionnaires or other material - except for this consent form. Your participation in this study is voluntary. If you choose not to participate or if you decide to withdraw from participation at any later time, it will in no way affect the regular services that you will receive. That is, you do not have to participate in this study in order to be included in the group sessions.

If you are interested in participating in this study, please sign below. Your signature indicates that you have read and understood this form, and are volunteering your participation.

| | |
|---|---|
| Name (print) | Signature of Participant |
| Signature of Witness | Date |

Whether of not you have chosen to participate in this study, thank you for having taken the time to read this form.

# Appendix D

## Background Information Form

Participant Number _____

Age _____ Sex _____ Marital Status _____

Education (in number of years) _____

Past Involvement in Groups or Therapy? _____

_____

Are you presently taking any medication? _____ If so, what? _____

_____

Date of First Genital Infection _____ Number of Years Since First Infection ____
Age at First Genital Infection _____

Know who gave it to you? _____ Did you know they had it? _____
If so, how did you know? _____

How do you know you have genital herpes? _____
Estimate of Recurrance Rate in Last: 1 Year _____ 4 Months _____ 3 Weeks ____

Current Contraceptive Method _____
Approximate Number of Sex Partners During Lifetime _____
Number of Current Sex Partners _____

---

How many of the following have you talked with about having herpes and how satisfied were you with the support they provided for you?

**Friends** ____: extremely___ very ___ somewhat ___ not really ___ not very ___ not at all ___

**Family** ____: extremely___ very ___ somewhat ___ not really ___ not very ___ not at all ___

**Partners** ___: extremely___ very ___ somewhat ___ not really ___ not very ___ not at all ___

**Doctors** ____: extremely___ very ___ somewhat ___ not really ___ not very ___ not at all ___

Have you used any community resources in trying to deal with and understand more about having herpes? Yes _____ No _____

If yes, which resources have you used? _____

_____

_____

How satisfied have you been with the support from these community resources?

extremely___ very ___ somewhat ___ not really ___ not very ___ not at all ___

# Appendix E

## Questionnaire Battery

Genital Herpes Questionnaire (GHQ)

Ways of Coping Checklist - Revised (WOC-R)

Coping Scale - Genital Herpes Version (CS-H)

Hopkins Symptom Checklist (HSCL)

UCLA Loneliness Scale - Revised (LS-R)

Multidimensional Health Locus of Control Scale (HLC)

# GHQ

Interview: Initial / Post / Follow-up  Number: _____

Following are some statements about feelings you may have about having herpes. By circling the appropriate number, please indicate how each statement describes your own expereince.

| | None or a little of the time | Some of the time | Good part of the time | Most or all of the time |
|---|---|---|---|---|
| 1. I get depressed because of herpes | 1 | 2 | 3 | 4 |
| 2. Herpes has interfered with my performance at work or school | 1 | 2 | 3 | 4 |
| 3. I am as capable of emotional warmth and intimacy as before I got herpes | 1 | 2 | 3 | 4 |
| 4. I have had the support of others in dealing with herpes | 1 | 2 | 3 | 4 |
| 5. When an outbreak clears up I am worried and nervous that another will occur | 1 | 2 | 3 | 4 |
| 6. Herpes has prevented me from getting to know people to whom I am sexually attracted | 1 | 2 | 3 | 4 |
| 7. I am as confident as before I got herpes | 1 | 2 | 3 | 4 |
| 8. I have felt like infecting another person or people with herpes | 1 | 2 | 3 | 4 |
| 9. Herpes has reduced my interest in sex | 1 | 2 | 3 | 4 |
| 10. I worry about developing other physical symptoms as a result of having contracted herpes | 1 | 2 | 3 | 4 |
| 11. I can have herpes and still be happy | 1 | 2 | 3 | 4 |
| 12. I feel I will be accepted by others if they find out I have herpes | 1 | 2 | 3 | 4 |
| 13. My relationship with my family is as good as it was before I got herpes | 1 | 2 | 3 | 4 |
| 14. I feel contaminated because of herpes | 1 | 2 | 3 | 4 |
| 15. I enjoy sex when I have it as much as I did before I got herpes | 1 | 2 | 3 | 4 |

| | None or a little of the time | Some of the time | Good part of the time | Most or all of the time |
|---|---|---|---|---|
| 16. I feel I would like to take revenge on someone because I have herpes | 1 | 2 | 3 | 4 |
| 17. I have felt like completely isolating myself from others because of herpes | 1 | 2 | 3 | 4 |
| 18. I blame myself for having herpes | 1 | 2 | 3 | 4 |
| 19. I feel just as desirable sexually as before I got herpes | 1 | 2 | 3 | 4 |
| 20. I have self-destructive feelings or impulses because of herpes | 1 | 2 | 3 | 4 |
| 21. My closest relationship(s) is (are) as good as before I got herpes | 1 | 2 | 3 | 4 |
| 22. I enjoy school or work as much as I did before getting herpes | 1 | 2 | 3 | 4 |
| 23. I have the same ability to achieve orgasm as I did before I got herpes | 1 | 2 | 3 | 4 |
| 24. I feel I am repugnant to others because of herpes | 1 | 2 | 3 | 4 |
| 25. I feel optimistic that I will have less frequent and/or less severe recurrences in the future | 1 | 2 | 3 | 4 |

# WAYS OF COPING

Interview: Initial / Post / Follow-up Number: _____

Below is a list of ways people cope with a wide variety of stressful events. Please indicate by circling the appropriate number, the strategies you use in dealing with recurrences of genital herpes.

| | Does not apply and/or not used | Used some-what | Used quite a bit | Used a great deal |
|---|---|---|---|---|
| 1. Just concentrate on what I have to do next -- the next step | 0 | 1 | 2 | 3 |
| 2. I try to analyse the problem in order to understand it better | 0 | 1 | 2 | 3 |
| 3. Turn to work or substitute activity to take my mind off things | 0 | 1 | 2 | 3 |
| 4. I feel that time will make a difference -- the only thing to do is wait | 0 | 1 | 2 | 3 |
| 5. Bargin or compromise to get something positive from the situation | 0 | 1 | 2 | 3 |
| 6. I'm doing something which I don't think will work, but at least I'm doing something | 0 | 1 | 2 | 3 |
| 7. Try to get the person responsible to change his or her mind | 0 | 1 | 2 | 3 |
| 8. Talk to someone to find out more about the situation | 0 | 1 | 2 | 3 |
| 9. Criticize or lecture myself | 0 | 1 | 2 | 3 |
| 10. Try not to burn my bridges but leave things open somewhat | 0 | 1 | 2 | 3 |
| 11. Hope a miracle will happen | 0 | 1 | 2 | 3 |
| 12. Go along with fate; sometimes I just have bad luck | 0 | 1 | 2 | 3 |
| 13. Go on as if nothing is happening | 0 | 1 | 2 | 3 |
| 14. I try to keep my feelings to myself | 0 | 1 | 2 | 3 |
| 15. Look for the silver lining, so to speak; try to look on the bright side of things | 0 | 1 | 2 | 3 |
| 16. Sleep more than usual | 0 | 1 | 2 | 3 |
| 17. I express anger to the person(s) who caused the problem | 0 | 1 | 2 | 3 |
| 18. Accept sympathy and understanding from someone | 0 | 1 | 2 | 3 |
| 19. I tell myself things that help me feel better | 0 | 1 | 2 | 3 |
| 20. I am inspired to do something creative | 0 | 1 | 2 | 3 |
| 21. Try to forget the whole thing | 0 | 1 | 2 | 3 |
| 22. I'm getting professional help | 0 | 1 | 2 | 3 |

| | Does not apply and/or not used | Used somewhat | Used quite a bit | Used a great deal |
|---|---|---|---|---|
| 23. I'm changing or growing as a person in a good way | 0 | 1 | 2 | 3 |
| 24. I'm waiting to see what will happen before doing anything | 0 | 1 | 2 | 3 |
| 25. Apologize or do something to make up | 0 | 1 | 2 | 3 |
| 26. I'm making a plan of action and following it | 0 | 1 | 2 | 3 |
| 27. I accept the next best thing to what I want | 0 | 1 | 2 | 3 |
| 28. I let my feelings out somehow | 0 | 1 | 2 | 3 |
| 29. Realize I brought the problem on myself | 0 | 1 | 2 | 3 |
| 30. I'll come out of the experience better than when I went in | 0 | 1 | 2 | 3 |
| 31. Talk to someone who can do something concrete about the problem | 0 | 1 | 2 | 3 |
| 32. Get away from it for a while; try to rest or take a vacation | 0 | 1 | 2 | 3 |
| 33. Try to make myself feel better by eating, drinking, smoking, using drugs or medication, etc. | 0 | 1 | 2 | 3 |
| 34. Take a big chance or do something risky | 0 | 1 | 2 | 3 |
| 35. I try not to act too hastily or follow my first hunch | 0 | 1 | 2 | 3 |
| 36. Find new faith | 0 | 1 | 2 | 3 |
| 37. Maintain my pride and keep a stiff upper lip | 0 | 1 | 2 | 3 |
| 38. Rediscover what is important in life | 0 | 1 | 2 | 3 |
| 39. Change something so things will turn out all right | 0 | 1 | 2 | 3 |
| 40. Avoid being with people in general | 0 | 1 | 2 | 3 |
| 41. Don't let it get to me; refuse to think too much about it | 0 | 1 | 2 | 3 |
| 42. Ask a relative or friend I respect for advice | 0 | 1 | 2 | 3 |
| 43. Keep others from knowing how bad things are | 0 | 1 | 2 | 3 |
| 44. Make light of the situation; refuse to get too serious about it | 0 | 1 | 2 | 3 |
| 45. Talk to someone about how I am feeling | 0 | 1 | 2 | 3 |
| 46. Stand my ground and fight for what I want | 0 | 1 | 2 | 3 |
| 47. Take it out on other people | 0 | 1 | 2 | 3 |
| 48. Draw on my past experiences; I was in a similar situation before | 0 | 1 | 2 | 3 |
| 49. I know what has to be done, so I am doubling my efforts to make things work | 0 | 1 | 2 | 3 |
| 50. Refuse to believe it will happen | 0 | 1 | 2 | 3 |

| | Does not apply and/or not used | Used somewhat | Used quite a bit | Used a great deal |
|---|---|---|---|---|
| 51. Make a promise to myself that things will be different next time | 0 | 1 | 2 | 3 |
| 52. Come up with a couple of different solutions to the problem | 0 | 1 | 2 | 3 |
| 53. Accept it, since nothing can be done | 0 | 1 | 2 | 3 |
| 54. I try to keep my feelings from interfering with other things too much | 0 | 1 | 2 | 3 |
| 55. Wish that I can change what is happening or how I feel | 0 | 1 | 2 | 3 |
| 56. Change something about myself | 0 | 1 | 2 | 3 |
| 57. I daydream or imagine a better time or place than the one I am in | 0 | 1 | 2 | 3 |
| 58. Wish that the situation would go away or somehow be over with | 0 | 1 | 2 | 3 |
| 59. Have fantasies or wishes about how things might turn out | 0 | 1 | 2 | 3 |
| 60. I pray | 0 | 1 | 2 | 3 |
| 61. I prepare myself for the worst | 0 | 1 | 2 | 3 |
| 62. I go over in my mind what I will say or do | 0 | 1 | 2 | 3 |
| 63. I think about how a person I admire would handle the situation and use that as a model | 0 | 1 | 2 | 3 |
| 64. I try to see things from the other person's point of view | 0 | 1 | 2 | 3 |
| 65. I remind myself how much worse things could be | 0 | 1 | 2 | 3 |
| 66. I jog or exercise | 0 | 1 | 2 | 3 |
| 67. I try something entirely different from any of the above. (Please describe). _____ _____ | 0 | 1 | 2 | 3 |

# Coping Scale (Genital Herpes Version)

Interview: Initial/ Post / Follow-up  Participant Number: _____

INSTRUCTIONS: The following are statements concerning possible reactions to having genital herpes. Please read each item and decide whether the statement is true or false as it pertains to yourself. Circle "T" if the statement is true and "F" if it is false.

---

| | | |
|---|---|---|
| 1. I try to see the positive side. | T | F |
| 2. I try to step back from the situation and be more objective. | T | F |
| 3. I pray for guidance and strength. | T | F |
| 4. I take things one step at a time. | T | F |
| 5. I consider several alternatives for handling the situation. | T | F |
| 6. I draw on my past experiences; I was in a similar situation before. | T | F |
| 7. I try to find out more about the situation. | T | F |
| 8. I talk with a professional person (e.g., doctor or nurse). | T | F |
| 9. I take some positive action (e.g., examine myself regularly). | T | F |
| 10. I talk with others who have herpes. | T | F |
| 11. I talk with family members or friends about the situation. | T | F |
| 12. I try to relax myself. | T | F |
| 13. I prepare for the worst. | T | F |
| 14. Sometimes I take it out on other people when I feel angry or depressed. | T | F |
| 15. I try to reduce tension by not thinking about the situation. | T | F |
| 16. I try to reduce tension by imagining that I am elsewhere. | T | F |
| 17. I keep my feelings to myself. | T | F |
| 18. I get busy with other things in order to keep my mind off the problem. | T | F |
| 19. I don't worry about it; I figure everything will probably work out fine. | T | F |

# HCL

Interview: Initial / Post / Follow-up  Number: _____

Below are a list of feelings and symptoms which may have caused you distress in the past year / six weeks / 3 months. Please indicate by circling the apporpriate number in the column in the right, how distressing these feelings and symptoms have been for you in the past year / six weeks / 3 months

| | Not at all distressing | A little bit distressing | Quite distressing | Extremely distressing |
|---|---|---|---|---|
| 1. Headaches | 1 | 2 | 3 | 4 |
| 2. Nervousness or shakiness inside | 1 | 2 | 3 | 4 |
| 3. Being unable to get rid of bad thoughts or ideas | 1 | 2 | 3 | 4 |
| 4. Faintness or dizziness | 1 | 2 | 3 | 4 |
| 5. Loss of sexual interest or pleasure | 1 | 2 | 3 | 4 |
| 6. Frequent head or chest colds | 1 | 2 | 3 | 4 |
| 7. Feeling critical of others | 1 | 2 | 3 | 4 |
| 8. Bad dreams | 1 | 2 | 3 | 4 |
| 9. Difficulty speaking when you are excited | 1 | 2 | 3 | 4 |
| 10. Trouble remembering things | 1 | 2 | 3 | 4 |
| 11. Worried about sloppiness or carelessness | 1 | 2 | 3 | 4 |
| 12. Feeling easily annoyed or irritated | 1 | 2 | 3 | 4 |
| 13. Pains in the heart or chest | 1 | 2 | 3 | 4 |
| 14. Feeling low in energy or slowed down | 1 | 2 | 3 | 4 |
| 15. Thoughts of ending your life | 1 | 2 | 3 | 4 |
| 16. Sweating | 1 | 2 | 3 | 4 |
| 17. Trembling | 1 | 2 | 3 | 4 |

2

| | Not at all distressing | A little bit distressing | Quite distressing | Extremely distressing |
|---|---|---|---|---|
| 18. Feeling confused | 1 | 2 | 3 | 4 |
| 19. Poor appitite | 1 | 2 | 3 | 4 |
| 20. Crying easily | 1 | 2 | 3 | 4 |
| 21. Feeling shy or uneasy with the opposite sex | 1 | 2 | 3 | 4 |
| 22. A feeling of being trapped or caught | 1 | 2 | 3 | 4 |
| 23. Tiring easily | 1 | 2 | 3 | 4 |
| 24. Suddenly scared for no reason | 1 | 2 | 3 | 4 |
| 25. Temper outbursts you could not control | 1 | 2 | 3 | 4 |
| 26. Constipation | 1 | 2 | 3 | 4 |
| 27. Blaming yourself for things | 1 | 2 | 3 | 4 |
| 28. Pains in the back or spine | 1 | 2 | 3 | 4 |
| 29. Feeling blocked or stymied in getting things done | 1 | 2 | 3 | 4 |
| 30. Feeling lonely | 1 | 2 | 3 | 4 |
| 31. Feeling blue | 1 | 2 | 3 | 4 |
| 32. Worrying or stewing about things | 1 | 2 | 3 | 4 |
| 33. Feeling no interest in things | 1 | 2 | 3 | 4 |
| 34. Feeling fearful | 1 | 2 | 3 | 4 |
| 35. Problems with asthma | 1 | 2 | 3 | 4 |
| 36. Your feelings being easily hurt | 1 | 2 | 3 | 4 |
| 37. Having to ask others what you should do | 1 | 2 | 3 | 4 |
| 38. Feeling others do not understand you or are unsympathetic | 1 | 2 | 3 | 4 |
| 39. Feeling that people are unfriendly or dislike you | 1 | 2 | 3 | 4 |

| | Not at all distressing | A little bit distressing | Quite distressing | Extremely distressing |
|---|---|---|---|---|
| 40. Having to do things very slowly | 1 | 2 | 3 | 4 |
| 41. Heart pounding or racing | 1 | 2 | 3 | 4 |
| 42. Nausea or upset stomach | 1 | 2 | 3 | 4 |
| 43. Feeling inferior to others | 1 | 2 | 3 | 4 |
| 44. Muscle soreness, stiffness or swelling | 1 | 2 | 3 | 4 |
| 45. Loose bowel movements | 1 | 2 | 3 | 4 |
| 46. Difficulty in falling asleep or staying asleep | 1 | 2 | 3 | 4 |
| 47. Having to check and double check what you do | 1 | 2 | 3 | 4 |
| 48. Difficulty making decisions | 1 | 2 | 3 | 4 |
| 49. Trouble getting your breath | 1 | 2 | 3 | 4 |
| 50. Hot or cold spells | 1 | 2 | 3 | 4 |
| 51. Skin problems | 1 | 2 | 3 | 4 |
| 52. Having to avoid certain places or activities because they frighten you | 1 | 2 | 3 | 4 |
| 53. Your mind going blank | 1 | 2 | 3 | 4 |
| 54. Numbness or tingling in parts of your body | 1 | 2 | 3 | 4 |
| 55. A lump in your throat | 1 | 2 | 3 | 4 |
| 56. Feeling hopeless about the future | 1 | 2 | 3 | 4 |
| 57. Trouble concentrating | 1 | 2 | 3 | 4 |
| 58. Weakness in parts of your body | 1 | 2 | 3 | 4 |
| 59. Feeling tense or keyed up | 1 | 2 | 3 | 4 |
| 60. Heavy feelings in your arms or legs | 1 | 2 | 3 | 4 |

# UCLA LONELINESS SCALE

Interview: Initial / Post / Follow-up  Number: _____

Please indicate how often you feel the way described in each of the following statements Circle one number for each statement.

| Statement | Never | Rarely | Sometimes | Often |
|---|---|---|---|---|
| 1. I feel in tune with the people around me | 1 | 2 | 3 | 4 |
| 2. I lack companionship | 1 | 2 | 3 | 4 |
| 3. There is no one I can turn to | 1 | 2 | 3 | 4 |
| 4. I do not feel alone | 1 | 2 | 3 | 4 |
| 5. I feel part of a group of friends | 1 | 2 | 3 | 4 |
| 6 I have alot in common with the people around me | 1 | 2 | 3 | 4 |
| 7. I am no longer close to anyone | 1 | 2 | 3 | 4 |
| 8. My interests and ideas are not shared by those around me | 1 | 2 | 3 | 4 |
| 9. I am an outgoing person | 1 | 2 | 3 | 4 |
| 10. There are people I feel close to | 1 | 2 | 3 | 4 |
| 11. I feel left out | 1 | 2 | 3 | 4 |
| 12. My social relationships are superficial | 1 | 2 | 3 | 4 |
| 13. No one really knows me well | 1 | 2 | 3 | 4 |
| 14. I feel isolated from others | 1 | 2 | 3 | 4 |
| 15. I can find companionship when I want it | 1 | 2 | 3 | 4 |
| 16. There are people who really understand me | 1 | 2 | 3 | 4 |
| 17. I am unhappy being so withdrawn | 1 | 2 | 3 | 4 |
| 18. People are around me but not with me | 1 | 2 | 3 | 4 |
| 19. There are people I can talk to | 1 | 2 | 3 | 4 |
| 20. There are people I can turn to | 1 | 2 | 3 | 4 |

# HEALTH LOCUS OF CONTROL SCALE A

Interview: Initial / Post / Follow-up Number. _____

Below are a number of statements with which you may agree or disagree. Beside each statement is a scale which ranges from strongly disagree (1) to strongly agree (6). For each item, please circle the number that represents the extent to which you disagree or agree with the statement. Please circle only one number for each statement

| | Strongly Disagree | Moderately Disagree | Slightly Disagree | Slightly Agree | Moderately Agree | Strongly Agree |
|---|---|---|---|---|---|---|
| 1. If I get sick, it is my own behavior which determines how soon I will get well again | 1 | 2 | 3 | 4 | 5 | 6 |
| 2. No matter what I do, if I'm going to get sick, I will get sick | 1 | 2 | 3 | 4 | 5 | 6 |
| 3. Having regular contact with my physician is the best way for me to avoid illness | 1 | 2 | 3 | 4 | 5 | 6 |
| 4. Most things that affect my health happen to me by accident | 1 | 2 | 3 | 4 | 5 | 6 |
| 5. Whenever I don't feel well, I should consult a medically trained professional | 1 | 2 | 3 | 4 | 5 | 6 |
| 6. I am in control of my health | 1 | 2 | 3 | 4 | 5 | 6 |
| 7. My family has a lot to do with my becoming sick or staying healthy | 1 | 2 | 3 | 4 | 5 | 6 |
| 8. When I get sick, I am to blame | 1 | 2 | 3 | 4 | 5 | 6 |
| 9. Luck plays a big part in determining how soon I will recover from an illness | 1 | 2 | 3 | 4 | 5 | 6 |
| 10. Health professionals control my health | 1 | 2 | 3 | 4 | 5 | 6 |
| 11. My good health is largely a matter of good fortune | 1 | 2 | 3 | 4 | 5 | 6 |
| 12. The main thing which affects my health is what I myself do | 1 | 2 | 3 | 4 | 5 | 6 |
| 13. If I take care of myself, I can avoid illness | 1 | 2 | 3 | 4 | 5 | 6 |
| 14. When I recover from an illness, it's usually because other people (for example, doctors, nurses, family, friends) have been taking good care of me | 1 | 2 | 3 | 4 | 5 | 6 |
| 15. No matter what I do, I'm likely to get sick | 1 | 2 | 3 | 4 | 5 | 6 |
| 16. If it's meant to be, I will stay healthy | 1 | 2 | 3 | 4 | 5 | 6 |
| 17. If I take the right actions, I can stay healthy | 1 | 2 | 3 | 4 | 5 | 6 |
| 18. Regarding my health, I can only do what my doctor tells me to do | 1 | 2 | 3 | 4 | 5 | 6 |

# Appendix F

## Daily Report Form

**Each morning**, please call 842-4972. After the tone, Please do the following:

1. Say, "_____". This is the number you have been assigned to keep your identity confidential.

2. Say, "Mood", then report your general mood the **day** before according to the scale below:

| 1 | 2 | 3 | 4 | 5 | 6 |
|---|---|---|---|---|---|
| Extremely Happy | Moderately Happy | A Little Happy | A Little Sad | Moderately Sad | Extremely Sad |

For example, if you felt a little happy the **day** before, you would say, "Mood, 3".

3. Say, "Nerves", then report how you felt the **day** before according to the scale below:

| 1 | 2 | 3 | 4 | 5 | 6 |
|---|---|---|---|---|---|
| Extremely Anxious | Moderately Anxious | A Little Anxious | A Little Calm | Moderately Calm | Extremely Calm |

For example, if you felt moderately anxious the **day** before, you would say, "Nerves, 2".

4. Say, "Symptoms", then say the number corresponding to any symptom you experienced the **day** before according to the following:

1. No symptoms
2. Fever
3. Genital Tingling
4. Genital Tenderness
5. Genital Redness
6. Genital Itching
7. Genital Pain
8. Genital Lesions
9. Genital Scabs
10. Radiating Pain to Buttocks or Hip
11. Tenderness in the Groin
12. Abnormal Discharge from the Penis/Vagina

For example, if you had genital pain and genital lesions the **day** before, you would say, "Symptoms, 7, 8". If you had no symptoms the day before, you would say, "Symptoms, 1".

5. Say, "Thoughts", then give a brief statement of your thoughts **today** about herpes.

**Thank you.**

## Appendix G

## Cognitive Restructuring Group Therapy

At the end of the information session, CR subjects were given instruction in Ellis' (1962) model for cognitive restructuring and were advised that the topic for the following week would be their initial reaction to the disease and any subsequent change in their attitude about it. Ellis' model was reviewed at the beginning of the first therapy session. Subjects were then asked to relate their thoughts when they were first told that they had genital herpes. All thoughts were written on one half of a blackboard. Irrational thoughts were identified and then challenged by the subjects and corresponding rational thoughts were written on the other half of the blackboard. Role-playing between two subjects was used to demonstrate the emotional effects of an initial reaction including irrational thoughts vs a reaction including only rational ones. Individual progress toward holding more rational thoughts and the means by which irrational thoughts had been or could be challenged was discussed. In later therapy sessions, role-playing was used to identify irrational thoughts in each of the situations for discussion (e.g., telling a potential lover about the disease). Irrational thoughts were challenged and role-playing was again used to demonstrate the affective benefit of holding more rational thoughts.

A summary of the discussion was provided at the close of all therapy sessions. In addition, all sessions except the final one included advice as to the next week's topic for discussion and encouragement to complete the homework assignment.

# Appendix H

## Cognitive Restructuring Homework Assignment Form

Week # _____ Participant Number _____

| Activating Event | Irrational Beliefs | Consequences<br>a. Affective<br>(Anx. & Dep.-0 to 100)<br>b. Behavioral<br>c. Cognitive | Disputes | Rational Beliefs | Effects<br>a. Affective (Anx. & Dep.-0 to 100)<br>b. Behavioral<br>c. Cognitive |
|---|---|---|---|---|---|
| | | | | | |

# Appendix I

## Weekly Report Form

**Each Monday morning**, beginning April 22nd and continuing until July 8th, please call 842-4972. After the tone, Please do the following:

1. Say, "_____". This is the number you have been assigned to keep your identity confidential.

2. Say, "Mood", then report your general mood the week before according to the scale below:

| 1 | 2 | 3 | 4 | 5 | 6 |
|---|---|---|---|---|---|
| Extremely Happy | Moderately Happy | A Little Happy | A Little Sad | Moderately Sad | Extremely Sad |

For example, if you felt a little happy the week before, you would say, "Mood, 3".

3. Say, "Nerves", then report how you felt the week before according to the scale below:

| 1 | 2 | 3 | 4 | 5 | 6 |
|---|---|---|---|---|---|
| Extremely Anxious | Moderately Anxious | A Little Anxious | A Little Calm | Moderately Calm | Extremely Calm |

For example, if you felt moderately anxious the week before, you would say, "Nerves, 2".

4. Say, "Symptoms", then say the number corresponding to any symptom you experienced the week before according to the following:

1. No symptoms
2. Fever
3. Genital Tingling
4. Genital Tenderness
5. Genital Redness
6. Genital Itching
7. Genital Pain
8. Genital Lesions
9. Genital Scabs
10. Radiating Pain to Buttocks or Hip
11. Tenderness in the Groin
12. Abnormal Discharge from the Penis/Vagina

For example, if you had genital itching, genital lesions and genital scabs the week before, you would say, "Symptoms, 6, 8, 9". If you had no symptoms the week before, you would say, "Symptoms, 1".

5. Say, "Thoughts", then give a brief statement of your thoughts this week about herpes.

Thank you.

# Appendix J

## Factor Loadings, Communalities ($h^2$) and Percent of Total Variance for Six Factor Principal Components Solution for Background Data

| Variables | Factors 1 | 2 | 3 | 4 | 5 | 6 | ($h^2$) |
|---|---|---|---|---|---|---|---|
| Months Since First Infection | .82 | .18 | -.21 | .13 | -.09 | .12 | (.77) |
| Current Knowledge of Herpes Source[a] | .58 | .38 | -.03 | .00 | .46 | .39 | (.82) |
| Prior Knowledge of Herpes Source[a] | .82 | -.31 | .14 | .07 | .16 | -.10 | (.77) |
| No. of Family Members Talked With Re Herpes | .80 | -.04 | .24 | .14 | -.14 | .29 | (.78) |
| No. of MD's Talked With Re Herpes | .78 | -.01 | .33 | -.40 | .01 | .26 | (.88) |
| No. of Lifetime Sexual Partners | -.12 | .79 | -.09 | .10 | -.03 | -.13 | (.62) |
| No. of Current Sexual Partners | .02 | .68 | .44 | .23 | -.33 | -.16 | (.84) |
| No. of Partners Talked With Re Herpes | .09 | .76 | -.10 | -.06 | -.01 | .41 | (.54) |
| Involved in a Sexual Relationship[a] | -.17 | .06 | -.73 | .41 | .05 | -.16 | (.68) |
| In Psychological Therapy Last Year[a] | -.03 | .30 | .73 | .36 | -.15 | .14 | (.79) |
| Marital Status[b] | .29 | -.37 | .76 | .06 | .17 | -.09 | (.82) |
| Age | -.15 | .02 | .00 | -.88 | .03 | -.14 | (.51) |
| Past Involvement in Therapy Groups[a] | -.05 | .12 | .08 | .73 | .48 | -.03 | (.77) |
| Contraceptive Method[c] | .00 | .42 | .26 | .58 | .03 | .47 | (.80) |

continued . . .

## Appendix J continued

| | Factors | | | | | | |
|---|---|---|---|---|---|---|---|
| Variables | 1 | 2 | 3 | 4 | 5 | 6 | ($h^2$) |
| Years of Education | .16 | .11 | -.10 | -.04 | -.80 | -.00 | (.53) |
| Psychoactive Medication[a] | .31 | -.17 | -.13 | -.02 | .60 | .17 | (.47) |
| Used Community Resources[a] | -.15 | .22 | -.06 | .29 | .60 | -.54 | (.80) |
| Sex[d] | .04 | .21 | -.26 | -.16 | -.45 | -.56 | (.59) |
| No. of Friends Talked With Re Herpes | .32 | .19 | -.06 | .19 | .01 | .87 | (.89) |
| Percent of Variance | 20.2 | 16.9 | 13.6 | 11.6 | 9.2 | 6.3 | |

[a] 1- yes, 2-no
[b] 1- living together or married, 0- single, separated, divorced or widowed
[c] 0- none, 1- condom, diaphram, contraceptive foam or jelly, 2- oral contraception or IUD
[d] 1- female, 2- male

# Appendix K

## Factor Loadings, Communalities ($h^2$) and Percent of Total Variance for Seven-Factor Principal Components Solution for Questionnaire Data

| | Factors | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Variable | 1 | 2 | 3 | 4 | 5 | 6 | 7 | ($h^2$) |
| GHQ self-concept | .89 | -.12 | -.13 | -.03 | -.13 | -.06 | .14 | (.87) |
| GHQ sexual | .86 | -.16 | -.03 | .04 | .00 | .12 | -.05 | (.78) |
| GHQ interpersonal | .84 | .02 | -.38 | -.02 | -.08 | -.22 | .04 | (.91) |
| GHQ emotional | .66 | -.37 | -.05 | -.08 | -.38 | -.01 | -.37 | (.86) |
| Loneliness Scale | -.58 | .09 | .35 | -.11 | -.21 | .53 | -.00 | (.81) |
| CS-H suppression | -.50 | .01 | .19 | -.00 | .47 | .28 | .02 | (.58) |
| HSCL anxiety | -.12 | .85 | .01 | .24 | .03 | .07 | .29 | (.88) |
| HSCL somatization | -.12 | .84 | -.15 | -.21 | -.23 | -.11 | -.06 | (.86) |
| HSCL obs-comp. | -.19 | .79 | .39 | -.24 | .09 | .05 | -.07 | (.88) |
| HSCL depression | .01 | .69 | .16 | .27 | .05 | .47 | .09 | (.81) |
| HSCL sensitivity | -.39 | .58 | .44 | -.03 | .17 | .29 | -.19 | (.84) |
| CS-H behavioral action | .11 | -.21 | -.88 | .15 | .04 | -.03 | -.10 | (.88) |
| WOC-R keep to self | -.36 | .27 | .68 | .20 | .18 | .09 | .30 | (.84) |
| WOC-R seek support | .26 | -.15 | -.66 | .49 | -.12 | -.06 | .06 | (.78) |
| CS-H denial | -.17 | -.43 | .65 | -.09 | -.33 | .14 | -.01 | (.78) |
| HLC control by powerful others | -.24 | -.03 | .60 | -.10 | .33 | -.43 | .21 | (.78) |
| WOC-R detached | -.05 | -.34 | .51 | -.11 | .21 | .45 | .29 | (.72) |
| WOC-R problem focus | .11 | .14 | -.32 | .83 | .05 | .05 | -.10 | (.83) |
| WOC-R positive focus | .16 | -.33 | -.31 | .76 | -.08 | .12 | -.18 | (.86) |
| WOC-R reduce tension | -.26 | -.30 | -.04 | .71 | .43 | .03 | -.08 | (.85) |
| WOC-R self-blame | -.27 | .28 | .18 | .70 | -.07 | .08 | .14 | (.71) |
| GHQ work/school | .19 | -.13 | -.02 | -.01 | -.75 | .07 | .14 | (.64) |
| CS-H cognition | .19 | -.48 | .26 | .21 | .62 | .16 | -.22 | (.83) |
| HLC control by chance | -.05 | -.55 | -.23 | -.44 | .53 | .20 | .25 | (.76)) |
| CS-H worry | -.06 | .14 | -.05 | .05 | .11 | .81 | -.00 | (.70) |
| WOC-R wishful | -.48 | -.10 | .15 | .30 | -.06 | .55 | .05 | (.66) |
| HLC internal control | .05 | .10 | .22 | -.14 | -.19 | .03 | .88 | (.89) |
| Percent of Variance | 27.3 | 14.0 | 13.9 | 7.8 | 6.3 | 6.0 | 4.8 | |

# Appendix L

## Definitions of Coping Method for the Classification of Subject Transcripts

1) Cognitive - a change in attitude about the disease or attempting to manage appraisal of the stressor or its emotional consequences.

Examples:

a) Trying to see the positive side of having the disease.
b) "I used to think that herpes meant no more sex, but that's silly."

2) Behavioral - specifically planning a course of action or dealing directly with the stressor or its emotional consequences.

Examples:

a) Trying or wanting to find out or understand more about the disease.
b) Trying to make a connection between possible triggers and recurrences.
c) Planning or actually changing lifestyle to avoid triggers such as lack of sleep or excessive stress, etc.
d) Anticipating problems (e.g., "I have an exam tomorrow. I hope it doesn't bring on another recurrence.").
e) Statement of the negative aspects of having the disease.
f) Description of physical symptoms or emotional reactions.

3) Avoidant - attempting to avoid recognition of or confrontation with the disease or its emotional consequences.

Examples:

a) Expressing the thought that the disease is not really present or that it will not recurr.
b) Wishing the disease was not present.
c) Thinking about something else.
d) Denying the presence of physical symptoms or emotional states.

# Appendix M

## Definitions of Coping Focus for the Classification of Subject Transcripts

1) Problem Focus - attempting to recognize, modify or eliminate symptoms or triggers of the disease or sources of stress connected with the disease.

   Examples:
   a) A specific reference to the disease or a hypothesized trigger.
   b) "Something to get rid of."
   c) "Herpes makes it harder to concentrate and I'm not studying very well."

2) Emotion Focus - attempting to recognize or manage the emotional consequences of the disease.

   Examples:
   a) A specific reference to the emotional state being experienced.
   b) "People who are upset about herpes bug me."
   c) "I feel scared because I don't want to have another attack."

3) Unfocused - absence of reference to either the disease or its emotional consequences.

   Examples:
   a) Claiming the absence of any thoughts.
   b) No mention of anything relating to the disease.