

A Psychosocial Treatment Intervention For Recurrent Genital
Herpes: An Investigation of Psychoneuroimmunology

by

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Dissertation submitted to the Faculty of the
Virginia Polytechnic Institute and State University
in partial fulfillment of the requirements for the degree of
Doctor of Philosophy
in
Psychology

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June, 1986

Blacksburg, Virginia

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(ABSTRACT)

Thirty-one (11 males and 20 females) individuals with recurrent genital herpes were recruited from two cities, 15 (five males and 10 females) from Blacksburg, Virginia and 16 (six males and 10 females) from Pittsburgh, Pennsylvania, to participate in a four Assessment Period (Before treatment, After treatment, 12-week Followup, and 26-week Followup) study . They were randomly assigned to one of three conditions: Psychosocial Intervention groups, Social Support groups, or Waiting-List control groups . Each condition was comprised of two, five-member groups (i.e., one group for each city), with six-members in the Pittsburgh Waiting-List condition . Two individuals of this latter group failed to complete the study . Six, consecutive, weekly, 90-minute group treatment sessions were conducted for the first two conditions, Waiting-List controls were offered treatment after the 26-week Followup period. Psychosocial Intervention

involved: HSV information, interpersonal conflict discussions, relaxation training, stress management instructions, and suggestive-imagery techniques. The Social Support groups shared feelings and experiences about the disease, and served as placebo controls. Significantly greater reductions in herpes episode frequency, severity, and duration were reported by the Psychosocial Intervention individuals after treatment, than by individuals in the other two conditions. Similar improvements, in Psychosocial Intervention individuals, were found for the emotional distress, social support, and cognitive measures. It was concluded that Psychosocial Intervention was effective in reducing the chronicity of recurrent HSV infections as well as facilitating adjustment to the disease. Results were discussed according to psychoneuroimmunologic theory.

ACKNOWLEDGMENTS

I would like to thank George Clum, Ph.D., my committee chairperson, for his suggestions concerning the design of the dissertation, his guidance pertaining to the statistical analysis, and his encouragement, motivation, and support throughout the project. Also, Dr. Clum's expertise in group psychotherapy was invaluable in training the group therapists, processing the groups' activities, and directing group work.

I wish to thank my dissertation committee members, Drs. Winett, Jones, Scott, and Neff, for participating on the committee . I am grateful for their pertinent recommendations and suggestions directed at improving the research project's focus and design.

I am especially grateful for the time and commitment devoted by Nancy Yaeger, M.S. for her excellent clinical skills as the Virginia group therapist.

To the social work department of Magee-Women's Hospital, Pittsburgh, Pa., and the University of Pittsburgh Department of Infectious Diseases, I found their cooperation in referring individuals to the Pittsburgh project extremely valuable.

To all the individuals in the Virginia and Pennsylvania samples, thank you for your cooperation, motivation, and perseverance while participating in the study.

Finally, I offer warmest thanks to my wife, I am indebted to her for suggesting the dissertation topic. I appreciated her cooperation and encouragement throughout the project. I am grateful for and my daughter's, patience with me.

Sincerely,

David Longo, M.S.

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INTRODUCTION

Genital Herpes is a sexually transmitted disease resulting from Herpes Simplex Virus (HSV) type I or type II. It may now be the most frequently occurring venereal disease in the United States (Bettoli, 1982; Guinan, 1985). Many pharmacological agents have been utilized to treat genital HSV, but results have been inconclusive. While favorable reports of these agents' initial effectiveness have been attributed to placebo and demand characteristics (Glaser & Gotlieb-Stematsky, 1982), several researchers report that there is no biological cure for the disease at this time (Bierman, 1982, 1983a; Corey & Holmes, 1983; Guinan, 1985). Since there appears to be a large psychological component associated with the effectiveness of chemotherapeutic agents, it is surprising that only three studies have addressed this area. Blank and Brody (1950), di Bertolino (1981), and Gould and Tissler (1984) reported the successful psychiatric treatment of 36 patients with recurrent HSV episodes. However, these studies suffer from several methodological deficits. They do not control for demand characteristics, expectancy, or placebo effects. There was no standardization of psychiatric treatment, or specification of success criteria. Finally, these studies

have treated a highly select group of patients, which question whether the results will generalize to more diverse populations. Because of the possibility that psychological interventions may be successful in the treatment of HSV, it is the purpose of this paper to outline a controlled investigation of the psychosocial factors associated with recurrences and to examine the benefits of group support, suggestive-imagery, relaxation, health promoting behaviors, and psychotherapy on the episodic, recurrent rates of genital herpes.

CLINICAL MANIFESTATIONS

Genital herpes infections are classified as either initial or recurrent according to epidemiological and clinical criteria (Felman & Nikitas, 1982). Initial, or primary infections, tend to be more severe than recurrent infections. Initial attacks occur after an incubation period of two to 20 days, with an average of five days, postexposure (Chang, Fiumara, & Weinstein, 1974; Corey, Adams, Brown, & Holmes, 1983; Himell, 1981). The attacks involve: ". . .multiple genital and anorectal lesions appearing in crops from two to four weeks [in duration] and occasionally with urinary retention and constipation due to

pain and neurological involvement, root pains, and more distant disease such as adenitis and hepatitis ." (Thin, Nabarro, Parker, & Fiddian, 1983, p.116). "In approximately 60 percent of initial infections the virus moves in a retrograde fashion and invades the Pudental nerve, which supplies sensation to the genital skin" (Bierman, 1982, p. 34). Subsequently, the virus follows this nerve to the sacral dorsal-root ganglia, where it establishes itself as a non-encapsulated, mass of genetic material inseperable from the host's DNA (Bierman, 1976b; Reeves, Corey, Adams, Vontver, & Holmes, 1981).

While residing in the sacral dorsal-root gangla, the virus is almost impossible to treat without serious damage to the host (Juel-Jensen, 1982). Although there are a few studies which have attempted treatment during the remission phase of the disease (Fife, Corey, & Keeney, 1981; Mindel, Adler, Sutherland, & Fiddian, 1982), most of these studies suffer from procedural deficits (e.g., lacking placebo or control groups; were not double-blind, etc.) (Guinan, 1982), or the drugs used in treatment have major host side-effects such as: renal failure, liver involvement, or possible carcinogenic effects (Juel-Jensen, 1982; Nahmias, 1980). Recent studies with intravenous administered acyclovir (Fife et al., 1981; Mindel et al., 1982) and oral acyclovir

(Douglas et al., 1984; Nilsen, Aasen, & Nalsos, 1982; Straus et al., 1984) have offered some biologic promise for lesion treatment, however acyclovir does not decrease HSV lesion recurrent rates once treatment is discontinued (Guinan, 1985).

Individuals not experiencing the classic initial episode (i.e., neurologic involvement and systemic complications) are likely to exhibit fewer recurrences. These individuals often report a restricted localized attack, consisting of one or two discrete lesions. Typically, no fever, headache, chills, or urogenital complications are present. These clients have either handled the infection at the cellular level and the virus has not invaded the host's nervous system, or minor neural involvement occurred. The severity of the herpes infection "...appears to be influenced by herpes simplex virus type, host immune response to genital infection, and a previous history of past genital herpes" (Corey, Adams et al., 1983, pp. 966-967). Approximately 40 to 55% of initial HSV type I genital infections will recur, whereas 80 to 88% of initial HSV type II genital infections will recur (Bierman, 1982; Corey, Adams et al., 1983).

Recurrent infections involve less violent clinical episodes lasting from 10 to 12 days (Himell, 1981).

Symptoms include: genital itching, burning, pain, dysuria, edema, lymphadenopathy, neuralgias, shooting pains down the legs, and sometimes vaginal or urethral discharge (Bettoli, 1982; Himell, 1981; Juel-Jensen, 1981). As in initial infections, the prodromal symptoms (i.e., burning, itching, and neuralgia) are "... followed by clusters of small vesicles on an erythematous base. The lesions may become pustular, form crusts, and usually heal without scarring." (Felman & Nikitas, 1982, p. 448). Complete lesion healing requires from four to 10 days (Bettoli, 1982), however sometimes secondary infections prolong recovery from the episode. (Juel-Jensen, 1982). Viral shedding occurs for about five to 10 days (Bierman, 1982). In a survey (Knox, Corey, Blough, & Lerner, 1982) of 3142 patients, with recurrent genital herpes, recurrences occurred at the rates of: one-per-year (8.8% of the survey), two-to-four-per-year (23.6%), five-to-eight-per-year (36.0%), every month (24.1%) and nearly continuous (7.5%). Reported duration of the disease varies from a single, initial episode to recurrent histories of over 20 years in duration (Bierman, 1982; Knox et al., 1982). The mean recovery rate of recurrent genital herpes has been estimated as seven years for 40 to 50% of the sufferers (Bierman, 1982, 1983c).

INCIDENCE

Genital herpes is a perplexing, disease for the medical profession (Bettoli, 1982). The infection is considered a venereal disease because its mode of transmission results predominantly from either sexual intercourse or oral-genital contact (Glaser & Gotlieb-Stematsky, 1982). As of this writing, there is no biologic cure for the disease (Bierman, 1982, 1983a; Corey & Holmes, 1983; Guinan, 1985). Furthermore, several investigators (Armerding, 1982; Glaser & Gotlieb-Stematsky, 1982) estimate the development of an effective medical cure is between 10 to 20 years in the future.

Genital herpes is now considered the second most common venereal disease by the Centers for Disease Control (Bettoli, 1982). Felman and Nikitas (1982) estimate the total annual number of new genital herpes cases reported each year in the United States as between 200,000 to 500,000. However, since the disease is not considered a reportable venereal disease by many physicians, these estimates are low (Bettoli, 1982). Higher estimates of 300,000 to one million cases per year are likely more representative (Himell, 1981). These higher estimates establish the disease as the second in incidence with only

gonorrhoea (one million cases/year) being higher . Furthermore, if genital herpes has continued to increase in frequency at its reported rate (900% increase from 1960 to 1979 -- Genital Herpes Infection-United States, 1966-1979 [GHI-US], 1982), then it may now be the most frequently occurring venereal disease in the United States.

DEMOGRAPHICS

The Centers for Disease Control reported an epidemic of genital herpes occurred between 1966 to 1979, based on the most recent data available (GHI-US, 1982) . The report explained that accurate estimates of new genital HSV consultations per year are unknown, because many health care providers do not report such data . However, based on increased cases provided by reporting physicians, it is assumed that a genital herpes epidemic is in progress .

Demographic data suffers from the same physician-reporting deficits as noted in the incidence data above. Adam (1982) has summarized the data from several studies and concludes that genital infection parallels the onset of sexual activity . Most primary infections occur after puberty, with the highest concentrations during the second and third decades of life. Incidence varies with the sexual

mores of various subcultures. Corey, Adams et al. (1983) suggest that genital herpes is the most prominent venereal disease for middle class individuals, ages 18 to 44. Approximately 40% of HSV sufferers acquired genital herpes from individuals claiming they did not know they had the disease (Corey, Adams et al., 1983).

Knox et al., (1982) described a survey of 1,535 men and 1,607 women members of HELP (a program service organization of the American Social Health Association comprised of individuals with herpes and those interested in the disease). Although this survey was based on a self-select population of individuals, and generalization of the results to the general population is not advisable, the study warrants description. Knox et al. (1982) found that the respondents were primarily white, with a mean educational level of 15.2 years, and earned greater than \$20,000 per year. The median age range for women was 25 to 29 years (men: 30-34 years) with a mean age of 30.9 ± 0.2 years (men: 35.9 ± 0.2). The age at which women acquired initial genital herpes differed from men. More women in the survey reported initial genital herpes acquisition in the youngest age group (15 to 24 years of age) than men. However, acquisition rates between the genders became equal (28.8% women, 29.3% men) for the 25 to 29 year acquisition

category, and men surpassed women in acquisition rates (70.0% men vs. 46.3% women) after the age of 30 years. Hence, these women tended to acquire HSV before age 24 and men after that age.

The median recurrent rates were between five to eight HSV episodes per year, with no gender differences. "About one-third (32.5% of the men and 30.3% of the women) stated that the frequency of recurrences was about the same as when they were first infected. Almost one-half of the subjects reported that their attacks were less frequent than initially (47.9% of the men and 47.1% of the women), and about one-fifth of the subjects reported more frequent recurrences (19.6% of the men and 22.6% of the women)" (Knox et al., 1982, p. 18). Finally, women reported a shorter duration of the disease (mean years = 3.9) than men (mean years = 5.1). Interestingly, there was no significant relationship between duration and rates of recurrences. It is, therefore, clear from these data that a college population should provide an ample supply of individuals with episodic genital herpes.

REVIEW OF LITERATURE

The majority of genital herpes treatment research has resided in the medical area . Only three psychological treatment studies (Blank & Brody, 1950; di Bertolino, 1981; Gould & Tissler, 1984) have reported the used of psychotherapy as a treatment strategy for patients with recurrent herpes simplex. These studies will be described later, but first a review of the medical treatment research for the disease is warranted because of the vast amount of research done in this area.

BIOLOGICAL/MEDICAL TREATMENTS

As of this writing, no successful medical treatment of genital herpes has been reported in the literature (Corey & Holmes, 1983). The elusive cure for both herpes viruses (types I & II) results from the nature of the HSV during its dormant phase. Because most pharmacologic treatments have serious side effects, medical professionals treat only those patients with life-threatening or extreme cases of HSV, e.g., herpes simplex encephalitis (Whitley, Soony, Dolin, Galasso, Ch'ien, & Alford, 1977) or ocular herpes (Nahmias, 1980), with chemotherapeutic agents. In such cases, drugs

such as trifluorothymidine, adenine arabinoside (Ara-a), and iododeoxyuridine were effective in destroying HSV. However these drugs pose major Host side effects, such as: renal failure, liver involvement, and/or carcinogenic effects (Juel-Jensen, 1982; Nahmias, 1980).

Topical treatment studies of the HSV lesions are hindered procedurally by the short duration of the lesion, which usually lasts from four to 16 days (Whitley, Barton, Collins, Whelchel, & Diethelm, 1982). This short episode length results in demands of extremely effective chemotherapeutic agents to reduce healing time sufficiently in order to reach statistical significance (Thin et al., 1983; Spruance, Overall, Kern, Krueger, Plsam, & Miller, 1977). Methodological flaws in past research has included the lack of placebo controls and double-blind designs (Bierman, 1982; Guinan, 1982; Spruance et al., 1977). A number of drugs have been found successful in uncontrolled research only to have later controlled studies contradict these initially favorable results and attribute patient improvement to placebo and/or psychological effects (Bierman, 1982, 1983a, 1983b; Corey & Holmes, 1983; Guinan, 1982 Juel-Jensen, 1982; Nahmias, 1980; Spruance et al., 1977).

Recent success has been shown in placebo-controlled,

double-blind studies in reducing mean lesion healing time with topical application of five percent acyclovir (Zovirax) in apolyethylene glycol base for both genital herpes (Corey, Nahmias, Guinan, Benedetti, Critchlow, & Holmes, 1982; Thin et al., 1983) and labial HSV (Whitley et al., 1982). Other investigators have reported successful treatment of genital herpes with intravenous acyclovir (Corey, Fife et al., 1983; Fife et al., 1981; Mindel et al., 1982), however the drug was not effective in reducing recurrence rates. Subsequent reports by Bierman (1983a, 1983b), Corey and Holmes (1983), and Guinan (1982) have claimed that neither topical nor intravenous acyclovir reduce the recurrent rates of HSV episodes in patients following discontinued use of the drug.

Three recent studies (Douglas et al., 1984; Nilsen et al., 1982; Straus et al., 1984) have investigated the effects of oral acyclovir on genital herpes. These studies have shown that daily administration of three to five, 200-mg capsules of acyclovir-5 effectively suppressed herpes episodes in 71% to 83% of patients treated for 120 to 125 days. However, acyclovir did not have an episode-suppressive effect once treatment was discontinued. In fact, most treated individuals exhibited more severe posttreatment lesions than pretreatment lesions (Guinan, 1985; Straus et al., 1984). The investigators suggest that

the more severe posttreatment HSV episodes might be due to altered Host immune responses during long-term acyclovir suppression therapy (Douglas et al., 1984; Straus et al., 1984). In addition, several adverse reactions were reported by the acyclovir treated individuals, including: hypertension, blurred vision, loose stools, rash, vomiting, headache, diarrhea, weight loss, and nausea. Finally, the researchers cautioned against wide spread use of acyclovir until further research is conducted concerning three possible major side effects of the drug. These include: 1). Long-term acyclovir therapy may affect normal host-cell metabolism in an adverse fashion; 2). Acyclovir produces highly drug-resistant viral strains which may increase the danger to HSV sufferers' sexual partners; and 3). Long-term acyclovir suppression therapy alters the Host's natural response to HSV recurrences in an adverse manner, such that posttreatment lesion episodes are similar in severity to HSV sufferers' initial attacks.

Another avenue of medical treatment lies in the use of interferon (Cheeseman, Rinaldo, & Hirsch, 1977; Dunnick & Galasso, 1979), HSV vaccinations (Nasemann, 1976; Nasemann & Wassilew, 1979; Schmersahl & Rudiger, 1975; Weitgasser, 1977), cutaneous sensory-nerve destruction (Bierman, 1983b), and immunoactivation-stimulation techniques (Drew, Blume,

Miner, Silverberg, & Rosenbaum, 1973; Feldman, Hayes, Chaudhary, & Ossi, 1978; Neumann, 1977). These treatments have yielded mixed results. The use of human leukocyte interferon to treat herpes zoster was effective in reducing episode severity with minor side effects (Dunnick & Galasso, 1979). Exogenous interferon has also been used to delay reactivation and decrease lesion severity in HSV patients (Dunnick & Galasso, 1979; Kirchner, 1982). However, the wide spread investigation of interferon treatment has been hindered by its high cost and lack of purity (Phillips, 1979). Furthermore, interferon does not appear to reduce the frequency of HSV recurrences in double-blind investigations (Bierman, 1982, 1983a, 1983b; Guinan, 1982).

HSV vaccinations, both active and passive forms, have been shown to be minimally effective against HSV infections (Skinner, Woodman, Hartley, Buchan, Fuller, Durham, Synnott, Clay, Melling, Wiblin, & Wilkins, 1982). Rapp and Adelman (1982) have warned against the use of present HSV vaccinations due to their serious health risks (e.g., contaminant DNA, virus transformations, and oncogenic potential).

Cutaneous sensory nerve destruction is a theoretically efficacious procedure in preventing recurrences of HSV through elimination of the infected nerve ending (Bierman,

1983b) . Several researchers (Sutherst, 1979; Ward & Sutherst, 1975; Woodruff & Thompson, 1972) have resolved pruritus vulvae in women by the injection of absolute alcohol into the target area. Other researchers (Carton & Kilbourne, 1952; Shelley, 1978) have surgically transected the cutaneous nerves and reduced the occurrences of herpes labial in patients. However, followup data indicated HSV episodes returned along neighboring neuropathways (Shelley, 1978) . One potential problem with such radical neurodestruction procedures in genital HSV patients is obvious. Decreased neurogenital, stimulatory surface area may lead to secondary sexual dysfunction in these patients (Kaplan, 1974).

Immunoactivation-stimulation techniques have included: repeated smallpox vaccinations (Kern & Schiff, 1959; Neff & Lane, 1970); oral poliovaccine (Tager, 1974); influenza vaccine (Brown, 1977); and bacillus Calmette-Guerin (BCG) immunoprophylaxis (Anderson, Ushijima, & Larson, 1974; Bierman, 1976a) . These techniques were intended to stimulate the host's immunologic response to HSV and thus destroy the active and latent virus (Bierman, 1976a) . Recent research (see Corey & Holmes, 1983; Glaser & Gotlieb-Stematsky, 1982) has shown the ineffectiveness of these techniques in reducing recurrent HSV infections .

Additionally, other researchers (Adam, 1982; Rapp & Adelman, 1982) have suggested that serious side effects, similar to HSV vaccinations (e.g., viral transformation, cell-mediated-immune incompetence, oncogenic potential) may result from these techniques.

The effects of psychotropic drugs on HSV recurrent rates have been reported in two studies. Lieb (1979) described the effect of lithium carbonate on two patients he was treating for psychiatric disorders. A 30-year-old woman with an 18 year history of monthly, labial herpes episodes was administered lithium (900 mg/day). The woman was episode-free from herpes for eight months during lithium therapy. When lithium was discontinued, the patient again displayed monthly HSV episodes. The second patient, a 30-year-old man, with a eight year history of genital herpes (one to two episodes per month), was treated with lithium (1200 mg/day). The patient reported a three month, episode-free, period while he was following the chemotherapeutic regimen. He discontinued lithium ingestion and three weeks later developed a genital herpes episode. Subsequently, he resumed lithium and reported no additional episodes.

Chang (1975) described a small study of eight men (ages 21 to 38) with recurrent genital herpes (two or more episodes per month). The researcher did not report duration

history of the patients' infections. Each patient was "...given chlorpromazine once daily, beginning with 50 mg one to two hours before retiring, and increasing the dose to 100 mg in two to three days, depending on their tolerance to the sedative effects." (Chang, 1975, p. 153). Two patients discontinued chemotherapy because the drug had no effect on their rate of HSV recurrences. The remaining six patients displayed a significant reduction of recurrences. Furthermore, the recurring episodes during treatment were 'mild and brief'. Chang (1975) reported: "After the drug was discontinued, herpetic recurrence continued with the same clinical severity as before therapy. Continued use of chlorpromazine was not encouraged because of its potential toxicity." (p. 154). The researcher could not ascertain the drug's mechanism of operation, but believed chlorpromazine's tranquilizing effect was not the active factor in episode reduction "... because neither diazepam nor trifluoperazine produced the same effect. An anti-serotonin effect of chlorpromazine was suspected [Chang, 1974]. However, reserpine administration was not effective." (Chang, 1975, p. 154).

In summary, the majority of genital herpes treatment research has resided in the biological-medical area (Bonneau & Hennesen, 1981; Corey & Holmes, 1983; Glaser & Gotlieb-

Stematsky, 1982; Hamilton, 1980; Shiota, Cheng, & Prusoff, 1982). The above review demonstrates the inability of these methods to provide either a safe or effective biologic cure for recurrent genital herpes to date. The typical progression of such research is from poorly-controlled studies with promising effects to well-controlled studies with disappointing results. This oft-repeated progression has led to the hypothesis that genital herpes of the recurrent type responds to placebo-effects, demand characteristics, and patient-researcher expectancies (Bierman, 1982, 1983a; Guinan, 1982). Rather than mobilize these powerful elements (Benson & Epstein, 1975; Critelli & Neumann, 1984; Frank, 1982), most previous researchers have attempted to parcel-out or control these effects. Only three research studies (Blank & Brody, 1950; di Bertolino, 1981; Gould & Tissler, 1984) have utilized these elements in the psychological treatment of recurrent, HSV infections. These studies will now be discussed at length.

PSYCHOLOGICAL TREATMENT

Blank and Brody (1950) were the first investigators to report the successful psychological treatment of patients with recurrent HSV. Ten patients were referred by

dermatologists to these psychiatrists. Presenting problems included prolonged, recurrent, genital and/or labial, HSV infections. Treatment was psychoanalytically oriented, 'suggestive therapy', with one-hour, individualized, sessions. The number of treatment sessions varied from two to 50 sessions. One patient refused treatment after the initial session. The researchers did not report the mean number of pretreatment HSV infection, periods for the patients, but exclaimed that each patient "... had a history of disease of sufficient severity to require frequent medical consultation for a long period before coming to the psychiatrist." (Blank & Brody, 1950, p. 256). No discrete, physical, stimuli (e.g., 'fever, respiratory infection, sunburn, gastrointestinal upsets, menstruation, physical trauma, or certain types of food') could be identified as precipitating their lesion episodes, however all patients "... observed a positive relationship between emotional upset and the occurrence of herpes." (Blank & Brody, 1950, p. 255). Nine of the 10 patients displayed no symptoms after "... an understanding and proper handling of the transference situation..." (Blank & Brody, 1950, p. 259) and were symptom free for 'many months' after treatment. Dermatologic followup studies confirmed symptom relief, but the followup time period was not specified.

di Bertolino (1981) treated 24 patients with recurrent, HSV, infections. Pretreatment duration of the disease ranged from one to over 10 years. Lesion outbreaks varied from once-a-month to almost continuous lesion manifestation. Four cases of herpes labial were treated (two adults and two children). The remaining twenty adult patients were treated for genital herpes. di Bertolino (1981) reported the successful treatment of all twenty-four patients. Success was defined as 'no herpes outbreaks, one year posttreatment', or 'herpes outbreak no longer followed exposure to the identified, external, stimulus'. Treatment effects were maintained in all patients, at one to two year followup periods. Considering such dramatic results, a more detailed description of the study is justified.

Patients were selected along two criteria. First, the patient must have believed the disease was serious and the lesions were bothersome. Second, lesion episodes must have occurred at least once-a-month, or symptoms must have followed an easily identified, discrete, external stimulus. Differential treatment was based on the second selection criteria. If a discrete, external stimulus was identified, di Bertolino described the relationship among the stimulus and the increased anxiety resulting from the patient's anticipation of a herpes episode and the resultant episode.

The psychiatrist then gave the patient an expectation that hypnotic suggestion would break the connection among the stimulus, anxiety, and the outbreaks of herpes lesions. The patient was placed into a medium trance and the following suggestion was made: "Begin to feel a cool, fresh sensation at the lesion site ... Slowly allow the sensation of heat and burning to be replaced with a sensation of coolness and numbness ... When you awaken you will feel no pain at the site of infection [translated from Italian]" (di Bertolino, 1981, p. 1208). The patient was brought out of the trance and site analgesia was pointed out. A deep trance was then induced with a suggestion to develop a pleasant dream. Six to 10, one-hour sessions were required to successfully treat these patients. Sessions were scheduled during lesion outbreaks. di Bertolino reported that the hypnotic suggestion was most effective when made during a lesion episode.

Patients without discrete, external, precipitating, stimuli required from seven to 17, one-hour sessions for treatment success. Psychotherapy was used to address the patients' interpersonal difficulties. As these difficulties were resolved, lesion recurrences and severity were reduced. Following interpersonal conflict resolution, the hypnotic techniques and suggestions described above were applied.

Gould and Tissler (1984) reported the successful treatment of two women with genital herpes. The treatment involved three individualized hypnotherapy sessions, along with home practice self-hypnosis tapes. Suggestions of clean skin and viral destruction were used (Simonton, Matthews-Simonton, & Creighton, 1978) as the focus of therapy. One woman reported no HSV attacks at a three month followup period, the other woman was episode free at a seven month followup.

As can be seen from the descriptions of these psychological studies, several methodological problems limit generalization of the results to the general population. First, the studies treated a select group of patients, who were referred to the researchers by other medical professionals because of the HSV infection chronicity and/or the patients' high level of concern about the infection. Since these samples represent a restricted range of the entire HSV population, generalization from the studies, with respect to successful psychological treatment of HSV infections, should be done with extreme caution. Second, the treatment was not standardized. The number of sessions varied from two to 50 sessions. Treatment technique involved either psychoanalytic transference resolution of various conflicts, or cognitive restructuring of the

hypothesized anxiety/HSV connection plus hypnotic suggestion of symptom relief. Such variation in treatment does not allow for the estimate of treatment effectiveness or strength. Third, expectancy and demand effects could not be parceled out from the treatment techniques. Since all patients were exposed to the researcher and treatment, successful outcomes might be attributed solely to placebo effects. Fourth, resulting from the lack of placebo controls, the outcomes may have been due to the passage of time. There was no attempt to control for the length of time these patients were infected. Bierman (1982, 1983c) estimated that 40 to 50% of HSV sufferers recover from HSV infections in about seven years. Hence, the results may have been due to selecting patients who were about to recover in spite of treatment. The fifth methodological concern involves the followup period. Although the researchers report their treatments were successful at followup, Blank and Brody (1950) did not report the followup time interval, and none of the investigations described the method of followup reporting. Subsequently, the treatment success at followup might be due to insufficient posttreatment time lag, and/or due to demand characteristics elicited from the patients.

EVIDENCE LINKING PSYCHOLOGICAL FACTORS TO GENITAL HERPES

The following section describes a case study associating interpersonal tension and HSV labial outbreaks (Schneck, 1947); two reports of HSV outbreaks elicited by emotionally laden hypnotic suggestions (Heilig & Hoff, 1928; Ullman, 1947); and a postdictive correlation study (Goldmeier & Johnson, 1982) in which severity of emotional distress was strongly correlated to rates of recurrent genital herpes.

Schneck (1947) was one of the first researchers to report the association between interpersonal tension and the outbreak of oral herpes. He described a case of a 24-year-old soldier who sought Schneck's assistance for his feelings of loneliness, depression, and suicidal ideation. During the interview, Schneck discovered that interpersonal situations, which elicited hostility in the soldier, brought on an oral herpes attack. The attack occurred only if the patient could not confront the anger-producing individual. In situations in which the soldier could assert his feelings, no HSV episode was realized. This association was confirmed by the patient's wife. Further examples of this phenomenon were reported by Heilig and Hoff (1928) and Ullman (1947). Heilig and Hoff (1928) elicited oral herpes

outbreaks in three individuals. The patients had long histories of the disease. While in a hypnotic state, the patients were asked to imagine the itching of an incipient herpes attack. However, no herpes outbreaks followed this suggestion. Subsequently, the psychiatrists administered the trance with a different suggestion. This time the suggestion of the incipient herpes itching was accompanied by visualizing unpleasant emotional situations. This latter suggestion elicited oral herpes outbreaks in all three patients. Heilig and Hoff (1928) concluded that recurrent oral herpes was the psychosomatic expression of emotional distress. Similarly, Ullman (1947) elicited an oral herpes episode in a 27-year-old man through hypnotic suggestion. The patient was asked to imagine he was catching a cold and felt tired, achy, and feverish. The man displayed an oral HSV episode within 24 hours of the suggestion. Although these last two studies did not control for HSV eliciting factors other than the hypnotic suggestion, they do offer some evidence for suggestive, stress-induced, HSV episodes.

Goldmeier and Johnson (1982) conducted a postdictive study in which they monitored 58 initial genital herpes patients, for 30 weeks. The researchers assessed the patients' levels of 'nonpsychotic illness' (e.g., levels of anxiety, depression, and hypochondriasis), by administering

Goldberg's (1972) General Health Questionnaire (GHQ), and confirmed the presence of HSV, by culture, upon the patients' first visit to their clinic. Gender, age, and social class were also assessed. Followup data was collected, by mail, 14 and 28 weeks after the initial visits. The data consisted of the number of recurrences since the last contact and the location of lesions. The researchers found no significant correlations between patient demographics and recurrences. They did find a significant relationship ($p = .002$) between GHQ score and recurrence rate. Patients scoring above '11' on the GHQ displayed a significantly greater frequency of recurrent, HSV, episodes than patients scoring below '11'. Goldmeier and Johnson (1982) suggested that nonpsychotic states, such as anxiety, depression, or obsessional thinking resulting in GHQ scores above 12, led to increased frequency of recurrences. The authors speculate that these psychological states may "... cause an excess production of adrenergic substances which encourage reactivation of latent genital herpes." (Goldmeier & Johnson, 1982, p. 40). The researchers recommend psychological and/or chemical therapy for HSV patients designed to reduce autonomic sympathetic reactivity.

These four studies demonstrate an association between

emotions and HSV activation . However, caution in interpreting these results should be taken due to the nature of the above studies . Schneck (1947) and Goldmeier and Johnson (1982) conducted postdictive investigations . Such designs rely on retrospective data, which are subject to recall errors and response biases . This is especially pertinent in Schneck's (1947) study, since the investigation was a single-case, retrospective design . Goldmeier and Johnson's (1982) results may be viewed with more confidence since recall time periods were relatively short (14 weeks each) . Heilig and Hoff's (1928) and Ullman's (1947) experiments are rather impressive demonstrations for the influences of suggestion on herpes outbreaks. However, the small sample size (n = 4) and the select nature of the clients indicate some caution should be exercised in generalizing these results to the entire HSV population.

In conclusion, there appears to be an association between emotional distress (i .e ., levels of anxiety, hostility, and depression) and HSV recurrence rates . Patients reporting high levels of emotional distress also report more frequent HSV episodes . Additionally, herpes outbreaks can be elicited in some HSV sufferers with suggestions of emotional laden scene visualizations . Although this data supports the association of distress and

herpes attacks, the exact mechanisms through which emotional distress affects HSV activation are not known. One possible explanation, given the results of these studies, is that emotional distress increases adrenergic substance production and intensifies autonomic nervous system activity (Bieliaskas, 1982). High autonomic nervous system activity has been hypothesized to encourage reactivation of latent HSV (Bierman, 1983a; Goldmeier & Johnson, 1982), whereas elevated adrenergic substances produce immunosuppressive effects in the host (Crary et al., 1983). Therefore, emotional distress functions to both activate latent HSV, as well as to compromise the individual's ability to destroy the activated herpes virus because of the immunosuppressive effects of elevated adrenergic substances. This hypothesis is not sufficient to explain why some individuals have one HSV episode and others have recurrent attacks (Bierman, 1983a; Kemeny, Cohen, & Zegan, 1984; Manne & Sandler, 1984). A more complexed hypothesis is needed to explain the effects of biopsychosocial factors on HSV episodes and immunocompetence. Psychoneuroimmunology offers such a hypothesis. This model will now be examined.

PSYCHONEUROIMMUNOLOGY

Psychoneuroimmunology is a recent development in behavioral medicine/health psychology (Ader, 1981; Solomon, in press). The model explains how various psychological, sociological, biological, and environmental factors interact to affect the individual's immune system. Jemmott and Locke (1984) provided an extensive review of the literature relating psychosocial factors and cortical-immunological structures to human susceptibility to infectious diseases. Similarly, Plaut and Friedman (1981; 1982) have proposed a "Multifactorial Approach" for the development of disease in humans. According to this approach, factors such as the individual's psychosocial and physical environment, genetic predisposition, psychosocial operations, physiological functions, pathogenic exposure, and medical treatment interact in a systemic, nonlinear fashion (Schwartz, 1982) to place the individual along a disease-to-nondisease continuum. These researchers have suggested that infectious disease should be viewed as a 'psychosomatic phenomenon'. In this way, idiosyncratic responses to infectious pathogens and prescribed medical treatment may be explained through psychosocial mediated influences on the immune system. Support for viewing the expression of disease as a function of biopsychosocial factors has been documented by many studies (see Ader, 1981; Jemmott & Locke, 1984; Riscalla,

1982; Solomon, in press).

Genital herpes provides an excellent example of how biopsychosocial factors influence the rate and severity of HSV, recurrent, episodes (Jemmott & Locke, 1984; Kiecolt-Glaser, Speicher et al., 1984). Since the virus resides in the ganglia between episodes, the disease pathogen is available to the Host at all times. During periods of immunosuppression, the virus overcomes the Host's immunologic defenses and manifests as a herpes lesion (Glaser & Gottlieb-Stematsky, 1982). Hence, the absence or presence of herpes lesions may be considered a physical indicator of the individual's immunocompetence. In the following section, biopsychosocial factors will be conceptualized into five areas: stress, health status, emotions, social support, and cognitions. These areas will be described and then related to genital herpes.

Stress

Selye (1946; 1956; 1971) proposed an early stress model (General Adaptation Syndrome - GAS) associating environmental stress to endocrine stimulation (e.g., stress stimulates the anterior pituitary gland to secrete the hormones STH and ACTH, which acts upon the stressed target

site and adrenal cortex, respectively. The adrenal cortex is then stimulated by ACTH to produce tissue active catecholamines and corticoids). Later models (Jemmott & Locke, 1984; Ramsey, 1982; Stein, Schleifer, & Keller, 1981) have incorporated the hypothalamus and its junctions to the cerebral cortex (i.e., cognitive influences) and limbic system (i.e., emotional - autonomic nervous system influences) to explain an individual's immune response to a stressor (physical and/or psychological). In short, Riscalla (1982) has postulated that "... psychological factors such as emotions, stress, life experiences, etc. can produce an abnormality in immune function through mediation of the neuroendocrine system, and in the final analysis, exert control over the immune system." (p. 331). Hence, stress has been shown to have an immunosuppressive action in both humans (Locke, 1982; Palmbland, 1981; Rogers, Dubey, & Reich, 1979) and animals (Borysenko & Borysenko, 1982; Monjan, 1981). For individuals with recurrent genital herpes, stress is likely to be perceived as a causal factor in their recurrent episodes. In fact, Bierman (1983c) reported from a survey of 375 genital herpes patients that: "'Emotional stress' was the single most important triggering mechanism (86.4%), while 'intercourse', (66.0%), 'lack of sleep' (51.5%), and 'overexertion' (37.7%) ..." (p.43)

preceded recurrent episodes. Other stressors have also been associated with recurrent HSV attacks. These stressors include: fever, exposure to sunlight or extreme cold, surgical procedures, and trauma (Felman & Nikitas, 1982; Juel-Jensen, 1982).

In summary, stress has been shown to affect immunocompetence and in return the frequency and severity of HSV episodes (Bierman, 1983a; Kemeny et al., 1984). Furthermore, di Bertolino (1981) found that a substantial percentage of the herpes patients he treated associated a particular stressor with an HSV outbreak. After these patients were instructed to use a stress reducing coping strategy, their recurrent rates were drastically reduced.

Emotions

Emotions may influence the immune system through both the limbic and autonomic nervous systems via the thymus gland, which produces T-lymphocytes (i.e., cell mediated, antiviral, immune substances). Strong emotions such as bereavement have been shown to decrease both humoral (B-lymphocyte) and cell-mediated (T-lymphocyte) immunity (Bartrop, Lockhurst, Lazarus, Kiloh, & Penny, 1977). Additionally, Locke et al. (1984) found that individuals who

report above average number of 'psychiatric symptoms' (i.e., depression, anxiety, obsessive-compulsiveness, and interpersonal sensitivity) have lower Natural Killer Cell Activity (NKCA) than individuals reporting average or below average number of 'psychiatric symptoms'. NKCA is an important immunologic function associated with destroying both tumor and virus-infected cells (Herberman & Holden, 1978; Marx, 1980). Hence individuals who experience psychiatric symptoms are assumed to have diminished NKCA. The diminished immunologic function may allow HSV reactivation and increased herpetic outbreaks. Support for this hypothesis was provided by Goldmeier and Johnson's (1982) study, in which herpes sufferers scoring above '11' on the GHQ displayed significantly greater frequencies of HSV episodes than individuals scoring below '11'.

Herpes Simplex Virus and Moods. Luborsky and his associates reported two studies associating mood with recurrent herpes labialis. The first study (Katcher et al., 1973) found a significant correlation ($r = 0.33$) between the Unhappy Factor of the Clyde Mood Scale (Clyde, 1963) and episodes of herpes labialis for 38 first-year nursing students during the year following evaluation. A multiple correlation of 0.56 was also found among nursing students with identified herpes labialis episodes during the posttest

year and their scores on three measures: Clyde Mood Scale, Cornell Medical Index (Brodman, Erdmann, & Wolff, 1970), and Social Assets (Luborsky, Todd, & Katcher, 1973). The Social Assets score yielded a negative correlation ($r = -0.41$) with recurrences, whereas the Cornell Medical Index items assessing 'unhappiness' and 'the inclination to complain of many illnesses' showed a positive correlation with recurrent rates. Katcher, Brightman, Luborsky, and Ship (1973) concluded that recurrent herpes labialis could be predicted with the Clyde Mood Scale. Additionally, individuals manifesting recurrent HSV infections tend to report more psychological and medical complaints, a general feeling of unhappiness, as well as fewer social support systems.

Luborsky, Mintz, Brightman, and Katcher (1976) followed Katcher et al.'s 1973 work with a longitudinal study comparing moods with recurrent herpes labialis episodes in first-year female nursing students. In this second study, "Student nurses who had a positive antibody titer filled out the Clyde Mood Scale daily for three months (except for occasional absences such as for some weekends). Each woman was checked daily for herpes sores on lips and herpes virus in mouth secretions. A daily calendar was kept by each woman containing a notation of cold sores, other illnesses, and concomitant life events" (Luborsky et al., 1976, p.

544). Data was collected for 16 nursing students during two three-month periods (May to July, 1969 and June to August, 1970). No significant association was found between mood for a four day period preceding herpes episodes and the episodes, when all scores were combined and averaged. However, a 'highly significant effect' was shown for the first data period, but not for the second. The authors stated that: "...we could not find the basis for the differing results, [so we] combined the results into the single group result." (Luborsky et al., 1976, p. 545). Yet a significant association existed between mood level and herpes episodes in the summer of 1969 and dissipated in the summer of 1970. Perhaps the nursing students found their first year of instruction more stressful than their second. While the authors did not clarify this issue, the hypothesis has some intuitive appeal. Luborsky et al. (1976) explained their failure to find a significant correlation between daily mood shifts and recurrent herpes episodes as residing in: "...the variety of alternative instigators to the activation of herpes simplex virus, mood shifts may only occasionally be an instigator." (p. 547).

The above studies, with the exception of the Luborsky et al. (1976) article, suggest a connection between negative emotional states and recurrent herpes episodes.

In general the studies are poorly controlled or lack the longitudinal nature requisite for more conclusive data. Nonetheless, they are suggestive of a link between psychological states and HSV recurrences. This follows Luborsky et al.'s (1976) suggestion that emotions may be one factor in the activation of latent herpes simplex viruses. Placed in a psychoneuroimmunologic framework emotions, along with the other psychosocial factors may be viewed as influencing immunocompetence, and hence may more accurately explain the recurrent nature of genital herpes.

Social Support

Social support has been hypothesized to function as a buffer against life stressors. The buffering hypothesis has been used to explain the interactive actions of stress and health status, that is under low stress conditions social support levels are not as important. However, under high stress conditions low social support is associated with health problems, whereas high social support is associated with reduced numbers of health related difficulties. These effects have been documented in a number of studies (Berkman & Syme, 1979; Broadhead et al., 1983; Cohen & McKay, in press; Kaplan, in press).

The exact nature of how social support functions as a moderator variable between stress and health is unclear (Wortman, 1983). One avenue of investigation lies in the immunologic effects of the social buffering hypothesis (Cohen & McKay, in press). Bartrop et al. (1977) reported that individuals who lost a spouse displayed decreased lymphocyte proliferation. In this study, individuals assessed experienced both a highly stressful life event (i.e., death of a loved one) and a reduction of social support (i.e., absence of the spouse).

Two other studies reported the effects of social contact and social assets on herpesviruses in humans. Kiecolt-Glaser et al. (1985) have shown that geriatric clients' immunocompetence may be enhanced via social contact or relaxation training. HSV specific antibody titers were reduced following one month of therapist-delivered relaxation training or social contact as compared to a matched no intervention group. In a previously described study, Katcher et al. (1973) found that nursing students who had low scores on the Social Assets Inventory also displayed more frequent oral herpes attacks. Hence the former study provides evidence for the positive effects of increased social contact in decreasing HSV activity in a geriatric population, whereas the latter study provides correlational

data associating low social assets with increased herpes outbreaks in students.

Other studies have utilized loneliness as an index of social support to determine the effects of moderate stress on various immunologic parameters. First year medical students with high levels of loneliness exhibited lower levels of NCKA during their final exams than students reporting low loneliness levels (Kiecolt-Glaser, Garner et al., 1984). Similarly, reduced B-lymphocyte transformation by Epstein-Barr virus (a herpes virus) was found among medical students who reported high levels of loneliness during final exams (Kiecolt-Glaser, Speicher et al., 1984). The immunologic effects of loneliness have also been found in psychiatric inpatients. Newly admitted patients to a shortterm, acute psychiatric unit, who reported high levels of loneliness, have displayed significantly lower levels of NKCA than less lonely patients (Kiecolt-Glaser, Ricker et al., 1984).

In summary, social support functions to moderate the impact of stressors (Bruhn & Philips, 1984). Individuals with adequate social contacts, social assets, or low levels of loneliness display better immunocompetence than individuals without such support parameters (Kemeny et al., 1984). Therefore, genital herpes sufferers who perceive the

disease as stressful and lack adequate social support networks may manifest more severe and chronic disease courses (Manne & Sandler, 1984).

Cognitions

Cognitions may play an important part in the immunologic response to recurrent genital herpes, though the supportive data for this assumption is speculative. Evidence comes primarily from the health locus of control literature and treatment studies which show responses of target symptoms or HSV correlates which change in response to cognitive techniques.

Health locus of control has been used to study numerous medical disorders (e.g., diabetes, myocardial infarction, cancer, etc.) and health related behaviors (e.g., obesity, smoking, compliance to treatment, etc.) (Wallston & Wallston, 1981). Research with geriatric populations have shown the positive effects of increased personal control on health status (Langer & Rodin, 1976; Rodin & Langer, 1977; Schulz, 1976). Additionally, animal studies have demonstrated that controllable stress is less immunosuppressive than uncontrollable stress (Monjan, 1981; Sklar & Anisman, 1981; Visintainer, Seligman, & Volpicelli,

1983). In general then, a more internal health locus of control is associated with greater well-being (Kobasa et al., 1985; Wallston & Wallston, 1981) and perhaps an increased level of immunocompetence.

One study has shown that suggestive techniques can alter human immunocompetence. Hall, Longo, and Dixon (1981) found that highly suggestible individuals could significantly alter their lymphocyte proliferation when given the suggestion to do so. Other researchers have used suggestion to alter individuals' immunologic reactions to hypersensitive agents (Black, 1963; Black, Humphrey, & Niven, 1963; Roitt, 1977). Several studies have shown the effectiveness of suggestive techniques in treating contact dermatitis (Ikemi & Nakagawa, 1963) and warts (Sinclair-Gieben & Chalmer, 1959; Surman, Gottlieb, Hackett, & Silverberg, 1973; Ullman & Dubek, 1960). Finally, Blank and Brody (1950), di Bertolino (1981), and Gould and Tissler (1984) have used suggestion as part of their psychological treatment of herpes simplex patients.

In summary, individuals' perceived control of their health have important immunologic implications. This perception may act as a mediating variable and buffer the effects of stress. Persons with internal health control may cope with stress in ways which facilitate their

immunocompetence . Since having genital herpes is a stressful life event, perhaps treatment interventions which increase internal health locus of control may effectively reduce HSV episode frequency and severity. This appears to be why the many uncontrolled medical interventions have been initially successful in HSV treatment (Glaser & Gotlieb-Stematsky, 1982). Finally, more direct methods have been used to influence individuals' perceptions of health control. Suggestive-techniques have been shown to enhance immunocompetence and to effectively treat viral based disorders such as warts and herpes infections.

Health Status

Health status factors are defined as the general nutritional, physical fitness, and circadian rhythm of the individual . These three factors have been shown to influence the individual's immunocompetence (Ader, 1981; Borysenko & Borysenko, 1982; Monjan, 1981; Plaut & Friedman, 1982; Ramsey, 1982; Riley, 1981; Rogers, Dubey, & Reich, 1979; Stein, Schiavi, & Camerino, 1976; Stein, Keller, & Schleifer, 1981) . Specifically, poor physical fitness (i.e., lack of sufficient exercise), inadequate diet, and insufficient amounts of relaxation (i.e., overexertion) and

sleep have immunosuppressive effects for the individual (Kobasa, Maddi, Puccetti, & Zola, 1985; Plaut & Friedman, 1982; Ramsey, 1982; Stein et al., 1981). These factors have been suggested to result in increased recurrence rates of genital herpes episodes (Bierman, 1982, 1983a, 1983c; Freudberg, 1982; Kennedy, 1983; Langston, 1983; Wickett, 1982). Additional support for the hypothesis that poor health status is associated with increased genital herpes outbreaks comes from the study by Katcher et al. (1973) which found a positive relationship among scores on the Cornell Medical Index and recurrent genital infections. It may, therefore, be assumed that individuals with high HSV recurrent rates also demonstrate low levels of health status.

GENERAL CONCLUSIONS

It is apparent from the above discussion that stress, emotions, cognitions, and health status can affect the individual's immune system. Stress has been implicated as adversely affecting the immunocompetence of the individual through both endocrine and autonomic nervous system structures (Bierman, 1982, 1983a; Goldmeier & Johnson, 1982; Jemmott & Locke, 1984; Kemeny et al., 1984; Plaut &

Friedman, 1982; Ramsey, 1982; Riscalla, 1982; Stein et al., 1981) . Emotions and cognitions affect the body's immunocompetence . Negative emotions (e .g ., anxiety, depression, hostility, and loneliness) have been associated with: increased susceptibility to disease (Jemmott & Locke, 1984; Riscalla, 1982); decreased immunocompetence (Bartrop et al ., 1977; Locke et al ., in press); and increased frequency of genital herpes outbreaks (Goldmeier & Johnson, 1982) . Health status is also important in the immunologic functioning of the body. Poor health habits (lack of sleep, poor nutrition, overexertion, little physical exercise) tend to have an immunosuppressive effect on an individual's immunologic response to disease pathogens (Ader, 1981; Kobasa et al ., 1985; Marx, Somes, Garrity, Reeb, & Maffeo, 1984; Plaut & Friedman, 1982; Ramsey, 1982; Riscalla, 1982) . Finally, individuals who perceive themselves as not in personal control of their health display lower immunologic responsivity, than those individuals who believe they can influence their health (Jemmott & Locke, 1984; Kobasa et al ., 1985; Locke, 1984; Locke et al ., in press) . Individuals with low personal health locus of control tend to illustrate poor coping strategies to daily stressors . Hence, the placebo-effects of the uncontrolled HSV drug studies may be viewed as offering these individuals an effective coping

strategy against the disease. With such a strategy, the individual believes (s)he is in control of her/his health, and thus manifest increased immunocompetence and decreased HSV lesion episodes. Finally, an immunostimulatory effect has been shown with suggestive-imagery techniques (Blank & Brody, 1950; di Bertolino, 1981; Gould & Tissler, 1984; Hall et al., 1981). With these techniques, genital herpes recurrences have been significantly reduced (Blank & Brody, 1950; di Bertolino, 1981; Gould & Tissler, 1984), and the individual's lymphocyte proliferation altered (Hall et al., 1981).

In summary, it is suggested that decreased stress, attenuated negative emotions, improved health status, internal health locus of control orientation, and the immunopotentiating effects of suggestive-imagery techniques will bolster the individual's immunocompetence, through participation in a psychosocial treatment intervention. This improved immunologic status will then decrease genital herpes sufferers' recurrent episode rates and lessen the severity of their HSV attacks.

SUMMARY AND HYPOTHESES

In summary, there appears to be a heavy involvement of

placebo effects in the initial success of many proposed chemotherapeutic HSV cures. The initial successfulness of various drugs may be somewhat attributed to demand characteristics from the researchers and the expectancies of the HSV sufferers to be cured by the drug under investigation. When double-blind replications are conducted (essentially filtering out placebo effects), the drug under investigation has not produce the desired results . Biochemical researchers then continue investigation of other HSV drugs. Other investigators have been intrigued by the influence placebo effects exhibited in treating HSV patients . These researchers have hypothesized a psychoneuroimmunological theory to explain this phenomenon. According to the theory, stress, emotions, social support, cognitions, and health status may affect the immunologic state of the individual, thus facilitating HSV resistance and prolonging virus latency; or these biopsychosocial factors may produce an immunosuppressive effect, allow for HSV replication, and recurrent HSV episodes.

The above literature review offers support for the effects of stress, emotions, social support, cognitions, and health status on HSV recurrences, as formulated by the psychoneuroimmunological theory . An individual who practices poor health habits (e.g ., an unbalanced diet,

little sleep, and overexertion) will manifest a low health status . This status will result in decreased Host immunocompetence and may increase the HSV sufferer's chances of herpes reactivation and lesion outbreaks. Likewise, if an HSV patient expects that a certain chemotherapeutic agent or psychotherapeutic intervention will alleviate his/her HSV recurrences, then these expectancies will act as an effective coping strategy for stressors. With such a coping strategy, the Host's immunocompetence will be enhanced, and lesion episodes will decrease. Immunopotentiating effects can also be produced by suggestive-imagery techniques, which have been shown to increase lymphocyte proliferation and augment immunocompetence . Emotional states, such as increased anxiety and/or depression levels, were shown to be associated with increased genital, HSV, recurrences . According to the theory, negative emotional states will act through limbic-immunological structures in an immunosuppressive fashion, resulting in HSV replication, transmission, and lesion episodes. Finally, social support levels function as a moderator variable for the effects of stress, emotions, cognitions, and health status. Individuals with adequate social support networks will display greater immunocompetence and less severe HSV episodes and lower HSV recurrent rates than individuals without the social networks

to buffer the effects of psychosocial factors. As of this writing, no controlled psychological treatment program for HSV has been reported. Three uncontrolled psychological studies (Blank & Brody, 1950; di Bertolino, 1981; Gould & Tessler, 1984) have demonstrated positive results in reducing HSV lesion recurrences through psychiatric treatment. However as discussed earlier, these studies suffer from several methodological deficiencies: restricted samples, nonstandardized treatments, insufficient control for demand characteristics, no control for the effects of maturation, and ambiguous followup procedures.

This study will statistically control for the effects of maturation and history (i.e., by incorporating a Waiting-List control condition), standardize psychological treatment, and assess demand characteristics and expectancies by utilizing an exposure-to-therapist-control group (i.e., the Social Support groups). Additionally, this study will incorporate a broader patient sample than the three previous studies, and utilize a stratified random sampling technique based on HSV recurrence rates to facilitate result generalizability. Based on the above methodological considerations, the following hypotheses will be tested:

- 1). Individuals receiving Psychosocial Intervention will

report lower stress (measured by the Hassle Scale) and emotional distress (assessed by the State-Trait Anxiety Inventory, Zung Depression Scale, State-Trait Anger Survey, and Profile of Mood States), at Posttreatment and Followup, than individuals receiving Social Support or no treatment.

2). Individuals receiving Psychosocial Intervention will report more social support (assessed by the UCLA Loneliness Scale) and greater Internal Health Locus of Control (measured by the Multidimensional Health Locus of Control Scale) than individuals receiving Social Support or no treatment, at Posttreatment and Followup.

3). Individuals receiving Psychosocial Intervention will report better Health Status, at Posttreatment and Followup, than individuals in the other two conditions, when measured by the Monthly Contact Questionnaires and the HSV Symptom Checklist and Health Status Record. Better Health Status is defined as: lower HSV episode frequency rates; less severe episodes; shorter episode duration; and fewer lesions per episode.

4). Social Support individuals will report lower stress and emotional distress levels than the Waiting-List individuals at Posttreatment. At Followup, Social Support and Waiting-List individuals will demonstrate similar stress and emotional distress levels.

5). Individuals receiving Social Support will report more social support and greater Internal Health Locus of Control than the Waiting-List individuals at Posttreatment, however they will display similar levels of social support and Internality at Followup.

6). Better Health Status will be reported by the Social Support individuals, at Posttreatment, as compared to the Waiting-List individuals. At Followup, individuals in both the Social Support and Waiting-List conditions will demonstrate similar levels of Health Status.

METHOD

SUBJECTS

A total of 48 subjects were recruited from two cities. Twenty-six individuals living in Montgomery County, Virginia or attending Virginia Polytechnic Institute and State University were enlisted through local newspaper advertisements, posters displayed around the university, and referrals from the University Infirmary and local physicians. Twenty-two adults residing in Pittsburgh, Pennsylvania were recruited by means of newspaper advertisements and referrals from Magee-Women's Hospital of Pittsburgh and from the University of Pittsburgh Department of Infectious Diseases. Each subject attended an individualized screening session administered by the author. Length of time since the subject's primary HSV infection and the rate of HSV recurrence was ascertained. Thirty-one subjects with recurrent rates of four-or-more-per-year were admitted to the treatment study. Fourteen subjects reporting lower recurrent rates were provided with an HSV information pamphlet (see Appendix A) and offered supportive counseling. Additionally, three women who reported only internal genital lesions and/or frequent yeast infections

were excluded from the treatment study. This exclusion criteria was incorporated to increase the subjects' valid identification of HSV episodes, since some gynecological infections may mimic internal genital herpes.

All admitted subjects were in good health. No histories of serious illnesses, hospitalizations, disabilities, or immunosuppressive disorders were reported. Subjects were receiving no immunosuppressive or immunopotentiating medical treatment or drug. Sixty-five percent (20/31) of the subjects had been treated with topical acyclovir and 26% (8/31) had been treated with oral acyclovir prior to participating in the study. All individuals followed no HSV chemotherapeutic regimen during this study.

Two male subjects assigned to the Waiting-List control condition in the Pittsburgh sample did not complete the study. One man dropped out before the posttreatment assessment period. He failed to answer repeated mail and telephone contacts. The other man moved out of the city and withdrew his participation during the first followup period. He stated that time and distance constraints made it impossible for him to continue. Both men's data were excluded from the study, hence the Pittsburgh Waiting-List control condition was reduced to four subjects.

Stratified random samples were constructed, consisting

of HSV recurrent rate levels: four-to-six episodes per year, seven-to-ten episodes per year, 11-to-12 episodes per year, and 13+ episodes per year. Stratification of the samples were employed to ensure equal HSV infection severity among treatment conditions, and thus control for the effects of chronicity. Length of time since the subject's initial HSV infection was assessed in order to statistically control for maturation effects. All admitted Subjects signed a release of medical information form followed by confirmation of genital herpes from the diagnosing physician.

Demographic variables of Subjects completing the study are presented in Table 1. Fifteen Subjects completed from

Insert Table 1 about here

Virginia and 14 from Pennsylvania completed all assessments. Four of the 29 subjects were married, the remainder were single (see Table 1). Virginia subjects were primarily students. Most Pennsylvania subjects were employed. Two-factor between groups analyses of variance (i.e., 2 x 3 analyses) were conducted separately for age, years of education, disease duration, HSV frequency rates, self-report of HSV severity, and degree of concern about HSV, to determine differences among subject pools and treatment conditions before treatment. A significant subject pool main effect was found for age, $F(1,23) = 4.74$, $p < .05$, with

Pittsburgh Subjects significantly older than the Virginia Subjects (see Table 1). No other significant demographic differences were found among subjects or treatment conditions at pretreatment.

Gender composition of the treatment groups was a concern since some genital herpes sufferers may direct anger at individuals of the opposite sex (Sacher, 1983). An attempt to establish mixed-sex groups was made. However, the Virginia sample resulted in the establishment of an all female Psychosocial group, a mixed-sex Support group (two females, three males), and a mixed-sex Waiting-list control condition (three females, two males). Gender composition of the Pennsylvania treatment groups was then constructed to counterbalance the effects of gender (i.e., Psychosocial group: three females and two males; Support group: five females; Waiting-list condition: two females and two males).

PROCEDURE

A four Assessment Period (Before treatment, After treatment, 12-week followup and 26-week followup), three condition design was used to examine the effects of the group Psychosocial Intervention on genital herpes sufferers' stress, emotional distress, social support, health locus of

control, and health status (i.e., HSV recurrent rates, number of lesions per HSV episode, HSV episode duration, and HSV episode severity) (see Table 2). Each subject attended

Insert Table 2 about here

an individualized pretreatment interview. Individuals assigned to treatment conditions attended six consecutive 90-minute weekly group treatment sessions consisting of five members each. Posttreatment data was collected after the last group session. Followup data was collected via mail at 12 and 26 weeks posttreatment. Finally, the Waiting-List control subjects were offered the most effective treatment at the 26 week followup period.

ASSESSMENT

Pretreatment

Each subject was seen individually by the author for the initial assessment session. An informed consent (Appendix B) was signed by the individual. The author explained the nature of the treatment and prepared the individual for group treatment according to the guidelines discussed by Yalom (1975). These guidelines are designed to reduce members' fears, to define therapeutic goals, to

dispel misconceptions about the treatment, and to insure confidentiality. The preparation was intended to reduce group attrition. A brief history of the disease, recurrence rates, and demographic variables were collected (see Appendix C). Health status was assessed by the General Health Status Index (see Appendix D). The individual then completed the pretreatment assessment packet consisting of: Spielberger's (Spielberger, Gorsuch, & Lushene, 1970) State-Trait Anxiety Inventory (Trait form X-2), the Zung Depression Scale (Zung, 1965), the UCLA Loneliness Scale (Russell, Peplau, & Cutrona, 1980) (Appendix E), the Multidimensional Health Locus of Control Scales (Wallston, Wallston, & DeVellis, 1978) (Appendix F), the Profile of Mood States (POMS) questionnaire (McNair, Lorr, & Droppleman, 1981), Spielberger's (Spielberger, Barker, Russell, Silva de Crane, & Westberry, 1979) State-Trait Anger Survey (Trait form X), the Hassle Scale (Kanner, Coyne, Schaefer, & Lazarus, 1981), and the Monthly Contact Questionnaire (see Appendix G). The HSV Symptom Checklist and Health Status Record (see Appendix H) was given to the individual to monitor their HSV episodes and health habits daily until they completed treatment. This checklist will be explained later in detail. The client's ability to discriminate among HSV prodromal symptoms and symptoms

accompanying other systemic problems or infections was assessed. The client was trained in such discrimination if needed. Additionally, pictures of genital herpes lesions were presented to the individual to aid in the client's valid identification of his/her own HSV lesions. The individual was then told (s)he would be contacted by telephone when treatment began. Finally, each person was reminded to monitor his/her HSV episodes and health habits daily and to expect the Monthly Contact Questionnaires at the end of each month. These Questionnaires were mailed every month to each subject. Both the completed monitoring sheets and the Monthly Contact Questionnaires were returned to the experimenter via self-addressed, stamped, envelopes.

Posttreatment

Posttreatment data was collected at the end of the sixth group treatment session (see Table 2). Waiting-List Control data was obtained by mail. Data consisted of the initial assessment session questionnaires, excluding the historical data. Additionally, a posttreatment questionnaire (see Appendix I) was administered to assess the information and skills that treated individuals remembered from the group sessions. This questionnaire also evaluated the

treatment differences among the Social Support and Psychosocial Groups, along with assessing how valuable the treatments were perceived to be by the group members. Finally, a modified Monthly Contact Questionnaire was administered. The modified versions incorporated questions to assess treatment compliance. The Social Support Groups members received the form appearing in Appendix J and the Psychosocial Intervention Groups members received the form appearing in Appendix K. Waiting-List Control individuals continued to receive the initial Monthly Contact Questionnaire (see Appendix G). Waiting-List individuals were offered treatment 26 weeks later.

Followup

Followup data consisted of appropriate Monthly Contact Questionnaires sent through the mail to all individuals (see Table 2). Additionally, treated individuals were provided the HSV Symptom Checklist and Health Status Record (see Appendix H) self-monitoring sheets. These sheets were completed at the first sign of an HSV episode and then returned to the researcher via the mail. The initial assessment questionnaire packet, excluding historical information, were sent to each subject at 12 and 26 weeks

posttreatment. Return envelopes and postage were included in all mailings.

TREATMENT

All treatments were conducted in 90-minute, five member, groups. A total of six sessions were held for each treatment group. Treatment consisted of three conditions: Waiting-List Control, Social Support Groups, and Psychosocial Intervention Groups. The Waiting-List Control Group was added to the design to control for the effects of history and maturation, whereas the Social Support Groups allowed control for the effects of therapist contact, demand characteristics, expectancy, and placebo effects. The Psychosocial Intervention Groups contained the most discrete intervention techniques hypothesized to influence immunocompetence.

Therapists

Two clinical graduate students with previous group experience conducted all therapy sessions. They were trained by the author and dissertation chairperson to administer treatment components. Treatment issues arising

from these sessions were discussed with the dissertation chairperson. Each therapist conducted both a Psychosocial Intervention Group and a Social Support Group to counterbalance the effects of therapist factors. The author was present for the first five minutes of the other therapist's first group sessions, in order to introduce the group members to the therapist. The author served as one of the therapists for the Pennsylvania groups.

Social Support Group

This group followed the content described by Jessica Sacher (1983). A rationale conveying the message that an individual can live and function with genital herpes, without allowing the disease to become the epicenter of his/her life was presented (see Appendix L). Six topic areas were discussed: Getting acquainted, acknowledgment that HSV is a recurring disease, facts and fallacies of genital herpes; Sharing of feelings and symptomatic relief measures; Discussion of maladaptive adjustment to the disease; Emotional aspects of the disease; Sex with genital herpes; Concluding questions, remarks, and goodbyes (see Appendix M for session outlines).

Psychosocial Intervention Group

This group also followed Sacher's (1983) format, however a more structured approach was utilized. Nutritional/health promoting behaviors were emphasized through session discussions and bibliotherapy (see Appendix N), as well as training the group members in relaxation (Longo & vomSaal, 1984), and suggestive-imagery techniques (di Bertolino, 1981). The same rationale was proposed as in the Social Support groups, however the expectation of increased control over the disease was added. The Psychosocial rationale described how stress, health status, cognitions, and emotions, affect HSV outbreaks (see Appendix O). Detailed session outlines are provided in Appendix P.

COMPLIANCE

Since this study covered a period of more than 32 weeks, compliance with treatment and self-monitoring were factors of concern. To deal with this issue, the Monthly Contact Questionnaires prompted the treated individuals to use the techniques they learned, and to remind them to complete the self-monitoring sheets during an HSV episode. Waiting-List control subjects' Monthly Contact

Questionnaires functioned to assure them that they were still on the waiting list for treatment. Noncompliance was followed by telephone prompts asking the individual to return their data.

DEPENDENT MEASURES

There were nine dependent measures used to test the hypotheses. Anxiety was assessed by the State-Trait Anxiety Inventory, Trait form X-2 (Spielberger et al., 1970). This self-report inventory measured trait (the level of anxiety felt by the individual over time) anxiety by means of 20 questions rated by the individuals. Validity has been established by correlations to other anxiety measures and self-ratings of anxiety. The STAI A-Trait form has been correlated to the Multiple Affect Adjective Check List ($r = 0.52$ to 0.58), the Taylor Manifest Anxiety Scale ($r = 0.79$ to 0.83) and the IPAT Anxiety Scale ($r = 0.75$ to 0.77). Internal reliability (consistency) of the form is respectable, A-Trait correlations range from 0.46 to 0.55 .

The Zung Depression Scale (Zung, 1965) was used to measure depression. This instrument is a self-report questionnaire composed of 20 statements describing depressive symptoms. The client rated how frequently each

statement applied to them on a four point scale from "A little of the time" to "Most of the time". Concurrent validity of the scale has been shown to compare to clinical global assessment of depression (alpha coefficients range from 0.43 to 0.65). Correlations between the Zung Depression Scale and the MMPI depression subscale range from 0.59 to 0.75. Internal reliability of the scale has been reported to be high (0.86), as has test-retest reliabilities ($r = 0.49$ to 0.78).

Social support network and degree of social integration was assessed by the UCLA Loneliness Scale (Russell et al., 1980). This scale is comprised of 20 statements, which the individual rates from "1" (never) to "4" (often) according to how often the individual 'feels the way described in each statement' (see Appendix E). Internal consistency ranges from 0.91 to 0.94 (alpha coefficients). Concurrent validity has been established by showing that lonely people report emotions theoretically tied to loneliness (i.e., depression, emptiness, hopelessness, and isolation), whereas emotions such as embarrassment, surprise, and creativity are not correlated to loneliness. Discriminant validity has shown that the scale is not confounded by social desirability ($r = -0.203$), but is related to affiliative motivation, social risk taking, and negative affect.

The Multidimensional Health Locus of Control (MHLC) Scales (Wallston et al., 1978) was used to assess personal health control. This instrument consists of 18 items describing health locus of control. Each item was rated by the client on a six-point Likert scale as to how much the statement described him/herself (see Appendix F). Three dimensions are derived from the scales: Internal Health Locus of Control, Powerful Others Health Locus of Control (Externality), and Chance Health Locus of Control. Alpha reliabilities for the scales range from $\emptyset .67$ to $\emptyset .86$ (Wallston & Wallston, 1981). The MHLC's concurrent validity has been demonstrated when compared to Levenson's I, P, and C scales. These interscale correlations range from $\emptyset .28$ to $\emptyset .80$, depending on the sample studied (Wallston & Wallston, 1981).

Perceived stress levels were measured by the Hassle Scale (Kanner et al., 1981). This scale contains 117 items which describe irritating situations or thoughts. The individual rated hassles which occurred, during the last month, from (#1) 'somewhat severe' to (#3) 'extremely severe'. Three scores are available from this scale: frequency (number of items rated), cumulated severity (sum of all ratings), and intensity (cumulated severity divided by the frequency). Mean test-retest correlations for

frequency and intensity scores are $\emptyset .79$ and $\emptyset .48$, respectively. Validity of the Hassles Scale (scores taken for nine consecutive months) has been obtained by comparing the scale to the Bradburn Morale Score (negative affect, mean $\underline{r} = \emptyset.34$), the Berkman Life Events Scale (prestudy life events, mean $\underline{r} = \emptyset.21$), and the Hopkins Symptoms Checklist (psychological symptoms, mean correlations ranged from $\emptyset.49$ to $\emptyset.66$).

Spielberger et al.'s (1979) State-Trait Anger Survey, Trait form X was used to assess the individual's trait anger levels. This form consisted of 15 statements which the individual rated how each statement generally described them from '1' (almost never) to '5' (almost always). Internal consistency of this instrument ranged from $\emptyset.82$ to $\emptyset.85$ (Alpha Coefficients) based on a mix-sexed college sample and Navy recruits (Spielberger et al., 1980). Validity was established by comparing the students' and recruits' scores on the Anger Survey to the Buss-Durkee Hostility Inventory (Buss & Durkee, 1957). This comparison yielded a moderate to good validity range ($\underline{r} = \emptyset.66$ to $\emptyset.73$).

The POMS (McNair et al., 1981) evaluated the herpes sufferer's levels of mood. This instrument is a 65 adjective self-report questionnaire which requires the respondent to rate each adjective from ' \emptyset ' (not at all) to

'4' (extremely) as it generally describes how they feel. Six mood scales are derived from the instrument: Tension-Anxiety (T-A), Depression-Dejection (D-D), Anger-Hostility (A-H), Vigor-Activity (V-A), Fatigue-Inertia (F-I), and Confusion-Bewilderment (C-B). A Total Mood Disturbance (TMD) score is available by subtracting the Vigor-Activity scale from the sum of the other five scales. Internal consistency of the six scales range from $r = 0.84$ (Confusion-Bewilderment scale) to $r = 0.95$ (Depression-Dejection scale) based on male and female psychiatric outpatients. Test-retest stability correlation coefficients, over three to 110 days, range from 0.65 for the Vigor-Activity scale to 0.74 for the Depression-Dejection scale. Concurrent validity of the various scales have been reported by McNair et al. (1981) as follows: Tension-Anxiety scale vs. Taylors Manifest Anxiety Scale for outpatients, $r = 0.80$; Depression-Dejection scale vs. Hopkins Symptom Distress-Dejection Scale, $r = 0.86$; Anger-Hostility scale vs. Interpersonal Behavior Inventory -Hostility Scale, $r = 0.32$; and Vigor-Activity scale vs. Observer Rating of Interview Activity, $r = 0.29$.

The Monthly Contact Questionnaire was developed for this study (see Appendix G, J, & K). The form presented in Appendix G consists of two questions. Question One assessed

HSV episode occurrence during the previous month . Individuals reported the number of HSV recurrences, number of lesions per episode, duration (in days) of the episode(s), severity of the HSV episode(s), and HSV prodromes (rated on a Likert scale from #1, 'not severe', to #5, 'extremely severe') . The second question assessed stress, emotional distress, loneliness, social support, and physical exercise which the respondent encountered during the previous month. The individual rated these items on a five-point Likert scale . This form was used for the Waiting-List control subjects and the treated subjects during pretreatment. Following treatment, individuals were given one of two Monthly Contact Questionnaires. The form appearing in Appendix J was given to the Social Support groups. This form evaluated treatment compliance along with the items assessed by the original form. Social Support Group individuals responded to three additional questions assessing stress management, relaxation, and health habits. Each question was rated on a five-point Likert scale. The third form (see Appendix K) contained nine questions. It was mailed to the Psychosocial Groups members after treatment. The form contained the same questions as in the Social Support Group form, with the addition of two questions which evaluated the use of the relaxation and

suggestive-imagery techniques. Again, respondents reported how frequently each technique was practiced, and the usefulness of each technique on a five-point Likert scale. These questions estimated treatment compliance. There is no reliability or validity information for this measure, since it was developed for this study.

The final dependent measure was an original instrument developed for this study. The HSV Symptom Checklist and Health Status Record (see Appendix H) consists of the most frequently cited prodromal and episodic symptoms in the literature (Bettoli, 1982; Bierman, 1982; Felman & Nikitas, 1982; Guinan, 1982; Juel-Jensen, 1982; Nahmias & Roizman, 1973). These symptoms include: number of lesions, systemic reactions (fever, chills, lymph gland swelling), pain, itching, burning, redness at the lesion site, voiding difficulties, and genital discharge. The individual rated each symptom, daily, on a scale from "1" (little) to "5" (severe). The site, number, and duration of lesion episodes were also recorded. This instrument allowed for the measurement of HSV lesion characteristics such as: severity, chronicity, frequency, and duration. Additionally, health status parameters were monitored daily. Health status included parameters such as: number of hours of sleep and relaxation; number of hours worked; number of meals

consumed; levels of stress, exertion, and emotional distress; etc. Since this was an original instrument, no reliability or validity data is available.

RESULTS

Pearson correlation coefficients were calculated among all pretreatment dependent measures to determine the amount of association among variables before treatment. As can be seen from the correlation matrix presented in Table 3, a

Insert Table 3 about here

number of dependent measures are significantly correlated. All variables assessing emotions (i.e., POMS subscales & TMD; TRA ANX; ZUNG DEP; and TRA ANG) are highly associated. Cognitive variables (MHLC: IN, CHAN, OTH) are infrequently correlated to the other variables. The social support measure (UCLA LONE) is significantly associated with at least one of the variables assessing emotions, cognitions, stress, and HSV outbreaks. Similarly, stress variables (STRESS: FREQ & INTEN) are significantly correlated to other psychosocial variables and HSV outbreaks. The HSV outbreak variables (SEV, DUR, LES, & FREQ) are also significantly associated to the psychosocial variables.

In concluding, pretreatment dependent measures are highly associated. Although most correlations are found within each psychosocial dimension (i.e., emotions, cognitions, social support, stress, and HSV outbreaks), significant correlations are also demonstrated among

psychosocial dimensions. Hence, caution must be taken when interpreting significant outcomes within and among psychosocial dimensions.

Statistical Control For Time Since HSV Acquisition

The length of time since individuals acquired genital herpes was correlated with pretreatment HSV Frequency Rates. No significant correlation was found between these two variables. Hence, disease duration and HSV Frequency Rates were not significantly associated. This finding is similar to those reported by Knox et al. (1982).

Assessment Of Treatment Utility And Difference

To determine the credibility of the Psychosocial Intervention and the Social Support Groups, all treated individuals responded to a posttreatment questionnaire (see Appendix I). The summary of responses to this questionnaire is presented in Table 4. Individuals rated how useful they

Insert Table 4 about here

thought the treatment was for them on a Likert scale from #1, 'not useful' to #5, 'highly useful'. Mean responses are presented in Table 4. A two-factor, Sample x Treatment, (2

x 2) ANOVA was conducted on the 'Treatment Usefulness' variable. No significant effects were found, indicating all treatment groups perceived the treatment they received as equally useful. To further estimate the credibility of the treatments, individuals were asked if they would recommend the treatment to a friend on a Likert scale from #1, 'not recommend' to #5, 'highly recommend'. A two-factor (2 x 2) ANOVA was conducted the 'Recommend To A Friend' variable means presented in Table 4. No significant effects were found among treatment conditions or samples. Based on the above analyses and the means illustrated in Table 4, no significant differences were found among groups for the treatment's perceived credibility. Further the group members perceived the treatment was useful to them (means ranged from 3.4 to 4.2 on a five-point scale), and they reported that they would recommend the treatment to others (means ranged from 4.4 to 5.0).

To assess how helpful the individuals believed the treatment would be in managing their herpes, the individuals responded to two questions: 'How helpful will the treatment be for you in managing herpes' (HELPFUL TO YOU); and 'How helpful to others in herpes management' (HELPFUL TO OTHERS). Again, a five-point Likert scale was provided for each question (#1, 'not helpful' to #5 'highly helpful'). Mean

responses to the first variable ranged from 3.8 to 4.6, and to the latter variable, 4.4 to 4.6 (refer to Table 4). Two-factor ANOVA's (2 x 2) were conducted on each Helpful variable. No significant effects were found for either analysis, indicating no significant differences in perceived treatment helpfulness. Hence, all group members believed the treatment they received was highly useful and would be highly helpful to them in managing their genital herpes.

Psychosocial Intervention and Social Support comprised the two treatment conditions. In order to determine if whether treatment elements were different, group members responded to question #7 on the posttreatment questionnaire (see Appendix I). This question consisted of 29 subquestions. '7a' to '7u' assessed common elements of both treatment conditions and should yield a tally of 21 'yes' responses. The last eight subquestions, '7v' to '7cl', are Psychosocial treatment elements (i.e., yielding 'yes' responses), whereas the Social Support elements are represented by subquestions: '7x', '7y', '7z', and '7bl'. A Kruskal-Wallis H-Test was performed on the mean sums of question #7a-#7u (see Table 4). No significant differences were found among the treatment means, indicating all groups reported remembering similar information from treatment. Further, the mean sums ranged from 20.2 to 20.6, therefore

group members recognized most of the information presented.

Chi-square calculations were performed separately for the four subquestions common to both treatment conditions ('7x, y, z, b1'). No significant differences were found for the 'yes' frequencies displayed in Table 4.

The four major treatment elements presented to the Psychosocial groups and not to the Social Support groups were: Health Promoting Behaviors ('7v'); Relaxation Training ('7w'); Stress Management ('7a1'); and Suggestive-Imagery ('7c1'). Chi-square calculations were performed separately for these subquestions. No significant differences were found for the Health Promoting Behaviors subquestion among treatment groups. Similarly, no significant differences among treatment groups were found for the Stress Management subquestion, however the frequency count was in the expected direction (see Table 4) and significant at the $p < .10$ level, $\chi^2 (3, N = 20) = 6.4, p < .10$. The frequency counts for the last two questions (see Table 4) were significantly different: the Relaxation subquestion, $\chi^2 (3, N = 20) = 10.0, p < .025$; and the Suggestive-Imagery subquestion, $\chi^2 (3, N = 20) = 10.0, p < .025$. The above results indicate that each treatment group reported receiving the treatment elements which were designed for the specific condition, with the exception of

Health Promoting Behaviors.

Assessment Compliance

All individuals who completed the study responded to all four assessment packets (i.e., pretreatment, posttreatment, 12-week followup, & 26-week followup) and the Monthly Contact Questionnaires. Only 13.8% (4/29) of the total sample returned complete sets of the HSV Symptom Checklist and Health Status Record. This compliance rate is towards the lower end for long-term (i.e., greater than six-months) compliance, seven to 50% (Stuart, 1982). Many individuals complained about daily self-monitoring, relating that the task served to remind them of their genital herpes. Daily focusing on their condition may have been too aversive and led to the low rates of compliance (re: 13.8%). The HSV Symptom Checklist and Health Status Record data was, therefore, excluded for the analyses.

Treatment Compliance

Estimates of psychosocial treatment compliance during the followup periods were provided from the Monthly Contact Questionnaires. Most individuals in the Psychosocial Groups

utilized the relaxation technique that they were taught. Fifty percent (5/10) practiced relaxation daily, 30% (3/10) used the technique two-to-four times/week, and 20% (2/10) practiced the relaxation technique at least once-per-week during the followup periods. Twenty percent (2/10) of the Psychosocial Group members attempted to manage their stress daily. Another 20% (2/10) managed stress two-to-four times/week, with 60% (6/10) of the psychosocial individuals reporting that they managed their stress at least once-per-week during followup. Complying to health promoting behaviors (i.e., eating, sleeping, & physical exercise) was most difficult for the Psychosocial Group members as 80% (8/10) attempted to follow good health practices only once/week. Twenty percent (2/10) utilized health promoting behaviors two-to-four times/week.

The last major psychosocial treatment component was the suggestive-imagery tape. Psychosocial Group members were instructed to listen to this tape at the first sign of an HSV prodrome and throughout HSV episodes. Seventy percent (7/10) of the individuals regularly used the suggestive-imagery tape (i.e., not more than two noncompliant episodes). Twenty percent (2/10) of the individuals occasionally used the tape (i.e., three to five noncompliant episodes), and one individual (10%) did not use the tape

after treatment.

In conclusion, all Psychosocial Group members regularly used either the relaxation technique or the suggestive-imagery tape throughout the followup periods. Stress management techniques received less compliance, with the practice of health promoting behaviors displaying the least amount of treatment compliance. Perhaps high compliance to the first two techniques may be attributed to their discrete structure and high cost-benefit ratios (i.e., the techniques require little time to perform and small amounts of change in the individual's behavioral repertoire compared to the benefits the person receives). Stress management and health promoting behaviors may have low cost-benefit ratios. Much change in behavioral repertoire may be required before the individual perceives benefits from his or her efforts.

Pretreatment Analyses

Two-factor ANOVA's (Keppel, 1973), with sample and treatment condition serving as the between factors (2 x 3), were calculated separately for all pretreatment dependent measures to determine differences among samples (Virginia & Pennsylvania) and treatment conditions (Psychosocial Intervention, Social Support Groups, & Waiting-List Control)

prior to treatment. Significant Sample main effects were found for the POMS Fatigue-Inertia subscale, $F(1,23) = 5.76$, $p < .02$; the MHLIC Chance scale, $F(1,23) = 3.99$, $p < .05$; and the Hassles' Stress Intensity scale, $F(1,23) = 4.16$, $p < .05$. Mixed repeated measures analyses of covariance (Winer, 1971) were performed on these variables, with the Pretreatment Sample variable serving as the covariant. A significant Sample main effect, $F(1,23) = 7.11$, $p < .01$, and Treatment main effect, $F(2,23) = 4.66$, $p < .02$ were found for the Number of Lesion/HSV Episode pretreatment variable. Mixed repeated measures analysis of covariance was conducted on the Lesion/HSV Episode measure, again, the Pretreatment Sample variable served as the covariant. No other significant results were found for the remaining variables at pretreatment.

TESTING THE HYPOTHESES

Mixed repeated measures analyses of variance (Winer, 1971) were performed separately for each dependent measure, with Sample (Virginia & Pennsylvania) and Treatment Condition (Psychosocial Intervention, Social Support Group, & Waiting-List Control) the between factors and Phase of Treatment (Pretreatment, Posttreatment, 12-Week Followup, &

26-Week Followup) the within factor [e.g., a 2 x 3 x (4 x S) design) to test the hypotheses. Analyses of the Monthly Contact Questionnaire data were performed differently.

Monthly Contact Questionnaire data was collapsed into Pretreatment and Posttreatment individual averages. HSV Frequency Rates were obtained by summing the number of reported HSV episode outbreaks during the particular phase of treatment, and then dividing this sum by the number of months in the phase, and multiplying by 12 to yield yearly HSV Frequency Rates [i.e., for the Posttreatment phase:

(Sum of HSV Episodes during Posttreatment)/(six months) x 12 months = HSV Frequency Rates]. HSV Episode Severity, HSV Episode Duration, and Lesions/HSV Episode variables were calculated differently. Pretreatment and Posttreatment individual averages were obtained by summing the values reported during the particular phase of treatment, and dividing by the total number of HSV episodes during that phase [i.e., for HSV Episode Duration: (Total # of Episode days during Pretreatment)/(# of HSV Episodes during Pretreatment)].

Monthly Contact Questionnaire data were then collapsed into a two-level within [Pretreatment (a four-month baseline plus two-month treatment period for the Virginia sample and a two-month baseline plus two-month treatment period for the

Pennsylvania sample) and Posttreatment (six-month followup period for both samples)] and a three-level between (i.e., Treatment Conditions) factor design. This resulted in a 2 x 3 x (2 x S) design to test the hypotheses involving HSV Frequency Rates, HSV Episode Severity, HSV Episode Duration, and the Number of Lesions per HSV Episode dependent measures.

Stress

A mixed repeated measures analysis was conducted for the Stress Frequency variable of the Hassles Scale, while a mixed repeated measures analysis of covariance was performed for the Stress Intensity variable. Analysis of covariance was conducted due to the significant Pretreatment Sample differences. The Pretreatment Sample variable served as the covariant. No significant results were found for these analyses.

Emotions

Mixed repeated measures analyses of variance, described above, were conducted to test the hypotheses concerning emotions. No significant effects were found for the Trait

Anxiety or Trait Anger dependent measures. Analysis of the Zung Depression Scale and the POMS questionnaire yielded significant results.

A significant Phase of Treatment main effect, $F(3,69) = 6.061$, $p < .001$, and significant Treatment x Phase of Treatment interaction, $F(6,69) = 4.319$, $p < .001$ were found for the Zung Depression Scale (see Table 5). Inspection of the combined group means for this measure (see Table 6)

Insert Tables 5 & 6 about here

demonstrates significant differences in average depression scores for each phase of treatment (i.e., Phase of Treatment main effect).

The significant interaction was displayed by the combined group means shown in Table 6. A general decrease in depression levels for the Psychosocial condition over time ($M = 36.0$ to $M = 32.9$) was observed, whereas the other two conditions demonstrated increases in depression (Support Group: $M = 30.8$ to 37.6 ; Waiting-List: $M = 32.6$ to 41.7). Similar trends were observed in the respective sample means (see Table 7).

Insert Table 7 about here

Analyses of the simple main effects (Winer, 1971), to identify the locus of the interaction, yielded a significant effect for the last Followup, $F(2,26) = 3.31$, $p < .05$.

Psychosocial Intervention individuals reported significantly lower levels of depression, $F(1,26) = 17.21$, $p < .001$, ($M = 32.9$) than the Waiting-List individuals ($M = 41.7$), at the 26-week Followup.

The POMS questionnaire yielded seven separate analyses of variance, one for each of the six subscales and one analysis for the Total Mood Disturbance score. Significant results were found for the Tension-Anxiety subscale, the Depression-Dejection subscale, and the Total Mood Disturbance score. Mixed repeated analyses of variance for the Anger-Hostility, Vigor-Activity, and Confusion-Bewilderment subscales yielded no significant results. Due to the significant Pretreatment Sample main effect found for the Fatigue-Inertia subscale, discussed above, a repeated measures analysis of covariance (Winer, 1971) was conducted for this subscale, however no significant results were found. The three significant analyses will now be discussed.

A significant Treatment x Phase of Treatment interaction, $F(6,69) = 2.889$, $p < .01$, was found for the Tension-Anxiety subscale (see Table 8). The interaction

Insert Table 8 about here

indicated that reported tension-anxiety levels changed differently among treatment conditions over the course of time. The interaction is demonstrated by the group means

presented in Table 9. A general decline in tension-anxiety

Insert Table 9 about here

levels were observed for the Psychosocial condition (\underline{M} = 13.2 to 10.1) whereas the other conditions displayed gradual increases in tension-anxiety over time (Social Support: \underline{M} = 10.1 to 13.2; and Waiting-List: \underline{M} = 13.2 to 19.1). Analyses of the simple main effects were performed to identify the locus of the interaction. A significant simple main effect was found for the last Followup period, $\underline{F}(2,26) = 4.337$, $p < .025$. The Psychosocial condition reported significantly lower levels of mean tension-anxiety (\underline{M} = 10.1) than the Waiting-List condition (\underline{M} = 19.1) at the 26-week Followup, $\underline{F}(1,26) = 18.89$, $p < .001$. Likewise the declines in tension-anxiety levels were observed for the Psychosocial groups (see Table 10), whereas the other groups displayed

Insert Table 10 about here

gradual increases in tension-anxiety over time, with the exception of the Pennsylvania Social Support group. This group showed a slight decrease in levels (Pretreatment: \underline{M} = 11.2 to Followup-2: \underline{M} = 10.8).

Similar to the Zung Depression scale, the Depression-Dejection subscale yielded a significant Phase of Treatment main effect, $\underline{F}(3,69) = 8.087$, $p < .001$, as well as a significant Treatment x Phase of Treatment interaction,

$F(6,69) = 6.709, p < .001$ (see Table 11). As discussed

Insert Table 11 about here

above, these two variables were highly correlated at pretreatment ($r = 0.75$), therefore similar results would be expected. The Depression-Dejection combined means changed significantly over the course of the study (see Table 12). These trends were also displayed in the Virginia and Pennsylvania Sample means (see Table 13). The overall

Insert Tables 12 & 13 about here

increase in Depression-Dejection scores accounted for the significant Phase of Treatment main effect.

Analyses of the simple main effects identified the locus of the significant interaction to rest in both Followup phases: 12-week Followup, $F(2,26) = 5.513, p < .025$; and the 26-week Followup, $F(2,26) = 6.955, p < .01$. Inspection of the combined means (see Table 12) illustrates that the Psychosocial individuals reported lower average levels of Depression-Dejection during the Followup phases ($M = 8.8$ & 8.7) than individuals in the other two conditions (Social Support: $M = 18.1$ & 18.6 ; and Waiting-List: $M = 22.9$ & 24.7) at Followup. Further, these difference were significant at Followup-1 [Psychosocial vs. Social Support: $F(1,26) = 15.76, p < .001$; and Psychosocial vs. Waiting-List: $F(1,26) = 17.75, p < .001$] and Followup-2

[Psychosocial vs. Social Support: $F(1,26) = 15.88$, $p < .001$; and Psychosocial vs. Waiting-List: $F(1,26) = 18.99$, $p < .001$].

The final variable assessing significant changes in emotions was the POMS Total Mood Disturbance (TMD) score. A significant Phase of Treatment main effect, $F(3,69) = 3.545$, $p < .01$, and significant Treatment x Phase of treatment interaction, $F(6,69) = 3.447$, $p < .001$, were found. Again, the Phase of Treatment main effect indicated that the combined means differed from one phase of treatment to the other, with an overall increase in average mood disturbance (see Table 15).

Insert Table 15 about here

The significant interaction is displayed in Table 15. Inspection of the combined means reveals that the Social Support and Waiting-List conditions increased in average Total Mood Disturbance ($\underline{M} = 25.9$ to 43.9 and $\underline{M} = 35.5$ to 65.3 , respectively), whereas the Psychosocial condition decreased in average mood disturbance ($\underline{M} = 34.3$ to 22.8) over the course of the study. This trend was also observed in the separate sample means (see Table 16). Both Virginia

Insert Table 16 about here

and Pennsylvania Psychosocial groups decreased in average mood disturbance, while the other groups increased in Total

Mood Disturbance from Pretreatment to Followup-2.

Analyses of the simple main effects were conducted to identify the locus of the interaction. A significant simple main effect was found for the last Followup period, $F(2,26) = 4.239$, $p < .05$, indicating that the combined means differed significantly. Further, the Psychosocial condition displayed significantly, $F(1,26) = 17.16$, $p < .001$, lower average mood disturbance scores ($M = 22.8$) than the Waiting-List condition ($M = 65.3$) at the 26-week Followup.

In concluding, the combined results of the variables assessing emotions suggest that Psychosocial Intervention reduced depression, tension-anxiety, and global mood disturbance significantly more than placebo-control (Social Support) or through maturation effects (Waiting-List). Additionally, the reductions in emotional distress were maintained by the Psychosocial Intervention individuals at the 26-week Followup period.

Social Support

Mixed repeated measures analyses of variance were performed on the UCLA Loneliness Scale to test the affects of treatment on the individuals' feelings of social isolation. A significant Phase of Treatment main effect,

$F(3,69) = 3.140$, $p < .03$, and Treatment x Phase of Treatment interaction, $F(6,69) = 2.711$, $p < .01$, were found (see Table 17).

Insert Table 17 & 18 about here

The Phase of Treatment main effect indicated that the combined sample means (see Table 18) differed significantly over the course of the study. The overall pattern of combined means increased in degree of loneliness from Pretreatment to Followup-2, however inspection of the individual treatment means suggests an interaction.

The significant Treatment x Phase of Treatment interaction is illustrated in Table 18. Psychosocial condition means generally decrease from Pretreatment to the last Followup ($M = 37.6$ to 31.7). However Social Support condition means increased slightly ($M = 37.1$ to 37.7), whereas Waiting-List condition means illustrated a greater increase over time, ($M = 38.7$ to 45.9). A similar pattern was observed for the Virginia and Pennsylvania sample means presented in Table 19. An exception to this trend was

Insert Table 19 about here

displayed for the Pennsylvania Social Support group, which showed a decrease in loneliness levels from Pretreatment to Followup-2 ($M = 38.8$ to 36.0).

Analyses of the simple main effects of the Treatment x

Phase of Treatment interaction were conducted to identify the locus of the interaction. A significant simple main effect was found for the 26-week Followup, $F(2,26) = 4.665$, $p < .025$, demonstrating that treatment means differed significantly at this phase. Psychosocial condition individuals reported significantly less loneliness, $F(1,26) = 16.61$, $p < .001$, than the Waiting-List individuals ($M = 31.7$ vs. $M = 45.9$, respectively).

In conclusion, Psychosocial Intervention was shown to significantly decrease loneliness levels. Individuals receiving no treatment continued to report increasing levels of loneliness, such that a significant difference was found among them and Psychosocial Intervention individuals during the last Followup.

Cognitions

Mixed repeated measures analyses of variance were conducted on the Multidimensional Health Locus of Control's (MHLC) Internal and Powerful Others scales. Mixed repeated measures analysis of covariance was performed on the MHLC's Chance scale. No specific hypotheses were constructed for the Chance or Powerful Others scales, further no significant results were found for these scales. Several significant

effects were found for the Internal variable.

A significant Treatment main effect, $F(2,23) = 4.937$, $p < .01$, was found indicating that combined Internal means differed significantly among treatment conditions (see Table 21). Inspection of the means presented in Table 21 illustrate that the Psychosocial condition demonstrated the largest overall Internal average scores as compared to the other two conditions. A similar trend was observed in the separate Virginia and Pennsylvania sample means (see Table 22).

Insert Tables 21 & 22 about here

A significant Phase of Treatment main effect, $F(3,69) = 3.405$, $p < .02$, was also found for the Internal Health Locus of Control variable. This effect suggested that the average overall Internal scores differed significantly over the course of the study. The combined means and separate sample means presented in Tables 21 and 22, respectively, illustrate the Phase of Treatment effect.

The significant Treatment x Phase of Treatment interaction, $F(6,69) = 3.008$, $p < .01$, was of more interest. Observation of the combined average Internal scores (see Table 21) showed the Psychosocial condition individuals increased in Internality from Pretreatment to Followup-2 ($M = 23.9$ to 26.2), whereas individuals in the other two

conditions decreased in average Internality (Social Support: $\underline{M} = 27.2$ to 22.3 ; Waiting-List: $\underline{M} = 23.7$ to 19.0). Similar trends were demonstrated for the Virginia and Pennsylvania samples taken separately (see Table 22).

Analyses of the simple main effects, to identify the locus of the interaction, yielded two significant simple main effects: $\underline{F}(2,26) = 6.646$, $p < .01$, at the 12-week Followup; and $\underline{F}(2,26) = 4.885$, $p < .01$, at the 26-week Followup period. Psychosocial individuals reported significantly more Internality than the Social Support individuals ($\underline{M} = 27.1$ vs. 22.8 , respectively), $\underline{F}(1,26) = 19.86$, $p < .001$, or the Waiting-List individuals ($\underline{M} = 27.1$ vs. 19.1 , respectively), $\underline{F}(1,26) = 16.81$, $p < .001$, at the first Followup period. During the second Followup period, no significant differences between the mean Psychosocial and Social Support scores were found, however the Psychosocial versus Waiting-List differences remained significant ($\underline{M} = 26.2$ vs. 19.0 , respectively), $\underline{F}(1,26) = 17.16$, $p < .001$.

In conclusion, Psychosocial Intervention affected individuals' cognitions, i.e. Internal Health Locus of Control. These individuals displayed a significant increase in Internal Control as compared to individuals in the other two conditions as early as the first Followup period.

Health Status

Health Status dependent measures were included in the HSV Checklist and Health Status Questionnaire (see Appendix H). Due to the low return rates (13.8%, see the Assessment Compliance section above) of this daily self-monitoring instrument, analyses of the Health Status factors, general nutrition, physical fitness, and sleep patterns were not possible. However, initial assessment of pretreatment General Health Status Index (see Appendix D) found no differences among Treatment Conditions or Subject Samples for major illnesses or physical fitness.

An indirect measure of Health Status was provided by the frequency, duration, severity, and number of lesions of genital herpes recurrences (Glaser & Gotlieb-Stematsky, 1982; Jemmott & Locke, 1984; Kiecolt-Glaser, Speicher et al., 1984). These dependent measures are discussed in the next section.

Genital Herpes Episodes

Four dependent variables were derived from the Monthly Contact Questionnaire (see Appendixes: G, J, & K), and consisted of: HSV Frequency (episodes/year), HSV Episode

Duration (in days), HSV Episode Severity (from #1 to #5), and Number of HSV Lesions/Episode. Mixed repeated measures analyses of variance were conducted on the first three variables, while a mixed repeated measures analysis of covariance was performed on the fourth variable, due to significant Pretreatment differences found among Treatment Conditions and Samples. No hypotheses were constructed concerning the HSV Lesion variable. Further, analysis of covariance for this variable yielded no significant effects. Analyses of the first three variables will now be discussed. Again, it should be noted that these data were collapsed into two Phase of Treatment conditions, a four-to-six-month Pretreatment and a six-month Posttreatment phase.

HSV Episode Frequency Rate. Analysis of the HSV Frequency Rate variable yielded a significant Treatment x Phase of Treatment interaction, $F(2,23) = 5.276, p < .01$ (see Table 23), indicating that HSV recurrent rates varied differently among treatment conditions and phase of treatment. Inspection of the combined average HSV episode rates, presented in Table 24, demonstrated the significant

Insert Tables 23 & 24 about here

interaction. The Psychosocial mean recurrences decreased from Pretreatment to Posttreatment ($M = 10.9$ to 5.8), whereas the Social Support average recurrent rates remained

about the same ($\underline{M} = 10.6$ to 10.1). An increased rate of HSV recurrences was displayed in the Waiting-List condition ($\underline{M} = 10.5$ to 12.2). Similar trends were observed for the separate Virginia and Pennsylvania samples presented in Table 25.

Analyses of the simple main effects were performed to identify the locus of the interaction. These analyses resulted in a significant effect, $\underline{F}(2,26) = 5.464$, $\underline{p} < .025$, at Posttreatment. The Psychosocial individuals reported significantly lower HSV episode recurrences than either the Social Support individuals ($\underline{M} = 5.8$ vs. 10.1 , respectively), $\underline{F}(1,26) = 18.88$, $\underline{p} < .001$, or the individuals in the Waiting-List condition ($\underline{M} = 5.8$ vs. 12.2), $\underline{F}(1,26) = 16.79$, $\underline{p} < .001$.

In conclusion, Psychosocial Intervention significantly reduced HSV episode recurrences as compared to the placebo control and no treatment conditions.

HSV Episode Duration. Mixed repeated measures analysis of variance, conducted on the HSV Episode Duration variable, yielded a significant Treatment main effect, $\underline{F}(2,23) = 5.148$, $\underline{p} < .01$, and a significant Treatment x Phase of Treatment interaction, $\underline{F}(2,23) = 5.019$, $\underline{p} < .01$ (see Table 26). The Treatment main effect indicated that overall

Insert Table 26 about here

average episode duration differed significantly among

Treatment conditions. This trend was demonstrated by the combined and separate sample means presented in Tables 27 and 28, respectively.

Insert Tables 27 & 28 about here

The Treatment x Phase of Treatment interaction suggested that HSV episodes varied significantly in duration among treatment conditions and over the course of the study. Inspection of average episode durations observed in Table 27 displayed the interaction. Psychosocial individuals reported a decline in HSV episode duration (\underline{M} = 8.3 days to 5.8 days), whereas the other two conditions increased in episode duration (Social Support: \underline{M} = 8.2 to 9.6; and Waiting-List: \underline{M} = 9.5 to 9.8).

The locus of the interaction was found to reside in the Posttreatment phase. Analyses of the simple main effects yielded a significant Posttreatment effect, $F(2,26) = 6.395$, $p < .001$. Further, Psychosocial individuals reported significantly shorter HSV episodes as compared to the other two conditions, at Posttreatment: Psychosocial vs. Social Support (\underline{M} = 5.8 vs. 9.6, respectively), $F(1,26) = 19.76$, $p < .001$; and Psychosocial vs. Waiting-List (\underline{M} = 5.8 vs. 9.8, respectively), $F(1,26) = 17.33$, $p < .001$.

These results, therefore, demonstrated that Psychosocial Intervention decreased average HSV Episode

Duration significantly more than either the Social Support condition, or no treatment.

HSV Episode Severity. Mixed repeated measures analysis of variance was performed on this last variable. Analysis of the HSV Episode Severity variable yielded a significant Treatment x Phase of Treatment interaction, $F(2,23) = 4.357$, $p < .02$ (see Table 29). This interaction suggested that

Insert Table 29 about here

episode severity differed significantly among treatment conditions and over the course of the study. Inspection of the combined average HSV Episode Severity scores (see Table 30) illustrated that individuals reported less severe HSV

Insert Table 30 about here

episodes at Posttreatment than at Pretreatment ($M = 3.5$ to 2.6 , respectively), whereas individuals in the other two conditions reported increases in average HSV Episode Severity (Social Support: $M = 3.4$ to 3.6 ; Waiting-List: $M = 3.4$ to 3.6). Similar trends were demonstrated for separate Sample means (see Table 31), except for the Pennsylvania

Insert Table 31 about here

Social Support group, which displayed a slight decrease in HSV Episode Severity ($M = 3.35$ to 3.25).

Analysis of the simple main effects was performed to identify the locus of the interaction. A significant effect,

$F(2,26) = 5.409, p < .01$, was found at Posttreatment. Comparisons of combined means indicated that Psychosocial individuals reported significantly less severe HSV episodes, $F(1,26) = 11.56, p < .001$, than the Social Support condition ($M = 2.6$ vs. 3.6 , respectively), or the Waiting-List condition, $F(1,26) = 13.47, p < .001$ ($M = 2.6$ vs. 3.6 , respectively).

In conclusion, Psychosocial Intervention was shown to reduce genital herpes episode severity significantly more than either social support or no treatment.

Individual Differences. The mean changes in genital herpes activity among the treatment conditions were impressive. Due to the small sample sizes, inspection of individual scores is feasible. Individual changes in HSV Episode Frequency Rates are displayed in Table 32. As can be

Insert Table 32 about here

seen from Table 32, eight Subjects in the Psychosocial Groups demonstrated decreases in HSV Frequency rates, while two Subjects remained the same. Although eight Social Support Subjects reported decreases in HSV Frequency rates, these decreases were not as large as the decreases reported by the Psychosocial Subjects. Additionally, two Social Support Subjects reported increases in HSV Frequency rates. Finally, seven Waiting-List Subjects reported increased HSV

episode rates from Pretreatment to Posttreatment, while three individuals in this condition demonstrated reduced HSV episodes. In sum, Psychosocial individuals illustrated large reductions in HSV episode rates, with Social Support individuals' HSV episode rates remaining fairly constant. Finally, Waiting-List individuals reported increasing rates of HSV episodes over the course of the study.

Duration of the HSV episodes are presented in Table 33 for the 29 Subjects who were under study . Psychosocial

Insert Table 33 about here

Subjects reported shorter HSV episodes (eight had shorter episodes; five had longer episodes) than either the Social Support Subjects (five shorter and five longer), or the Waiting-List Subjects (four had shorter episodes; five had longer episodes) from Pretreatment to Posttreatment . Further, the Psychosocial individuals demonstrated larger reductions in episode duration than individuals in the other conditions.

Individual HSV Episode Severity ratings reflected greater Baseline to 26-week Followup changes among treatment conditions. Nine Psychosocial Subjects reported decreases in HSV Episode Severity, with one Subject reporting no change in episode severity (see Table 34). Social Support Subjects

Insert Table 34 about here

demonstrated mixed changes in episode severity ratings. Five reported more severe episodes, four had less severe episodes, and one individual reported no change in HSV Episode Severity. The Waiting-List Subjects illustrated a general increase in HSV Episode Severity. Seven individuals experienced more severe episodes over the course of the study, while only two reported less severe episodes. In sum, Psychosocial individuals experienced less severe episodes than the other individuals.

In conclusion, inspection of the individual HSV scores presented in Tables 32, 33, and 34 suggest that Psychosocial individuals experienced less frequent genital herpes outbreaks than the other individuals. Additionally, these outbreaks were less severe and of shorter duration as compared to those experienced by either the Social Support or Waiting-List individuals. The individual HSV scores provide illustrative support for the findings of the group analyses presented above.

General Summary

In concluding, Psychosocial Intervention was shown to significantly reduce emotional distress (i.e., Zung Depression Scale, POMS Tension-Anxiety subscale, POMS

Depression-Dejection subscale, & POMS Total Mood Disturbance score) and loneliness (i.e., UCLA Loneliness Scale) as compared to the Social Support and the Waiting-List conditions. The intervention also significantly increased Internal Health Locus of Control (i.e., Cognitions) to a greater degree than the other two conditions. Of more interest was the affect Psychosocial Intervention demonstrated on genital herpes episodes. Psychosocial Intervention significantly reduced HSV Frequency Rates, HSV Episode Duration, and HSV Episode Severity as compared to either the placebo-control (i.e., Social Support) or no treatment conditions (i.e., maturation). Although a number of the dependent variables were significantly correlated at Pretreatment (see above discussion), and some theoretical limitations concerning these correlations along with the large number of analyses are cautioned (Keppel, 1973; Winer, 1971), the overall pattern of results suggest that Psychosocial Intervention was a powerful treatment regimen for individuals with recurrent genital herpes.

DISCUSSION

Psychosocial Intervention was shown to be a powerful treatment for individuals with recurrent genital herpes. The results were similar to those reported by other HSV researchers (Blank & Brody, 1950; di Bertolino, 1981; Gould & Tissler, 1984) . However, this investigation provided controls for placebo effects, demand characteristics, expectancies, and maturation . Assessment was strictly defined . Treatment was standardized and formulated from psychoneuroimmunologic theory . In particular, five psychosocial factors were hypothesized to contribute to genital herpes outbreaks. Stress was the only psychosocial factor that did not function as predicted . A detailed examination of the psychosocial factors assessed in this study will now be discussed.

Health Status

Genital herpes activity (i.e., HSV recurrence rates, episode severity, and episode duration) was significantly reduced in the Psychosocial Intervention groups as compared to the other two conditions. The reduction in HSV frequency rates were similar to previous studies (Blank & Brody, 1950;

di Bertolino, 1981; Gould & Tessler, 1984), however these studies did not assess HSV episode severity or duration. A further refinement of this investigation over the previous three was the methodological control offered. This study demonstrates that expectancy alone does not reduce HSV episode rates. Additionally, it appears that group support, interpersonal conflict resolution, and herpes information are not in themselves sufficient to reduce the chronicity of recurrent genital herpes, since the Social Support groups did not improve significantly as compared to the Psychosocial groups or Waiting-List condition. Definite benefits are realized from learning stress reduction techniques, coping strategies, and relaxation, as provided in the Psychosocial Intervention regimen.

In conclusion, Psychosocial Intervention reduced HSV frequency rates, HSV episode severity, and HSV episode duration significantly more than the Social Support or no treatment conditions. Hence, individuals receiving Psychosocial Intervention demonstrated greater levels of Health Status as compared to individuals in the other two conditions.

Stress

Stress has long been associated with illness and health (Bieliaskas, 1982; Riscalla, 1982; Selye, 1946; 1956; 1971), however conflicting results have been reported by researchers. Some investigators have found that stress has negative effects on health (Locke, 1982; Palmbland, 1981). Others researchers have shown that stress facilitates health (Levy et al., 1985; Locke et al., 1984; Monjan, 1981). Current models of stress incorporate the intensity and chronicity of stress in explaining how it affects health. High levels of short-term stress have been reported to adversely affect health, whereas high levels of chronic stress may actually facilitate health (Levy et al., 1985; Locke et al., 1984; Monjan, 1981).

In this study, neither Stress Frequency or Intensity were affected by the Psychosocial Intervention or Social Support treatments. Assuming Stress Frequency is a function of independent environmental factors such as social situations and vocational activities (Dohrenwend & Shrout, 1985), treatment regimens would not be expected to change the natural occurrence of stress in the individuals' lives. Therefore, the lack of significant Stress Frequency differences among the treatment conditions, following treatment, is understandable and offers some support for the Social-Psychological Models of Life Stress Processes

proposed by Dohrenwend and Shrout (1985).

Stress Intensity has a large cognitive component. Intensity is a function of the individual's cognitive appraisal of the stressor (Lazarus, DeLongis, Folkman, & Gruen, 1985), hence Stress Intensity may be modified through psychological interventions. Significant differences were not found among treatment conditions for the Stress Intensity variable. This finding may have resulted from the treatment components presented to the Subjects. The Social Support groups were not exposed to a formal stress management regimen, therefore reductions of their stress intensity would not be anticipated. Although the Psychosocial Intervention groups were instructed in a basic stress management technique, this technique may have been too complex for adequate assimilation in the time allotted by the Intervention (Meichenbaum, 1977). Indirect support for this assumption was demonstrated by treatment compliance. Stress management was not used as frequently as the other treatment techniques during the Followup periods.

Similar to Kemeny et al.'s (1984) study, stress frequency was associated with HSV Frequency Rates. Kemeny and her associates reported that high levels of stress, measured by the Life Experiences Survey (Sarason, Johnson, & Siegel, 1978), were associated with high HSV recurrent

rates. Likewise, a large positive association was found in this study between the Hassles' Stress Frequency scale and the rates of HSV outbreaks. Kemeny et al., however, found no significant correlations between the Hassle Scale and HSV outbreaks. These results taken together offer support for the oft-cited observations reported by HSV sufferers that environmental stress leads to HSV outbreaks (Bierman, 1983a; Goldmeier & Johnson, 1982; Knox et al., 1982).

Emotions

Psychosocial Intervention was shown to be superior in reducing anxiety, depression, and global emotional distress than either placebo control or no treatment. These emotions have been associated with Host immunosuppressive effects (Kiecolt-Glaser et al., 1986; Levy et al., 1985; Locke et al., 1984) and increased HSV outbreaks (Goldmeier & Johnson, 1982; Heilig & Hoff, 1928; Katcher et al., 1973; Schneck, 1947; Ullman, 1947). It was suggested that decreases in emotional distress would be associated with reductions in genital herpes outbreaks. This trend was demonstrated by the Psychosocial Intervention group members. Additionally, positive correlations among emotional distress and HSV episode measures were found at Pretreatment. Hence, these

findings support the association between emotions and genital herpes outbreaks, however the direction of this association is unclear.

The directionality of the emotions-HSV outbreaks association appeared to be from emotions to HSV episode frequency. The pattern of Emotion and Health Status results offered support for this assumption. Individuals in the Social Support groups were expected to experience reductions in recurrent HSV episodes following treatment. These reductions did not occur. The expectancy was not fulfilled and led to increased emotional distress at the first Followup, whereas the Psychosocial Intervention individuals reported declining levels of emotional distress and HSV episode recurrent rates. Waiting-List individuals reported increased emotional distress and HSV episodes during this time. A unidirectional model of causation appears appropriate for the first Followup period, however the model is inadequate for the second Followup period. During this period, the Social Support individuals were demonstrating smaller increases in emotional distress. Perhaps these trends were the result of stabilizing HSV episode recurrent rates or some other mediating variable. If this assumption is correct, then Health Status was affecting Emotions during the last Followup period. The pattern of results during both

followup periods would, therefore, support a bidirectional model of causation (Schwartz, 1982).

Social Support

Social support has been characterized as a moderating variable between stress and health outcome (Bruhn & Philips, 1984). Social networks act as buffers against high levels of acute stress (Bruhn & Philips, 1984; Cohen & McKay, in press; Wortman, 1983). Support for this formulation is found in both the psychoneuroimmunologic (Kiecolt-Glaser et al., 1986; Kiecolt-Glaser, Garner et al., 1984; Kiecolt-Glaser, Speicher et al., 1984) and herpes (Kemeny et al., 1984; Manne & Sandler, 1984) literature. In particular, Psychosocial Intervention was effective in reducing feelings of loneliness in herpes sufferers. Manne and Sandler (1984) reported that high levels of social support were positively correlated to better psychological adjustment in herpes sufferers. In this study, individuals receiving Psychosocial Intervention reported significant reductions in emotional distress, loneliness levels, and HSV episode frequency rates. Hence, social support may be viewed as a moderator variable, since it is strongly associated with emotions, and weakly associated to health indicators (i.e., HSV episodes).

Cognitions

Two basic assumptions were made concerning cognitions. First, individuals with high levels of Internal Health Locus of Control would exhibit better health status than individuals with lower levels of Internality. Support for this assumption was drawn from human (Kobasa et al., 1985; Langer & Rodin, 1976; Rodin & Langer, 1977; Schulz, 1976; Wallston & Wallston, 1981) and animal (Monjan, 1981; Sklar & Anisman, 1981; Visintainer, Seligman, & Volpicelli, 1983) studies. The second assumption involved immunopotentialization through the use of suggestive-techniques. Support for immunopotentialization came from both immunologic (Hall et al., 1981; Gottlieb et al., 1973) and herpes (Blank & Brody, 1950; di Bertolino, 1981; and Gould & Tissler, 1984) research. These assumptions were supported by this study.

Individuals receiving Psychosocial Intervention reported significant increases in Internal Health Locus of Control as compared to the other conditions. Psychosocial Intervention individuals were given three techniques to control their HSV episodes: stress management, relaxation training, and a suggestive-imagery tape. Utilizing specific techniques to effectively deal with a chronic stressor

(i .e ., recurrent HSV) have been shown to increase perceptions of control (Krantz, 1983). Such an increase was exhibited in this study. The increase in Internality may have had immunopotentiating effects, since HSV activity also decreased in the Psychosocial Intervention groups. However, there was no direct association between Internality and HSV activity. Thus Internal Health Locus of Control indirectly influences HSV activation. Perhaps this cognitive variable along with the social support variable act as a mediating variables among stress, emotions, and health status (i.e., genital herpes activity).

General Conclusions

This investigation offers the first controlled study of psychosocial treatment effects on recurrent genital herpes. The study demonstrated the beneficial affects of the treatment in significantly reducing the frequency of genital herpes outbreaks. Further, the HSV recurrences experienced by the Psychosocial Intervention individuals were shorter in duration and less severe than the individuals receiving Social Support or no treatment.

Given these impressive results, Psychosocial Intervention provides an alternative treatment regimen to

oral acyclovir chemotherapy. There are two major advantages for the application of psychosocial treatment as compared to acyclovir therapy. First, the potential serious side effects (i.e., DNA transformation, evolution of drug resistant HSV strains, and psychological dependency) associated with long-term acyclovir therapy (Guinan, 1985) are not present with psychosocial treatment. Second, the relative momentary costs of long-term acyclovir therapy are greater than for psychosocial treatment. Acyclovir costs about 30 to 35 dollars per week (Peoples, 1986). This expense is continuous, since termination of the drug leads to resumption of HSV episodes (Bierman, 1983b; Douglas et al., 1984). Psychosocial group treatment would cost much less, about 200 to 250 dollars for the entire six-session program.

A number of investigators have provided basic research illustrating the immunopotentiating effects of psychosocial treatment on immunologic parameters (Ader, 1981; Levy, Herberman, Malnish, & MacClamrock, 1986; Kiecolt-Glaser et al., 1986). Only a few studies have demonstrated the effects of psychosocial treatment on actual health endpoints. Marx et al. (1984) reported students who received supportive problem-solving group intervention suffered fewer colds than students not receiving treatment. Surman et al., (1973) reduced the number of warts in individuals through

the use of suggestion. Similarly, Ikemi and Nakagawa (1963) decreased the severity of contact dermatitis with suggestion. Lower morbidity rates in the elderly were demonstrated by the application of psychosocial treatment (Rodin & Langer, 1977). This investigation provides additional support for the ability of psychosocial treatment to influence health in general, and an endogenous viral-based disease in particular.

Several problems with the investigation were noted. There was no standardized measure of general health status. Future studies might include Cox, Freundlich, and Meyer's (1975) Psychosomatic Symptom Checklist as a quantitative measure of general health status. Second, the Subjects were physician-certified to have herpes infections of the genitals, however the viral types were not diagnostically specified. Although 80 to 88% of recurrent genital herpes infections are HSV type II (Bierman, 1982; Corey, Adams et al., 1983), it could not be confirmed that all Subjects were infected with HSV II. Some researchers have cautioned that HSV I and HSV II may respond differently to chemotherapeutic regimens (Corey & Holmes, 1983; Whitley et al., 1982). It is not known whether HSV I and II would respond differently to psychosocial treatment, therefore future studies should identify the HSV type of their Subjects (see Corey & Holmes,

1983, for typing information). Subsequent analyses may then be performed to determine if differential responses to psychosocial treatment are exhibited by individuals with HSV I versus HSV II.

The results of this study rely on self-report data. Although the three condition design was utilized to control for demand characteristics, medical observation of lesion episodes might have increased the reliability of the findings. However, studies employing physician examination of HSV outbreaks suffer from high Subject attrition rates (43 to 48%, refer to: Spruance et al., 1977; and Thin et al., 1983). Such high attrition rates may yield results based on unrepresentative samples and thus reduce generalibility of the findings. An alternative to physician-monitored HSV episodes is to directly measure HSV antibody serum titers (Warford, Levy, & Rekrut, 1984). Periodic assessments of antibody concentrations would provide a biological index of HSV activation. This index along with psychosocial measures might be compared to actual genital herpes outbreaks. This comparison would define biopsychosocial conditions which result in HSV outbreaks.

The final difficulty with this study was the lack of a direct immunologic measure. Analysis of NK activity (Marx, 1980) would provide a useful immunologic variable to assess

the influence of Psychosocial Intervention on Host immunocompetence. Kemeny et al. (1984) utilized T-suppressor to T-helper ratios as HSV immunologic markers. They found no direct association among these ratios and HSV episode frequency rates. The lack of association was due the low reactivity of T-cell ratios to viral infections (Levy, 1982; Ramsey, 1982). Herberman and Holden (1978) suggest that NK activity is a more appropriate immunologic measure for viral-based infections. Therefore, future research should utilize NK activity. Immunologic measures would more fully describe transactional patterns among psychosocial factors, immunocompetence, and disease. Further, it would augment the reliability of the study by providing additional biological data.

Future biopsychosocial research on recurrent genital herpes should identify the active treatment components of Psychosocial Intervention. Relaxation training and suggestive-imagery techniques were utilized most frequently by the individuals. Providing accurate information about herpes along with destigmatizing the disease in a group experience was reported as very useful by the individuals. Finally, stress management and health habits appeared to be least useful treatment elements. Future investigators might compare the effectiveness of these various treatment

components on genital herpes episodes.

Another aspect of future investigation resides in the comparisons of individual versus group treatment. Three studies have reported the success of individualized treatment for HSV (Blank & Brody, 1950; di Bertolino, 1981; Gould & Tisser, 1984), however these studies were poorly controlled. All treated individuals in this study offered written statements that group experience was very meaningful to them. They had the opportunity to learn first hand how others experienced herpes. The Subjects were able to share their feelings concerning the disease, and discuss interpersonal issues which might be lost with individual treatment. Another argument for group treatment is the report that 42% of individuals with first episodes of HSV tend to withdrawal from social interactions (Bierman, 1983c). This tendency was also reported by individuals participating in this project. In light of the immunosuppressive effects of social withdrawal, perhaps group treatment would be more effective than individualized therapy in dealing with this tendency.

Given the success of Psychosocial Intervention, future application of this treatment to other immunosuppressive disorders (e.g., cancer, transplant patients) and high risk groups (entry-level students, military recruits, divorced or

widowed spouses, time-pressure occupation employees) is suggested.

Finally, more basic research designed to identify the theoretical functioning of the psychoneuroimmunologic model is warranted. How does the biopsychosocial model of health outcome function ? The unidirectional model appears inadequate (Schwartz, 1982). This study offered support for a bidirectional model. This model incorporates cognitions, personality, and social support as moderator variables between stress and health outcome (Kiecolt-Glaser et al., 1986; Kobasa et al., 1985; Krantz, 1983; Locke et al., 1984; McClelland, Alexander, & Marks, 1982) . However, this paradigm may give way to a multidimensional model which describes the complex, dynamic transactions among biological parameters, psychosocial factors, and health outcomes over time (Gottlieb, 1983).

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APPENDIX A. HSV INFORMATION PHAMPLET

Genital herpes is caused by herpes simplex virus (HSV). The disease has reached epidemic proportions in the United States. Experts estimate that between 20 to 30 million individuals suffer from the disease. Many individuals with the disease have recurrent lesions. The recurrence rates vary from once-per-year to almost continuous lesion outbreaks. The most frequently reported recurrence rates are between five to eight episodes-per-year. Researchers do not know what causes the herpes virus to reactivate and produce recurrent lesions. Although many triggers have been implicated in lesion reactivation, none of the triggers have been proven to cause recurrences.

Genital herpes is very contagious when active lesions are present on the genitals. During this phase of the disease, caution should be exercised to prevent transmission of herpes to a sex partner, or to other parts of your body. Sexual activity should be avoided until all lesions are completely healed. If you are not certain that your lesions are completely healed, use of a condom and contraceptive jelly offers some protection against the virus.

Personal hygiene is important to prevent the spread of the disease to other parts of your body. Wear cotton underwear. Keep the lesion area dry. Use a separate washcloth and towel for the lesion area when bathing. Avoid touching the lesions with your fingers or hands. You may infect other parts of your body. Each time you touch a lesion area with your fingers or hands, thoroughly wash your hands with soap and water. Be especially careful not to touch your eyes, after touching herpes lesions. If your eyes become infected with HSV, they will become red and feel sandy. Contact a physician immediately for treatment, if you suspect HSV infection of the eyes. Such eye infections may lead to blindness, however prompt medical attention will reduce this risk.

Unfortunately, there is no medical cure for recurrent HSV infections. Some success has been reported with the drug acyclovir (brand name: Zovirax) in treating the disease. Topical application of the drug has reduced average healing time from 10-14 days to 5-7 days. Intravenous and oral forms of the drug suppresses lesion outbreaks while the drug is being used; however once treatment is discontinued, lesion episodes return at the same rate or at an increased recurrence rate. Additionally, some researchers advise against the use of acyclovir because

of known and unknown side effects. Despite the frequent claims of new cures for genital herpes in the press, no drug has been shown effective in reducing episode outbreaks.

Although there is no cure for the disease at this time, many millions of Americans live with the virus. You are not alone. It is important to keep genital herpes in perspective. You are not the virus, but merely a host to it. You may enjoy life and sexual activity. Just follow the precautionary measures discussed above, when you have active lesions. Many people have done so. With care, spreading genital herpes to a sexual partner can be kept at a minimum. Infact, less than 40% of permanent sexual partners of genital herpes sufferers report developing the disease themselves. Finally, in some individuals the disease appears to be self-limiting, and recurrence rates are drastically reduced over the course of several years as your body builds up resistance to the disease.

APPENDIX B. INFORMED CONSENT/TREATMENT CONTRACT

This research you have agreed to participate in is an investigation into the psychosocial factors associated with Genital Herpes. During this initial individualized session, you will be asked to complete eight questionnaires assessing your emotional distress, cognitions, stress levels, and health status. Additionally, you will be asked to sign a release of medical information, so your genital herpes may be confirmed by your diagnosing physician. You will then become involved in an experimental therapeutic regimen, which is expected to help alleviate emotional distress that accompanies herpes.

Treatment will consist of participation in six, 90-minute, six member groups, conducted in six consecutive weeks by a therapist. During these sessions relevant topics, emotional concerns, and difficulties with having genital herpes will be explored by the group members. Since this is an experimental treatment study, you will be randomly assigned to one of two treatment conditions, or to a Waiting-List control group. The treatment conditions vary with respect to length of topic discussions and specificity of treatment techniques. Individuals assigned to the Waiting-List control will be asked to monitor their herpes episodes and health habits with a checklist for 26 weeks. At the end of this period, these individuals will be offered the most effective treatment, along with anyone in the treatment conditions who wishes to attend additional sessions. Finally, all treated individuals will be asked to complete questionnaires at 12 and 26 week followup periods. These questionnaires will be sent and returned via mail.

It is expected that you will experience a reduction in emotional distress associated with genital herpes. Some individuals may also realize a reduction in the frequency of their recurrent herpes episodes. Although these treatment benefits may be anticipated, they can not be guaranteed since this is an experimental treatment study.

You should be aware that during treatment sessions, you will be encouraged to discuss your feelings and thoughts about having genital herpes with other herpes sufferers. All members of your group will pledge that material discussed in the groups will be held in the utmost confidence, however you may experience some embarrassment and emotional discomfort as a result of these discussions.

To further insure all information you provide during this session, the group sessions, and from the 12 and 26

week followup mailings will remain confidential, all questionnaires and personal data will be coded. This will insure that your name will not appear on the data. Additionally, all information you provide during these sessions will be kept strictly confidential. No persons otherthan our research team will have access to it.

This research project has been approved by the Virginia Polytechnic Institute and State University Human Subjects Research Committee and the Institutional Review Board. In accordance with this approval, your participation in this study is voluntary. You are free to discontinue your participation, without penalty, at any time. If you have any questions regarding this project, please ask the interviewer. Additionally, a copy of this informed consent will be offered to you with the names and phone numbers of the investigators and the Human Subjects Representative, which are listed below.

George Clum, Ph.D.
Principal Investigator

David Longo, M.S.
Research Associate

Stephen Zaccaro, Ph.D.
Human Subjects Representative,

In concluding, I have read the above statement and am aware of the conditions of my participation in this research. I understand that all information I provide will be kept confidential, and I am free to withdraw my participation, or refuse to answer any questions, at any time. Further, due to the extreme sensitivity of this research, I agree that I will not reveal the identity of any group member to any person, if I participate in the group sessions. Finally, I hereby agree to voluntarily participate in this research project described above and under the conditions described above.

NAME (please print)

Signature

Date

APPENDIX C. HISTORICAL AND DEMOGRAPHIC INFORMATION

Name: _____ Code #: _____

Age: _____ Date: _____

D.O.B.: _____ Sex: Male Female

Years of Education: _____ Marital Status: _____

Occupation: _____

Campus Address: _____

Phone: (____) _____

Permanent Address: _____

Phone: (____) _____

Diagnosing Physician: _____

Address: _____

Phone: (____) _____

Date of first HSV: _____

How long have you had genital herpes _____

Estimated # of recurrences: ___ per month; or ___ per year.

Has the # of recurrences increased, remained constant,
or decreased, during the last few months?

Location of the lesion(s): _____

APPENDIX D. GENERAL HEALTH STATUS INDEX

Directions: This questionnaire is to help estimate your general level of health status. Please complete all sections of this form.

Health History

Please check those items below which are current problems for you:

Alcoholism _____	Heart problems _____
Arthritis _____	High blood pressure _____
Asthma _____	High cholesterol _____
Back pain _____	Injury to arms or legs _____
Breathing problems _____	Low blood sugar _____
Cancer _____	Overweight _____
Depression _____	Stomach Problems _____
Diabetes _____	Stroke _____
Ear or Eye problems _____	Suicide thoughts _____
Epilepsy or seizures _____	Skin disorders _____
Muscle pain _____	Trouble sleeping _____
Diarrhea _____	Other _____

Health Habits

Do you currently smoke cigarettes? Yes ___ No ___

If yes:

How long have you been smoking (years)? _____

How many cigarettes do you currently smoke per day? _____

What was the average number of cigarettes you smoked per day since you first started? _____

What is your average intake of alcohol per day? Consider one drink to equal: 1 bottle of beer; 4 oz. of wine; or 1.5 oz of liquor (please check the appropriate space):

0 ___ 0-1 ___ 1-2 ___ 2-3 ___ 3-4 ___ 4 or more ___

How many cups of caffeinated coffee (regular brewed or instant) do you drink per day? _____

How many cans of caffeinated soda pop do you drink per day? _____

Do you have any permanent disabilities? Yes ___ No ___

If yes, please describe them: _____

How many times have you visited a physician in the last twelve months? _____

Please list any hospitalization, serious injury, or operation you have had:

<u>Approximate Date</u>	<u>Where</u>	<u>Procedure</u>
_____	_____	_____
_____	_____	_____
_____	_____	_____

About how many colds do you get per year? _____
When was your last cold _____
When was the last time you had a fever? _____
When was the last time you had the flu? _____

Please list all of your current medications (including aspirin, allergy medications, and over-the-counter drugs:

<u>Medication</u>	<u>Dose</u>	<u>Times/Day</u>	<u>Start Date</u>	<u>Prescribed for what</u>
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____

Please answer the following six questions.

- 1). How much do you weight _____ (lbs.).
- 2). What is your height _____.
- 3). Are you covered by some form of health insurance? Y N
- 4). Have you had a medical checkup in the past year, even though you felt well? Y N
- 5). Have you had a dental checkup in the past year, even though you had no dental problems? Y N
- 6). How often do you participate in the following activities each month:

ACTIVE SPORTS _____ PHYSICAL EXERCISES _____

SWIMMING OR TAKING LONG WALKS _____
GARDENING, HUNTING, FISHING _____

APPENDIX E. UCLA LONELINESS SCALE

Directions: Indicate how often you feel the way described in each of the following statements. Circle one number for each statement.

	STATEMENT	NEVER	RARELY	SOMETIME	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 a lot in common with 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

APPENDIX F. MULTIDIMENSIONAL HEALTH LOCUS OF CONTROL SCALES

Directions: This questionnaire has to do with beliefs that people have about their health. The questionnaire consists of a series of statements followed by a six-point rating scale. Next to each statement circle the number that most closely agrees with your own beliefs. The higher the number the more you agree with it. Please answer every item and do not spend too much time thinking about any one. Since this is a measure of belief, there is no right or wrong answer.

ITEM	Strongly Disagree						Strongly Agree					
1). If I get sick, it is my own behavior which determines how soon I get well again	1	2	3	4	5	6						
2). No matter what I do, if I am going to get sick, I will get sick	1	2	3	4	5	6						
3). Having regular contact with my physicians 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						

ITEM	Strongly Disagree						Strongly Agree					
12). The main thing which affects my health is what I do myself	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 G. MONTHLY CONTACT QUESTIONNAIRE

Date: _____

Code #: _____

Directions: Please answer all of the following questions and return this form in the enclosed, stamped envelope.

1). Have you had a recurrence during the past month: Y N
If yes, please respond to the following questions:

- a). How many recurrences did you have _____
- b). Number of lesions or lesion clusters _____
- c). How long did the recurrence last _____ days
- d). How severe was this recurrence compared to others you have had:

1-----2-----3-----4-----5
not moderately extremely
severe severe severe

e). Please rate each of the items below. Rate the item as compared to previous recurrences you have had. Use the following scale:

1-----2-----3-----4-----5
not moderately extremely
severe severe severe

Fever _____ (1 to 5)
Lymph gland swelling _____ (1 to 5)
Neurologic pain _____ (1 to 5)

Pain at the lesion site _____ (1 to 5)
Itching at the lesion site _____ (1 to 5)
Redness at the lesion site _____ (1 to 5)
Burning at the lesion site _____ (1 to 5)
Swelling at the lesion site _____ (1 to 5)

Urination discomfort _____ (1 to 5)
Defecation discomfort _____ (1 to 5)
Urinary retention _____ (1 to 5)
Urethral/Vaginal discharge _____ (1 to 5)

DATE: _____

APPENDIX H

CODE: _____

HSV Symptom Checklist and Health Status Record

Directions: Date this sheet and begin to record the information for each item in the spaces below.
Record any appropriate item each day.

For the last three items, rate each according to this scale: 1 2 3 4 5
not severely moderately severe extremely severe

ITEM	DAY																			
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
# hours of sleep																				
# hours of relaxation																				
# hours worked																				
# meals ate																				
# alcoholic bev. con.																				
# cigarettes smoked																				
# coffee cups (caf.)																				
# cups of tea (caf.)																				
# of caf. soft drink																				
RATE THE FOLLOWING ITEMS ACCORDING TO THE RATING SCALE ABOVE																				
Stress Level																				
Exertion Level																				
Emotional distress																				

Please list the type and quantity of medications consumed during

Medication	Quantity	Medication	Quantity	Medication	Quantity

DATE: _____

APPENDIX H

CODE: _____

HSV Symptom Checklist and Health Status Record

Directions: At the first sign of your first HSV symptom, date this record sheet. Begin rating the symptoms below, each day, until there is no noticeable sign of a lesion episode.

Rate each symptom according to this scale:

1	2	3	4	5
not severe	moderately severe	extremely severe		

SYMPTOM	DAY																				
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
Fever																					
Lymph gland swelling																					
Neurologic pain																					
Pain at lesion site																					
Itching at lesion site																					
Redness at lesion site																					
Burning at lesion site																					
Swelling at lesion site																					
Urination discomfort																					
Defecation discomfort																					
Urinary retention																					
Urethral/Vaginal discharge																					
Number of lesions																					
Number of lesion clusters																					

DATE OF FIRST LESION: _____

DATE OF SCAB APPEARANCE: _____

DATE OF COMPLETE LESION HEALING: _____

SITE OF FIRST LESION: _____

SITE OF OTHER LESIONS: _____

not helpful

highly helpful

7). Please circle Y if the following issues or skills were discussed in the past six sessions, and N if they were not covered:

- a). General information about herpes Y N
- b). Medical and drug information about herpes Y N
- c). How you contracted herpes Y N
- d). Your feelings about the person who gave you herpes . Y N
- e). Confusion concerning if this person
knew they had HSV Y N
- f). Your feelings about having herpes Y N
- g). Other members' feelings about having herpes Y N
- h). How other members experience their herpes Y N
- i). Ways of identifying when your herpes is active Y N
- j). Ways of identifying when your herpes is about to
become active (i.e., prodromal symptoms) Y N
- k). How other members experience prodromal symptoms Y N
- l). How the disease affects your relationships Y N
with others Y N
- m). How the disease affects your relationship with your
spouse, lover, boyfriend, or girlfriend Y N
- n). Symptomatic relief measures for outbreaks Y N
- o). Maladaptive adjustment to herpes Y N
- p). Adaptive adjustment to herpes Y N
- q). Coping with herpes Y N
- r). Sex and herpes Y N
- s). Ways to protect your sexual partner from
contracting herpes from you Y N
- t). Ways to help prevent the spread of herpes to
other parts of your body Y N
- u). Ways of telling an intended sexual partner
you have herpes Y N
- v). Nutrition and health related information Y N
- w). A specific relaxation technique was taught Y N
- x). Nonspecific relaxation techniques were discussed ... Y N
- y). Influences of stress and herpes activation
were discussed Y N
- z). How your thoughts influence stress Y N
- al). Specific ways of dealing with stress
were discussed Y N
- bl). Nonspecific ways of dealing with stress

were discussed Y N
c1). A specific suggestive-imagery technique
was provided Y N

8). Please respond to the following questions,
concerning the treatment you received:

a). Describe or list the positive aspects of your
involvement in this treatment group:

b). Describe or list the negative aspects of your
involvement in this treatment group:

c). What was the most useful element(s) of the treatment for
you (e.g., information, techniques, group support,
etc.):

d). What was the least useful element(s) of the treatment
for you:

e). Were there any topics or issues, that were not addressed
during the sessions, which you would have liked to
discuss:

f). Are there any suggestions you might have for improving
future sessions or the treatment:

g). Please feel free to add any other thoughts or comments
you would like to make:

THANK YOU

If yes, rate how successful you were:

1-----2-----3-----4-----5
not very
successful successful

6). How many times did you visit a physician during the past month: _____
For what reason(s): _____

7). Where should I send next month's questionnaire?

SAME ADDRESS: _____
NEW ADDRESS: _____

If new address, please write it below:

PLEASE REMEMBER TO MONITOR YOUR OUTBREAKS AND HEALTH HABITS **DURING AN EPISODE**, ON YOUR MONITORING SHEETS. THEN RETURN THE MONITORING SHEETS VIA THE MAIL.

Do you need additional monitoring sheets:

Y N

THANK YOU

If yes, rate how useful the tape was:

1-----2-----3-----4-----5
not very
successful successful

6). Did you attempt to manage your stress during the past month: Y N

Did you manage your stress before, during, or after an episode: Y N

If yes, rate how successful you were:

1-----2-----3-----4-----5
not very
successful successful

7). Did you attempt to manage you health habits (i.e., eating, sleeping, exercise) during the past month: Y N

Did you manage your health habits before, during, or after an episode: Y N

If yes, rate how successful you were:

1-----2-----3-----4-----5
not very
successful successful

8). How many times did you visit a physician during the past month: _____

For what reason(s): _____

9). Where should I send next month's questionnaire?

SAME ADDRESS: _____

NEW ADDRESS: _____

If new address, please write it below:

PLEASE REMEMBER TO MONITOR YOUR OUTBREAKS AND HEALTH HABITS
DURING AN EPISODE, ON YOUR MONITORING SHEETS. THEN RETURN
THE MONITORING SHEETS VIA THE MAIL.

Do you need additional monitoring sheets: Y N

THANK YOU

APPENDIX L. SOCIAL SUPPORT GROUP RATIONALE

We will be meeting for a total of six sessions. During these sessions, we will be discussing various topics associated with genital herpes. As we explore these topics, you will become more knowledgeable about genital herpes. With more knowledge, your fears and concerns about the disease will be reduced. I will also encourage you to share your feelings, thoughts, and experiences associated with the disease. Through knowledge, fear reduction, and sharing, your emotional distress about having genital herpes will be reduced. With the reduction of this distress you will feel more in control of your life and better able to cope with genital herpes. The combination of distress reduction and increased coping may reduce the number of recurrences for some of you. This effect has been reported by several investigators. It is hypothesized that with decreased stress and increased social support (i.e., through group involvement), your body can resist HSV recurrences more effectively.

As I mentioned before, there will be a total of six group sessions. I encourage you to attend all sessions, in order to reap the most benefit from the treatment. As all

of you are aware, having genital herpes is a very private and sensitive issue. This is why you have all signed the Informed Consent form before attending this group. In the form, you agreed not to reveal the identity of any group member to any individual. Additionally, as with any group of this nature, I must stress that anything said or done in these meetings be held in the most strict confidence. With strict adherence to this rule of confidentiality, all of you will feel a little more at ease in discussing your thoughts and concerns about genital herpes.

Now before we begin this session, allow me to briefly summarize what topics we will be covering in the coming sessions. This meeting we will explore your knowledge about herpes. Our goal is to supply everyone here with accurate information about the disease. Additionally, any misconceptions or myths about genital herpes will be dispelled. The second session will be devoted to conveying symptomatic relief measures and exploring the group's feelings about having genital herpes. In the third session, we will discuss maladaptive adjustment patterns to herpes and how to refocus your perception concerning HSV. Emotional aspects of having genital herpes will be pursued in the fourth session. Sexual relations and considerations will be examined in the fifth session. Finally, the last

session will be devoted to concluding remarks, questions, concerns, and any other topic the group decides to discuss.

APPENDIX M. SOCIAL SUPPORT GROUP - SESSION OUTLINES

SESSION I

1. Rationale (see Appendix L)
2. Getting Acquainted
 - a. Have each client introduce him/herself.
 - b. Encourage the client to reveal how long they have had genital herpes.
3. Facts & Fallacies of Genital Herpes
 - a. Encourage group members to share what they know about the disease.
 - b. Allow free discussion.
 - c. Clear up misconceptions.
 - d. Generate Fallacies:
 - 1). I can die from the disease.
 - 2). I can never have sex again.
 - 3). You can get the disease from a door knob.
 - 4). Is there a medical cure for the disease?
 - 5). Can I have children?
 - 6). Can herpes cause cancer?
 - e. Provide Facts:
 - 1). 20 to 30 million Americans have the disease.
 - 2). The median number of recurrences is between

five to eight per year; but some people have less, others may have continuous lesion outbreaks.

- 3). Herpes lies dormant in the ganglia between episodes.
- 4). Some people suffer from the disease for seven years, others suffer for all their lives.
- 5). Many triggers cause the disease to travel from the ganglia to the lesion site (e.g., stress, overexertion, trauma, menstruation, lack of sleep, foods, etc.).
- 6). There is no medical cure for the disease at this time (Acyclovir only suppresses lesion outbreaks. Once you stop the drug, episodes come back - sometimes even worst than before the chemotherapy).
- 7). You can self infect other parts of your body with the disease.
- 8). Most women who have herpes, have babies free from herpes infection, if their physician knows about the disease before birth.
- 9). There is a correlation between genital herpes and cervical cancer in women, however no proof has been found indicating that HSV causes

cancer.

4. Close the session
 - a. Remind group members of time and day of the next session.
 - b. Briefly describe what topic will be discussed during the next session (i.e., your feelings about HSV - some relief measures will also be provided).

SESSION II

1. Sharing Of Feelings
 - a. Encourage group members to self-disclose how they feel about having genital herpes (look for: guilt, anger, hostility, depression, and anxiety).
 - b. Probe for feelings of social isolation and contamination.
 - c. Encourage group members to disclose how they acquired genital herpes and their feelings towards the infecting individual.
2. Symptomatic Relief Measures
 - a. Provide handout to group members (see Appendix R).
 - b. Go over handout.

SESSION III

1. Maladaptive Adjustment to Herpes
 - a. Group leader should describe several maladaptive adjustment patterns that individuals exhibit to the

disease. For example:

- 1). Depression and anxiety.
- 2). Feeling worthless, hopeless, dirty.
- 3). Feeling sinful.
- 4). Structuring and restricting their social lives around herpes.

2. Adaptive Adjustment to Herpes

a. Group leader should elicit adaptive ways of adjusting to having genital herpes from the group members. For example:

- 1). Ok, I have herpes, but I can live with it.
- 2). I'm only the host to the virus and not the virus.
- 3). Many people have the virus, infact 97% of all individuals have been exposed to either type I or type II, so I'm not alone.
- 4). I'm still the same person I was before I got herpes.

SESSION IV

1. Emotional Aspects of the Disease

- a. Legitimatize the group members fears and concerns about genital herpes.
- b. Acknowledge that occasionally you become depressed, angry, and frustrated about having the disease.

- c. Own these feelings.

SESSION V

1. Sex and Genital Herpes

- a. You can have sex.

- b. The Facts:

- 1). Only 40% of mates of genital herpes sufferers acquire the disease.
- 2). Although the virus may be dormant, some researchers suggest that a small percentage of HSV sufferers still shed the virus when there is no sign of lesion on the genitals.

- c. Preventative Measures:

- 1). Do not have intercourse or oral sex while you have an active lesion.
- 2). If you masturbate or pet, be aware that you can self-infect other areas of your body with your fingers, if a lesion is present.
- 3). If you are experiencing prodromal symptoms, use a condom and contraceptive jelly/cream to help protect your partner.

2. Telling a Sexual Partner You Have Herpes

- 1). It is your moral responsibility to inform you partner.
- 2). Role play telling intended sex partners. .

SESSION VI

1. Concluding Questions and Remarks
 - a. Group leader should elicit questions from members.
 - b. Clarify any issues.
 - c. Ask group members for feedback about the sessions.
2. Goodbyes.
3. FILL OUT POSTTREATMENT QUESTIONNAIRES.

APPENDIX N. NUTRITION AND HEALTHFUL BEHAVIORS
TO PROMOTE HSV RESISTANCE

Some of the most important ways you can help control genital herpes recurrences is to maintain good health. By maintaining good health and practicing healthful behaviors, you facilitate your immune system. Good health insures a well functioning immune system capable of resisting HSV reactivation; fighting other diseases and infections, thereby helping to keep immunocompetence high, and thus preventing HSV reactivation; and augmenting your immune system's response to a lesion outbreak, resulting in more rapid healing and less severe episodes. The best way to maximize your immunocompetence is to follow a nutritious diet, get adequate sleep, and to exercise.

Nutrition

Nutrition is essential to provide your body with an adequate supply of carbohydrates, fats, proteins, vitamins, and minerals. Although there is no one best diet for everyone, plan to eat three well balanced meals-a-day. In addition to this, keep in mind the following suggestions drawn from Dr. Donald Ardell's book (1979): High Level Wellness: An Alternative to Doctors, Drugs, and Disease (Bantam Books):

1. Try to eat fresh, natural, foods such as: fresh vegetables, fruits, and brans.
2. Eat a variety of foods.
3. Stay away from processed and artificial foods.
4. Reduce your sugar and salt intake.
5. Reduce your coffee, tea, alcohol, and drug (e.g., over-the-counter and if applicable other drugs) use.
6. Eat a combination of meat, whole grains, and legumes to provide your body with adequate protein.
7. Don't forget to eat high-fiber roughage.
8. Don't over eat. Enjoy your meals by eating slowly.
9. Drink plenty of water.

10. Eat a good breakfast.

Sleep

We need to sleep. Sleep is the time when your body repairs itself and finds a respite from daily stresses. Without adequate sleep, people become irritable. This irritation leads to imbalances in your body, which adversely affects your immune system, and in turn leads to herpes outbreaks. Additionally, many genital herpes sufferers point to lack-of-sleep as one of the major triggers of recurrent HSV lesions. So plan to get adequate amounts of sleep, everyday. An adequate amount of sleep varies from person to person (i.e., six to ten hours), but most people need seven to nine hours.

Exercise

Although genital herpes sufferers report that overexertion often triggers HSV attacks, to maintain your health, you need to exercise. Remember exercise may be obtained in a number of ways: walking, jogging, bicycle riding, swimming, sports, etc.

In concluding, to maximize your immunocompetence, follow a nutritious, well-balanced diet; plan to sleep seven to nine hours per day; and don't forget to exercise. By following the above guidelines, you will promote your body's natural resistance to the herpes virus. If these guidelines are close to your present life style, then keep up the good work. If there is a great distance between your life style and the suggestions above, slowly begin to adopt these suggestions into your daily routine. By slowly incorporating these healthful behaviors, you are more likely to maintain these behaviors, than if you were to make radical adjustments in your life style.

APPENDIX O. PSYCHOSOCIAL INTERVENTION GROUP RATIONALE

We will be meeting for a total of six sessions. During these sessions, we will be discussing various topics associated with genital herpes. As we explore these topics, you will become more knowledgeable about genital herpes. With more knowledge, your fears and concerns about the disease will be reduced. I will also encourage you to share your feelings, thoughts, and experiences associated with the disease. Through knowledge, fear reduction, and sharing, your emotional distress about having genital herpes will be reduced. With the reduction of this distress you will feel more in control of your life and better able to cope with genital herpes. The combination of distress reduction and increased coping may reduce the number of recurrences for some of you. This effect has been reported by several investigators. In addition to discussing various topics related to genital herpes, I will instruct you in techniques designed to booster your resistance to recurrent HSV episodes. These techniques include: Guidelines to a more nutritious diet and more health promoting behaviors to increase your body's ability to fight-off recurrent HSV episodes; Relaxation training to help you reduce your

autonomic nervous system reactivity, which has been suggested to be associated with reactivation of HSV lesions; and suggestive-imagery techniques to be utilized when you first notice prodromal HSV symptoms, which has been shown effective in mobilizing your immune responses to head-off lesion episodes. It is anticipated that with decreased stress and autonomic activity, increased nutrition and health behaviors, immunostimulator effects of suggestive-imagery, and increased social support (i.e., through group involvement), your body can resist HSV recurrences more effectively.

As I mentioned before, there will be a total of six group sessions. I encourage you to attend all sessions, in order to reap the most benefit from the treatment. As all of you are aware, having genital herpes is a very private and sensitive issue. This is why you have all signed the Informed Consent form before attending this group. In the form, you agreed not to reveal the identity of any group member to any individual. Additionally, as with any group of this nature, I must stress that anything said or done in these meetings be held in the most strict confidence. With strict adherence to this rule of confidentiality, all of you will feel a little more at ease in discussing your thoughts and concerns about genital herpes.

Now before we begin this session, allow me to briefly summarize what topics we will be covering in the coming sessions. This meeting we will explore your knowledge about herpes. Our goal is to supply everyone here with accurate information about the disease. Any misconceptions or myths about genital herpes will be dispelled. Additionally, nutritional/health promoting behaviors will be described. The second session will be devoted to conveying symptomatic relief measures; exploring the group's feelings about having genital herpes; and a relaxation technique will be taught to you. In the third session, we will discuss maladaptive adjustment patterns to herpes; learn how to refocus your perception concerning HSV; and discuss any problems with the relaxation technique. Emotional aspects of having genital herpes will be pursued in the fourth session, as well as practicing a suggestive-imagery technique designed to mobilize your immune response to a genital herpes attack. Sexual relations and considerations will be examined in the fifth session. Finally, the last session will be devoted to concluding remarks, questions, concerns, and any other topic the group decides to discuss.

APPENDIX P. PSYCHOSOCIAL INTERVENTION GROUP-SESSION OUTLINES

The Psychosocial Intervention Group will discuss the same session topics as the Social Support Group (see Appendix M for detailed session outlines). However for the first four sessions, a specific technique or skill will be added. The group leader should devote about half the session to the discussion topics, and the other half to the technique or skill (when appropriate). The following four techniques/skills are listed below per session:

SESSION I

1. Rationale (see Appendix O).
2. Discuss topics in Session I of Appendix M.
3. Hand out the Nutrition And Healthful Behaviors Phamplet (see Appendix N).
4. Go over the handout.

SESSION II

1. Discuss topics in Session II of Appendix M.
2. Teach the group members Respiratory Manipulation Training (Longo & vomSaal, 1984).

Rationale for Respiratory Manipulation Training

Several researchers have suggested that over aroused or stimulated autonomic nervous system will cause the HSV to reactivate and create a genital herpes attack. This arousal

may be felt as anxiety or "nerves". To reduce this autonomic arousal, you must first notice when you are aroused and then relax this arousal away. You will learn how to notice your arousal by first relaxing. When you have completely relaxed, you can compare this relaxed state to your arousal state. In this way, you can monitor when you are aroused and relax it away.

Now we are going to learn a relaxation technique called Respiratory Manipulation Training. This technique is a very effective, yet simple relaxation technique to learn and use. It's effectiveness comes from two sources. First, you will be exercising you diaphragm. This muscle will use up a lot of energy. By using up the energy, you will feel relaxed. Sort of like after you have exercised a great deal and feel the 'let down', at-peace-with-the-world, feeling. Second, while you practice Respiratory Manipulation Training, you will be building up the carbon dioxide concentrations in your blood (again, like when you exercise a lot). This build up of carbon dioxide has a tranquilizing effect on your nervous system, and thus reduces your arousal level. Hence, Respiratory Manipulation Training will reduce your autonomic nervous system arousal and decrease your chances of activating the HSV, which helps you control your genital herpes outbreaks.

Respiratory Manipulation Training

Respiratory Manipulation Training is a breathing technique. First, you must learn how to breath. Many people do not breath properly. Let's all breath deeply and slowly. Put your hands on your sides and breath from the diaphragm. If you are breathing properly, your hands should be moving out with each inhalation and in during the exhalation.

1. The therapist should demonstrate breathing.
2. Make sure all members are breathing correctly.

The second part of Respiratory Manipulation Training involves expelling all the air from you lungs. Refrain from breathing at this point, for as long as you can. When you can no longer refrain from breathing, inhale and experience respiratory relief. (NOTE: Some individuals must take a short quick breathe, followed by a deep breath to experience the relief.)

1. The therapist should demonstrate this for the group.
2. Once all members are skilled at the second part of Respiratory Manipulation Training, the therapist should demonstrate the combined procedure, that is: Two deep breathing cycles; Full exhalation; Maximum voluntary respiratory arrest; Inhalation; Respiratory relief; and repeat the sequence.

3. When all group members are skilled with the combined technique, have the members think the word "RELAX" or "CALM" with each exhalation.

4. The group should practice Respiratory Manipulation Training for about 20 minutes (e.g., two deep breathing cycles - exhalation -inhalation -relief - and repeat) without rest.

5. Homework is given to practice this technique at least 15 minutes each day. Also, encourage the group members to use the technique whenever they feel aroused. Remind the group to use the cue word "RELAX" or "CALM" with each exhalation.

SESSION III

1. Discuss topics in Session III of Appendix M.

2. Assess for problems with Respiratory Manipulation Training.

3. Be prepared to assess and intervene if noncompliance is discovered. .

SESSION IV

1. Discuss topics in Session IV of Appendix M.

2. Give rationale for the suggestive-imagery technique.

3. Have the group listen to the suggestive-imagery tape (adapted from di Bertolino, 1981).

4. Give each group member a suggestive-imagery tape to keep and to use at home.

5. Remind group members to play the tape as soon as they notice a HSV prodromal symptom, for as many times as they wish.

Rationale for the Suggestive-Imagery Technique

Suggestive-Imagery is a technique involving two components. First, you will be asked to enter a deep state of relaxation. This state allows you to focus your attention and concentration more fully than when you are not relaxed. Second, once you are relaxed, a suggestion will be made which will allow you to control certain functions of your body's immune response to the herpes virus.

This technique has been successful in reducing the frequency of recurrent genital herpes in herpes sufferers. The exact mechanisms of how it works is not known, however it does produce a reduction of herpetic infections. It is speculated that when you are deeply relaxed, you can produce hormonal changes in you body through mental images. Increased concentration and attention stimulates hormonal glands, which inturn stimulates your immune system to produce substances which destroys the herpes virus. Since your concentration and attention elicits immune functioning, this technique is most effective when you notice the first prodromal signs of an impending HSV attack. Therefore, play the tape we are about to hear upon the first prodromal sign

to mobilize your immune response, and during the herpes episode (if an attack does occur) to facilitate healing and recovery from the outbreak.

Suggestive-Imagery Technique

A deep state of relaxation will be elicited through a standard sleep-induction method. A variation of di Bertolino's (1981) suggestion will be offered and repeated several times. The suggestion will be as follows: "Imagine where the herpes lesion is... You can see the area... It may or may not show a lesion... As you imagine the area, you begin to notice a cool, fresh, sensation at the area... Slowly allow any sensation of itching, burning, heat, or pain to be replaced with a sensation of numbness and coolness...". Before the client is brought out of the relaxed state, the following suggestion is made: "Be aware of the coolness and numbness at the lesion site. You are able to mobilize your immune system to attack the herpes virus and thus promote healing. When you come out of your relaxed state, all pain and discomfort will be replaced by numbness and coolness". The client is then slowly brought out of the relaxed state by counting to four (see Appendix Q).

SESSION V

1. Discuss topics in Session V of Appendix M.

2. Assess for problems with any techniques learned.
3. Remind group members to practice all of the techniques they have learned.

SESSION VI

1. Concluding Questions and Remarks.
 - a. Group leader should elicit questions from group members.
 - b. Clarify any issues.
 - c. Resolve any difficulties with the techniques skills learned.
 - d. Ask group members for feedback about the sessions.
2. Goodbyes.
3. FILL OUT POSTTREATMENT QUESTIONNAIRES.

APPENDIX Q. SUGGESTIVE-IMAGERY SCRIPT

During this session I would like you to breathe deeply and slowly, as it will help you to relax. And I would like to have you practice breathing, so at my instructions inhale for a count of three and then exhale for a count of three. We will do this several times. Remember inhale for a count of three and then exhale for a count of three. We shall begin now. Inhale, one, two, three; Exhale, one, two, three... That's right, just relax. Relax every muscle in your body. Become very relaxed, very tired and relaxed. Think about the muscles in your ankles and feet. Think about them. Pay attention to the muscles in your ankle and your feet and relax them. Let them become very, very, relaxed and very tired. Let all the tension and tightness in your ankles and feet just drain out, fade out of them, let them feel more and more relaxed, more and more tired and heavy and relaxed. The muscles in your feet and ankles are very tired and very relaxed, very very relaxed.

Now pay attention to the muscles in your lower legs. Let all the tension in your lower legs drain out. Let the muscles become more tired and relaxed. Let all the tension and tightness fade out. The muscles in your lower legs are growing relaxed and heavy.

Now think about the muscles in your thighs . Pay attention to the muscles in your thighs . Let them become very relaxed, very very tired . Let all the tension drain out of them . Let them become more and more relaxed more and more tired, more and more tired, heavy and relaxed.

Now the muscles in your hips and lower back . Think about the muscles in your hips and lower back . Pay attention to them . Imagine them as they become more relaxed, you'll feel very very tired . As they become relaxed you can feel the tension and tightness draining out of the muscles in your hips and lower back . Let all the muscles in your hips and lower back become very relaxed, very very relaxed.

Now your abdomen and stomach . Pay attention to the muscles in your abdomen and stomach . Notice them . Think about the muscle in your abdomen and your stomach . Let them become very very relaxed, very tired . Let them become more and more relaxed, more and more tired and heavy and relaxed . The muscles in our abdomen and stomach are becoming very tired, very relaxed.

Now think about the muscles in your chest and shoulders . Pay attention to those muscles and let them become very relaxed . Let them become tired . Let all the tension and tightness in your chest and shoulders just fade

away. Let all the tension drain out of them, as they become more and more tired, more and more heavy and relaxed.

Now your upper arms. Notice the muscles and sensations you're feeling in your upper arms. Let them become very relaxed, very very tired. Your upper arms are very relaxed, very very tired. Let all the tension drain out as they become more and more relaxed, more and more tired and heavy and relaxed.

Now think about the muscles in your lower arms. Pay attention to these muscles. Let them become very relaxed. Let them become very very relaxed. Let all the tension fade out as they become more and more relaxed and heavy and warm.

Now your hands, all the muscles in your hands. The sensation. The feelings. Notice how tired they're becoming. Notice how relaxed your hands are becoming as you notice all the tension and tightness drain out. The muscles in your hands now are very relaxed, very very relaxed. They're very relaxed and heavy and tired.

Now think about the muscles in your neck. Pay attention to the muscles in your neck and throat. Let them become very relaxed. Let all the tension drain out. Let all the tension and tightness in these muscles just drain away. Let them become more and more relaxed and tired and heavy.

Now your face. All the muscles in your face. Think about the muscles in your face. In your forehead and around your eyes and checks and mouth. Pay attention to the muscles in your face and let them become very relaxed. Very very tired. Let all the tension drain out of all the muscles in you face, in your forehead, around your eyes, in your checks and mouth. Very relaxed and very very relaxed. Your eyes close. Your eyes will close now. They're very heavy and relaxed. Your jaw is slackening now, relaxing now. The muscles in your jaw and face are relaxing completely.

Open your mouth just a little. Open you mouth. Let it open now. Keep your mouth open now and inhale. Inhale very slowly. Inhale a very deep deep breath. Ready. Inhale. Deep breath. Hold it. Now exhale. Slowly, very slowly. Now inhale, inhale now, inhale deeply and hold it. Now exhale, exhale very slowly. How sleepy your becoming. How very very sleepy. Alright inhale again. Inhale deeply. Hold it and exhale very slowly, very very slowly. Breathe deep. Deepen your sleep. Go deeply, deeply, asleep. Eyes closed in darkness now. Go to sleep. Go deeply, deeply into sleep. Everything is gently drifting and floating gently by. Your sleeping, breathing very slowly and deeply. Sinking down down to sleep. Just floating and drifting gently as though on a cloud. And your sinking down down

deeply into sleep. Go to sleep. Go deeply, deeply, to sleep. How tired you are. Every muscle in your body calls for sleep. Your breathing is slow and regular. A warm sensation is coming into your body as you become more and more drowsy and sleepy. More and more sleepy. The heaviness in your eyelids is increasing more and more. You are now comfortably relaxed but you are going to relax even more, much more.

Your eyes are closed. You will keep your eyes closed until I tell you otherwise or until I tell you to awaken. You feel sleepy, very very sleepy. Just keep listening to my voice. Pay close attention to it. Keep your thoughts on what I am saying. Just listen. You are going to get much more drowsy and sleepy. Soon you will be deep asleep, but you will continue to hear me. You will not awaken until I tell you to do so. You are feeling comfortable and relaxed, comfortable and relaxed. Thinking of nothing, nothing but what I am saying. Your eyes are closed, comfortably closed. You are thinking of nothing, nothing but what I am saying. Your arms and your legs feel heavy. Your arms and your legs feel heavy. You are relaxed, very relaxed. Your whole body feels relaxed, deeply relaxed. The muscles in your face, arms, and legs . . . your whole body. Your whole body is deeply relaxed.

I will now begin to count. As I count you will feel yourself falling into a deep comfortable restful sleep. A sleep in which you are going to be able to do all sorts of things that I will ask you to do and remember all kinds of things. One, you're going to sleep. Two, down down into a deep sound sleep. Three. Four, more and more asleep. Five. Six. Seven, sinking, you are sinking into a deep deep sleep, nothing will disturb you. Pay attention only to my voice and the things I call to your attention. Keep paying attention to my voice and the things I tell you. Eight, deeply. Nine. Ten. Eleven. Twelve, deeply deeply deeply asleep falling deeply asleep. Thirteen. Fourteen. Fifteen, deep asleep. Although deep asleep you can clearly hear me. You will always hear me. No matter how deeply asleep you are. You are drifting deeper and deeper. It feels as though you're going backwards in darkness. Backwards into the darkness. And as you go backwards into the darkness, you are more and more relaxed, more and more comfortable. Deeper and deeper asleep. You are going deeper and deeper. Listen only to my voice, only to what I say. Thinking of nothing. Nothing but the sound of my voice. You are breathing regularly and deeply, regularly and deeply. Floating deeper and deeper into sleep. Sixteen. Seventeen. Eighteen, deep asleep fast asleep.

Nothing disturbs you. You will experience the things I will tell you to experience. Nothing disturbs you. Nineteen. Twenty. Deep asleep, deep asleep. You will not awaken until I tell you to do so. You will wish to sleep and to hear the things I'm going to tell you. You will wish to sleep and listen to the things I am going to tell you. As you go even more deeply into sleep, it will not disturb you to make yourself comfortable in your chair or bed.

Put your head in a comfortable position. You feel very relaxed, very relaxed, and deeply asleep. Listening without effort to my voice. I'm going to tell you some things that are very important to you. So I would like you to keep listening. Now I'm going to tell you something that is very important.

As you know that you can stimulate your immune system. You have control over your resistance to the virus. You can help your body fight the disease. Now imagine where the lesion is. Imagine that area. Picture it. Now have your body's virus fighting particles attack the virus. Imagine your body's white cells, lymphocytes, and virus killing cells attacking and destroying the lesion's virus. Picture little PAC men eating the virus. Gobbling them up. As you imagine this, you can feel the lesion becoming smaller. The virus is being reduced in numbers. As you stimulate your

immune system, you notice a feeling of numbness and coolness at the lesion site. Allow the lesion area to become cool and refreshed. The pain, burning, and itching are being replaced by a cool, refreshed sensation.

Now when you wake up, the session site will feel cool and refreshed, as your body fights the virus.

OK, in just a moment I'm going to wake you up. You know I've told you some things that are very important to you. Very important so you will remember these things. You will remember because you know how important these things are. Even when you're not aware, you will remember these things and be able to keep stimulating your immune response to the virus. Alright now I'm going to count to five. I'm going to wake you up as I count to five. When I get to five, you'll feel wide awake, wide awake. Alright, I'm going to count to five. One. Two. Three, that's it beginning to open your eyes. Beginning to open your eyes. Four, almost awake. Five. You're wide awake. You're wide awake. Look around the room. You are completely awake.

APPENDIX R. SYMPTOMATIC RELIEF MEASURES FOR GENITAL HERPES

This hand out is provided to help you relieve some of the discomfort associated with herpes outbreaks. There are several major symptoms associated with HSV outbreaks, such as: pain, burning, itching, aching, fever, headaches, and malaise. Each symptom and relief measure is described below.

Pain

Pain may be the result of swollen lymph glands, lesion site swelling, or lesion inflammation.

1. Swollen lymph glands are a positive sign that your body is fighting the virus. If pain is too severe, use hot compresses over the area and/or take aspirin.

2. Lesion site swelling is common. The site may become red and swollen because the virus is attacking the skin. Cold compresses are recommended (NOTE. Be careful to avoid contact with the lesion. You may infect other parts of your body. Be sure to use the compresses only for the lesion site and not to wash other parts of your body).

3. Lesion Inflammation is also common. If the lesion does not heal in a few days (10 to 18 days) then seek a physician's advise. You may have a secondary infection at the lesion site.

In general, wear loose fitting clothing to reduce friction and pressure on the lesion site. Also, wear cotton underwear. This also reduces friction and helps to keep the lesion area dry and cool.

Burning

Burning is a symptom of the HSV attack. Applying cold compresses of Domebroro solution (1:40 concentration - available at most drug stores) may be used to soothe the lesion. Women may experience burning when they urinate. This may be caused by urine flowing over the herpes lesions. Three relief measures may be tried:

1. You can urinate through a paper cup. Cut a small hole in the bottom of a cup and place this over the opening of the urethra while urinating. This will help prevent urine

to come in contact with the lesions.

2. You can urinate while sitting in the bathtub filled with warm water. The water helps dilute the urine and thus reduce the burning.

3. Drink a lot of water to help dilute your urine, which reduces its acidity, and in turn diminishes its irritation to the lesions.

Itching

Itching is a symptom of a genital herpes attack. Again, cold compresses of Domeboro solution may be used to soothe the symptom. Try to avoid scratching, as this may cause a secondary infection, and/or the spread of HSV via your fingers to other parts of your body.

Aching

Some individuals with genital herpes experience aching sensations in the legs, thighs, and/or joints prior to a genital herpes attack. Theoretically, the aching is caused by the viral activity in the ganglia or nerves on its way to the skin. Pressure at the site of aching may provide temporary relief. Also, try a hot bath or a heating pad to alleviate the aching. Aspirin may provide some relief.

Fever and Headaches

Some HSV sufferers experience a fever and/or headaches during a herpes outbreak. These symptoms result from your body's immune system mobilizing its defenses against the activated virus. Aspirin may relieve these symptoms. Also, keep your fluid intake high, to prevent dehydration.

Malaise

Malaise is the discomfort, uneasy, feeling-out-of-sorts sensation sometimes associated with an infection. There is no special relief measure to be offered, except the acknowledgment that this is a symptom of your body fighting against the disease.

TABLE 1. DEMOGRAPHIC VARIABLES

TABLE 1
DEMOGRAPHIC VARIABLES OF VIRGINIA AND PENNSYLVANIA SUBJECTS

TREATMENT CONDITION	SEX	MARITAL STATUS	EMPLOY STATUS	AGE (YRS)	YEARS OF EDUCATION	DISEASE DURATION	HSV FREQUENCY	HSV SEVERITY	HSV CONCERN
V I R G I N I A D A T A (N = 15)									
PSYCHOSOCIAL	5-F	1-M	1-EMP	23.8	14.2	2.0	8.6	2.2	4.0
GROUP	0-M	4-S	4-STU	(8.58)	(1.92)	(2.31)	(3.58)	(0.84)	(0.71)
SUPPORT	2-F	1-M	0-EMP	23.0	14.2	2.9	8.4	2.8	3.2
GROUP	3-M	4-S	5-STU	(5.39)	(1.30)	(3.10)	(3.57)	(0.44)	(1.30)
WAITING-LIST	3-F	1-M	1-EMP	23.4	13.4	2.4	8.8	3.0	4.0
CONTROL	2-M	4-S	4-STU	(4.10)	(1.14)	(3.11)	(3.63)	(1.11)	(0.70)
P E N N S Y L V A N I A D A T A (N = 14)									
PSYCHOSOCIAL	3-F	0-M	4-EMP	27.6	16.0	1.9	8.8	2.6	4.0
GROUP	2-M	5-S	1-STU	(5.41)	(1.58)	(2.07)	(3.63)	(1.14)	(1.01)
SUPPORT	5-F	1-M	4-EMP	30.0	14.8	1.4	8.3	3.0	3.0
GROUP	0-M	4-S	1-STU	(6.82)	(3.03)	(1.06)	(3.78)	(1.00)	(0.99)
WAITING-LIST	2-F	0-M	3-EMP	28.0	15.0	1.8	9.2	3.2	3.5
CONTROL	2-M	4-S	1-STU	(6.83)	(3.16)	(2.16)	(3.77)	(0.96)	(0.58)

NOTE: 1). Values for Age, Years of Education, Disease Duration, HSV Concern, & HSV Severity are mean values.

2). () Indicates Standard Deviation

TABLE 3. CORRELATION MATRIX - PRETREATMENT

Table 3
Correlation Matrix of All Pretreatment Dependent Measures

VARIABLE	POMS SUBSCALES AND TOTAL MOOD SCORES										M H L C			TRA			ZUNG			UCLA			TRA			STRESS			MONTH CON QUES - HSV				
	T-A	D-D	A-H	V-A	F-I	C-B	TMD	IN	CHAN	OTH	ASX	DEP	LOVE	AGG	AVG	INTEN	SEV	DUR	LES	FREQ	INTEN	SEV	DUR	LES	FREQ	INTEN	SEV	DUR	LES	FREQ			
T - A	1.00	0.79*	0.79*	-0.70*	0.51*	0.52*	0.94*	-0.30	0.17	0.13	0.78*	0.55*	0.66*	0.62*	0.58*	0.27	0.31*	0.42*	0.28	0.51*	0.58*	0.27	0.31*	0.42*	0.28	0.51*	0.58*	0.27	0.31*	0.42*	0.28	0.51*	
D - D		1.00	0.71*	-0.59*	0.38	0.63*	0.89*	-0.03	0.23	0.11	0.68*	0.75*	0.65*	0.55*	0.57*	0.36	0.38	0.35	0.12	0.48*	0.57*	0.36	0.38	0.35	0.12	0.48*	0.57*	0.36	0.38	0.35	0.12	0.48*	
A - H			1.00	-0.46*	0.36	0.35	0.81*	-0.19	0.25	0.19	0.58*	0.51*	0.55*	0.81*	0.58*	0.19	0.37	0.30	0.16	0.40*	0.58*	0.19	0.37	0.30	0.16	0.40*	0.58*	0.19	0.37	0.30	0.16	0.40*	
V - A				1.00	-0.34	-0.26	-0.75*	-0.44*	-0.05	-0.24	-0.71*	-0.52*	-0.72*	-0.38	-0.53*	-0.41*	-0.38	-0.32*	-0.49*	-0.46*	-0.34	-0.53*	-0.41*	-0.38	-0.32*	-0.49*	-0.46*	-0.34	-0.53*	-0.41*	-0.38	-0.32*	
F - I					1.00	0.38	0.62*	-0.26	-0.08	-0.04	0.52*	0.08	0.31	0.31	0.14	-0.01	0.34	0.37	0.38	0.43*	0.38	0.14	-0.01	0.34	0.37	0.38	0.43*	0.38	0.14	-0.01	0.34	0.37	0.38
C - B						1.00	0.62*	0.10	0.18	-0.15	0.49*	0.35	0.27	0.20	0.32	0.02	0.46*	0.12	0.30	0.57*	0.30	0.32	0.02	0.46*	0.12	0.30	0.57*	0.30	0.32	0.02	0.46*	0.12	0.30
TMD							1.00	0.17	0.13	0.13	0.81*	0.62*	0.70*	-0.36	-0.33	0.30	0.31*	0.46*	0.36	0.59*	0.30	0.30	0.30	0.31*	0.46*	0.36	0.59*	0.30	0.30	0.30	0.31*	0.46*	0.36
INTERNAL CHANCE								1.00	0.25	0.12	-0.50*	-0.17	-0.41*	-0.36	-0.33	0.26	-0.38	-0.34	-0.24	-0.24	0.25	-0.50*	-0.17	-0.41*	-0.36	-0.33	0.26	-0.38	-0.34	-0.24	-0.24	-0.24	-0.24
OTHER									1.00	0.25	0.07	0.11	0.08	0.10	0.05	0.34	0.03	0.08	0.15	0.02	0.08	0.05	0.34	0.03	0.08	0.15	0.02	0.08	0.05	0.34	0.03	0.08	0.15
T-ANXIETY										1.00	1.00	0.69*	0.63*	0.64*	0.31*	0.31	0.48*	0.47*	0.34	0.52*	1.00	1.00	0.69*	0.63*	0.64*	0.31*	0.31	0.48*	0.47*	0.34	0.52*	0.44*	0.44*
ZUNG-DEP											1.00	1.00	0.60*	0.59*	0.43*	0.33	0.34	0.36	0.00	0.44*	1.00	1.00	0.60*	0.59*	0.43*	0.33	0.34	0.36	0.00	0.44*	0.37	0.37	
UCLA-LOVE												1.00	1.00	0.55*	0.37	0.31	0.33	0.47*	0.37	0.30	1.00	1.00	0.55*	0.37	0.31	0.33	0.47*	0.37	0.30	0.30	0.30		
T-ANGER													1.00	0.55*	0.37	0.31	0.33	0.47*	0.37	0.30	1.00	1.00	0.55*	0.37	0.31	0.33	0.47*	0.37	0.30	0.30	0.30		
S-FREQ														1.00	0.47*	0.21	0.29	0.20	0.09	0.30	1.00	1.00	0.47*	0.21	0.29	0.20	0.09	0.30	0.30	0.30			
S-INTEN															1.00	0.17	0.29	0.35	0.35	0.48*	1.00	1.00	0.17	0.29	0.35	0.35	0.35	0.48*	0.10	0.10			
HSV-SEV																1.00	0.03	0.20	0.14	0.10	1.00	1.00	0.03	0.20	0.14	0.10	0.10	0.10	0.10	0.10			
HSV-DUR																	1.00	0.32	0.48*	0.54*	1.00	1.00	0.32	0.48*	0.54*	0.31	0.31	0.31	0.31				
HSV-LES																		1.00	0.31	0.57*	1.00	1.00	0.31	0.57*	0.31	0.31	0.31	0.31	0.31				
HSV-FREQ																			1.00	0.31	1.00	1.00	0.31	0.57*	0.31	0.31	0.31	0.31	0.31	0.31			

Note 1: T-A (Tension-Anxiety); D-D (Depression-Dejection); A-H (Anger-Hostility); V-A (Vigor-Activity); F-I (Fatigue-Inertia); C-B (Confusion-Bewilderment); TMD (Total Mood Disturbance); IN (Internal); CHAN (Chance); OTH (Powerful Others); TRA ANX (Trait Anxiety); ZUNG DEP (Zung Depression); UCLA LOVE (UCLA Loneliness); TRA AVG (Trait Anger); STRESS FREQ (Stress Frequency); STRESS INTEN (Stress Intensity); SEV (HSV Episode Severity); DUR (HSV Episode Duration); LES (HSV Lesions/Episode); FREQ (HSV Frequency Rate).

Note 2: *p < .05; **p < .01.

TABLE 4
POSTTREATMENT QUESTIONNAIRE

TREATMENT CONDITION	TREATMENT USEFULNESS	RECOMMEND TO A FRIEND	HELPFUL TO YOU	HELPFUL TO OTHERS	SUM OF 7a-7u	NUMBER OF 'YES' RESPONSES PER ITEM							
						7v	7w	7x	7y	7z	7a1	7b1	7c1
V I R G I N I A D A T A													
PSYCHOSOCIAL GROUP	4.0 (0.71)	5.0 (0.00)	4.6 (0.55)	4.4 (0.55)	20.4	4	5	4	5	5	5	5	5
SUPPORT GROUP	3.4 (0.55)	4.4 (0.55)	3.8 (0.84)	4.4 (0.55)	20.6	3	0	4	5	5	1	4	0
P E N N S Y L V A N I A D A T A													
PSYCHOSOCIAL GROUP	4.2 (0.84)	4.8 (0.45)	4.4 (0.55)	4.4 (0.55)	20.2	5	5	4	5	5	5	5	5
SUPPORT GROUP	3.6 (0.89)	4.6 (0.55)	4.0 (1.00)	4.6 (0.55)	20.2	3	0	4	5	5	1	4	0

Note 1: () Indicates Standard Deviations.

TABLE 5

ANALYSIS OF VARIANCE SUMMARY TABLE: ZUNG DEPRESSION SCALE

EFFECT	SUM OF SQUARES	D F	MEANS SQUARE	F - RATIO
SAMPLE	289.56	1	289.56	1.475
TREATMENT	141.09	2	70.55	0.359
SAMPLE X TREATMENT	2.90	2	1.45	0.007
ERROR 1	4513.28	23	196.23	
PHASE OF TREATMENT	382.09	3	127.37	6.061*
SAMPLE X PHASE OF TREATMENT	17.91	3	5.97	0.284
TREATMENT X PHASE OF TREATMENT	544.71	6	90.78	4.319*
SAMPLE X TREAT X PHASE OF TREAT	79.80	6	13.30	0.633
ERROR 2	1450.06	69	21.02	

Note. *p < .001.

TABLE 6
 COMBINED MEAN ZUNG DEPRESSION SCORES

TREATMENT CONDITION	PHASE OF TREATMENT			
	PRE-TREATMENT	POST-TREATMENT	FOLLOWUP - 1	FOLLOWUP - 2
	C O M B I N E D S A M P L E S D A T A (N = 29)			
PSYCHOSOCIAL	36.0	38.0	34.4	32.9
GROUP (N = 10)	(8.93)	(11.06)	(9.01)	(9.28)
SUPPORT	30.8	35.3	37.8	37.6
GROUP (N = 10)	(7.74)	(7.36)	(7.24)	(7.19)
WAITING-LIST	32.6	37.4	40.1	41.7
CONTROL (N = 9)	(6.02)	(6.88)	(4.94)	(4.98)

NOTE. () INDICATES STANDARD DEVIATION. POSSIBLE RANGE OF SCORE: 20 TO 80.

TABLE 7
 MEAN ZUNG DEPRESSION SCORES FOR BOTH SAMPLES

TREATMENT CONDITION	PHASE OF TREATMENT		
	PRE-TREATMENT	POST-TREATMENT	FOLLOWUP - 1 FOLLOWUP - 2
V I R G I N I A D A T A			
PSYCHOSOCIAL GROUP	36.2 (8.44)	40.2 (10.89)	35.4 (10.97) 35.2 (12.23)
SUPPORT GROUP	34.2 (10.03)	36.2 (10.11)	39.0 (9.59) 38.2 (10.11)
WAITING-LIST CONTROL	35.0 (4.30)	39.4 (6.98)	41.0 (6.16) 42.8 (3.19)
P E N N S Y L V A N I A D A T A			
PSYCHOSOCIAL GROUP	35.8 (10.40)	35.8 (12.01)	33.4 (7.73) 30.6 (5.55)
SUPPORT GROUP	27.4 (2.30)	34.4 (4.22)	36.6 (4.72) 37.0 (3.68)
WAITING-LIST CONTROL	29.5 (7.05)	35.0 (6.83)	39.0 (3.37) 40.3 (6.90)

NOTE. () INDICATES STANDARD DEVIATION. POSSIBLE RANGE OF SCORE: 20 to 80.

TABLE 8

ANALYSIS OF VARIANCE SUMMARY TABLE: TENSION - ANXIETY SUBSCALE (POMS)

EFFECT	SUM OF SQUARES	D F	MEANS SQUARE	F - RATIO
SAMPLE	355.32	1	355.32	2.505
TREATMENT	654.17	2	327.08	2.305
SAMPLE X TREATMENT	379.88	2	189.94	1.339
ERROR 1	3262.59	23	141.85	
PHASE OF TREATMENT	94.98	3	131.66	2.396
SAMPLE X PHASE OF TREATMENT	100.99	3	33.66	2.547
TREATMENT X PHASE OF TREATMENT	229.08	6	38.18	2.889*
SAMPLE X TREAT X PHASE OF TREAT	51.94	6	8.66	0.655
ERROR 2	911.86	69	13.22	

Note: * $p < .01$.

TABLE 9
 COMBINED MEAN POMS TENSION - ANXIETY SCORES

TREATMENT CONDITION	PHASE OF TREATMENT			
	PRETREATMENT	POSTTREATMENT	FOLLOWUP - 1	FOLLOWUP - 2
	C O M B I N E D S A M P L E S D A T A (N = 29)			
PSYCHOSOCIAL	13.2	9.6	11.0	10.1
GROUP (N = 10)	(8.47)	(6.98)	(6.16)	(5.95)
SUPPORT	10.1	10.4	12.4	13.2
GROUP (N = 10)	(5.13)	(5.44)	(5.58)	(7.68)
WAITING-LIST	13.2	16.7	18.4	19.1
CONTROL (N = 9)	(6.82)	(9.34)	(8.85)	(5.78)

NOTE. () INDICATES STANDARD DEVIATION. POSSIBLE RANGE OF SCORE: 0 TO 36

TABLE 10
 MEAN POMS TENSION - ANXIETY SCORES FOR BOTH SAMPLES

TREATMENT CONDITION	PHASE OF TREATMENT		
	PRETREATMENT	POSTTREATMENT	FOLLOWUP - 1
	VIRGINIA DATA (N = 15)		
PSYCHOSOCIAL	12.6	9.2	12.2
GROUP	(8.17)	(6.76)	(7.19)
SUPPORT	9.0	11.4	13.8
GROUP	(5.24)	(7.64)	(7.92)
WAITING-LIST	15.6	21.0	24.0
CONTROL	(6.11)	(10.00)	(7.65)
	PENNSYLVANIA DATA (N = 14)		
PSYCHOSOCIAL	13.8	10.0	9.8
GROUP	(9.68)	(7.97)	(5.49)
SUPPORT	11.2	9.4	11.0
GROUP	(5.36)	(2.41)	(1.58)
WAITING-LIST	10.3	11.2	11.5
CONTROL	(7.27)	(5.38)	(3.87)

NOTE. () INDICATES STANDARD DEVIATION. POSSIBLE RANGE OF SCORE: 0 to 36.

TABLE 11

ANALYSIS OF VARIANCE SUMMARY TABLE: DEPRESSION -- DEJECTION SUBSCALE (POMS)

EFFECT	SUM OF SQUARES	D F	MEANS SQUARE	F - RATIO
SAMPLE	98.12	1	98.12	0.345
TREATMENT	1582.99	2	791.49	2.781
SAMPLE X TREATMENT	178.67	2	89.33	0.313
ERROR 1	6546.69	23	284.64	
PHASE OF TREATMENT	589.09	3	196.36	8.087*
SAMPLE X PHASE OF TREATMENT	7.05	3	2.35	0.096
TREATMENT X PHASE OF TREATMENT	977.46	6	162.91	6.709*
SAMPLE X TREAT X PHASE OF TREAT	191.74	6	31.96	1.316
ERROR 2	1675.26	69	24.28	

Note: * $p < .001$.

TABLE 12

COMBINED MEAN POMS DEPRESSION - DEJECTION SCORES

TREATMENT CONDITION	PHASE OF TREATMENT			
	PRETREATMENT	POSTTREATMENT	FOLLOWUP - 1	FOLLOWUP - 2
C O M B I N E D S A M P L E S D A T A (N = 29)				
PSYCHOSOCIAL	13.7	7.8	8.8	8.7
GROUP (N = 10)	(11.42)	(8.53)	(7.21)	(6.79)
SUPPORT	11.2	13.5	18.1	18.6
GROUP (N = 10)	(7.94)	(11.50)	(12.29)	(12.08)
WAITING-LIST	11.9	16.9	22.9	24.7
CONTROL (N = 9)	(4.78)	(9.22)	(6.90)	(6.08)

NOTE. () INDICATES STANDARD DEVIATION. POSSIBLE RANGE OF SCORE: 0 to 60.

TABLE 13
 MEAN POMS DEPRESSION - DEJECTION SCORES FOR BOTH SAMPLES

TREATMENT CONDITION	PHASE OF TREATMENT			
	PRETREATMENT	POSTTREATMENT	FOLLOWUP - 1	FOLLOWUP - 2
	V I R G I N I A D A T A (N = 15)			
PSYCHOSOCIAL GROUP	12.2 (7.69)	6.8 (5.81)	10.2 (8.76)	9.8 (9.04)
SUPPORT GROUP	13.6 (10.88)	14.6 (16.47)	16.2 (16.81)	17.2 (17.34)
WAITING-LIST CONTROL	14.2 (3.89)	19.8 (10.62)	25.6 (7.64)	26.4 (6.43)
	P E N N S Y L V A N I A D A T A (N = 14)			
PSYCHOSOCIAL GROUP	15.2 (15.12)	8.8 (11.30)	7.4 (5.94)	7.6 (4.39)
SUPPORT GROUP	8.8 (3.03)	12.4 (4.83)	20.0 (6.83)	20.0 (4.74)
WAITING-LIST CONTROL	9.0 (4.55)	13.3 (6.70)	19.5 (4.65)	22.5 (5.69)

NOTE. () INDICATES STANDARD DEVIATION. POSSIBLE RANGE OF SCORE: 0 to 60.

TABLE 14

ANALYSIS OF VARIANCE SUMMARY TABLE: TOTAL MOOD DISTURBANCE SCORE (POMS)

EFFECT	SUM OF SQUARES	D F	MEANS SQUARE	F - RATIO
SAMPLE	583.21	1	583.21	0.178
TREATMENT	13799.36	2	6899.68	2.111
SAMPLE X TREATMENT	3516.65	2	1758.32	0.538
ERROR 1	75175.43	23	3268.49	
PHASE OF TREATMENT	2756.52	3	918.82	3.545*
SAMPLE X PHASE OF TREATMENT	598.12	3	199.37	0.769
TREATMENT X PHASE OF TREATMENT	5361.37	6	893.56	3.447**
SAMPLE X TREAT X PHASE OF TREAT	303.54	6	50.59	0.195
ERROR 2	17885.99	69	259.22	

Note: * $p < .01$; ** $p < .001$

TABLE 15

COMBINED MEAN POMS TOTAL MOOD DISTURBANCE SCORES

TREATMENT CONDITION	PHASE OF TREATMENT			
	PRETREATMENT	POSTTREATMENT	FOLLOWUP - 1	FOLLOWUP - 2
C O M B I N E D S A M P L E S D A T A (N = 29)				
PSYCHOSOCIAL	34.3	17.2	22.2	22.8
GROUP (N = 10)	(41.03)	(31.94)	(31.21)	(27.88)
SUPPORT	25.9	34.9	43.4	43.9
GROUP (N = 10)	(24.01)	(30.22)	(29.11)	(34.99)
WAITING-LIST	35.5	50.2	58.2	65.3
CONTROL (N = 9)	(27.49)	(35.82)	(29.14)	(18.21)

NOTE. () INDICATES STANDARD DEVIATION. POSSIBLE RANGE OF SCORE: -32 to +200.

TABLE 16
 MEAN POMS TOTAL MOOD DISTURBANCE SCORES FOR BOTH SAMPLES

TREATMENT CONDITION	PHASE OF TREATMENT			
	PRETREATMENT	POSTTREATMENT	FOLLOWUP - 1	FOLLOWUP - 2
	V I R G I N I A D A T A (N = 15)			
PSYCHOSOCIAL GROUP	27.2 (30.31)	13.0 (27.10)	24.6 (40.89)	23.0 (37.20)
SUPPORT GROUP	23.6 (29.33)	34.6 (39.62)	42.0 (41.75)	42.8 (52.16)
WAITING-LIST CONTROL	41.4 (24.69)	58.2 (43.86)	71.4 (32.65)	74.6 (18.88)
	P E N N S Y L V A N I A D A T A (N = 14)			
PSYCHOSOCIAL GROUP	41.3 (52.37)	21.4 (38.94)	19.8 (22.49)	22.6 (19.11)
SUPPORT GROUP	28.2 (20.57)	35.2 (22.01)	44.8 (12.58)	45.0 (5.57)
WAITING-LIST CONTROL	28.3 (32.78)	40.3 (24.88)	41.8 (13.87)	53.8 (9.32)

NOTE. () INDICATES STANDARD DEVIATION. POSSIBLE RANGE OF SCORE: -32 to 200

TABLE 17

ANALYSIS OF VARIANCE SUMMARY TABLE: UCLA LONELINESS SCALE

EFFECT	SUM OF SQUARES	D F	MEANS SQUARE	F - RATIO
SAMPLE	164.16	1	164.16	0.513
TREATMENT	1344.01	2	672.01	2.101
SAMPLE X TREATMENT	154.09	2	77.04	0.241
ERROR 1	7355.09	23	319.79	
PHASE OF TREATMENT	284.19	3	94.73	3.140*
SAMPLE X PHASE OF TREATMENT	167.14	3	55.71	1.846
TREATMENT X PHASE OF TREATMENT	490.66	6	81.78	2.711**
SAMPLE X TREAT X PHASE OF TREAT	114.09	6	19.02	0.630
ERROR 2	2081.56	69	30.17	

Note: * $p < .01$; ** $p < .03$

TABLE 18
 COMBINED MEAN UCLA LONELINESS SCORES

TREATMENT CONDITION	PHASE OF TREATMENT			
	PRETREATMENT	POSTTREATMENT	FOLLOWUP - 1	FOLLOWUP - 2
C O M B I N E D S A M P L E S D A T A (N = 29)				
PSYCHOSOCIAL GROUP (N = 10)	37.6 (11.54)	28.8 (5.55)	30.5 (9.11)	31.7 (10.23)
SUPPORT GROUP (N = 10)	37.1 (6.61)	36.0 (8.41)	36.9 (9.07)	37.7 (9.66)
WAITING-LIST CONTROL (N = 9)	38.7 (11.69)	39.2 (13.37)	39.7 (13.28)	45.9 (6.31)

NOTE. () INDICATES STANDARD DEVIATION. POSSIBLE RANGE OF SCORE: 20 to 80.

TABLE 19
 MEAN UCLA LONELINESS SCORES FOR BOTH SAMPLES

TREATMENT CONDITION	PHASE OF TREATMENT		
	PRETREATMENT	POSTTREATMENT	FOLLOWUP - 1 FOLLOWUP - 2
V I R G I N I A D A T A			
PSYCHOSOCIAL	35.0	28.0	32.8
GROUP	(11.13)	(7.36)	(10.89)
SUPPORT	35.4	36.6	38.2
GROUP	(8.79)	(11.17)	(11.81)
WAITING-LIST	40.2	43.6	42.4
CONTROL	(12.36)	(12.36)	(15.18)
P E N N S Y L V A N I A D A T A			
PSYCHOSOCIAL	40.1	29.4	28.2
GROUP	(12.59)	(3.78)	(7.39)
SUPPORT	38.8	35.4	35.6
GROUP	(3.70)	(5.77)	(6.43)
WAITING-LIST	36.8	33.8	36.3
CONTROL	(12.34)	(14.17)	(10.99)

NOTE. () INDICATES STANDARD DEVIATION. POSSIBLE RANGE OF SCORE: 20 to 80.

TABLE 20

ANALYSIS OF VARIANCE SUMMARY TABLE: INTERNAL HEALTH LOCUS OF CONTROL SCALE (MHLC)

EFFECT	SUM OF SQUARES	D F	MEANS SQUARE	F - RATIO
SAMPLE	9.80	1	9.80	0.190
TREATMENT	508.61	2	254.30	4.937**
SAMPLE X TREATMENT	16.85	2	8.42	0.164
ERROR 1	1184.69	23	51.51	
PHASE OF TREATMENT	136.19	3	45.39	3.405*
SAMPLE X PHASE OF TREATMENT	12.22	3	4.07	0.306
TREATMENT X PHASE OF TREATMENT	240.72	6	40.12	3.008**
SAMPLE X TREAT X PHASE OF TREAT	36.16	6	6.03	0.452
ERROR 2	919.99	69	13.33	

Note: * $p < .01$; ** $p < .02$

TABLE 21
 COMBINED MEAN MHLC INTERNAL HEALTH LOCUS OF CONTROL SCORES

TREATMENT CONDITION	PHASE OF TREATMENT			
	PRETREATMENT	POSTTREATMENT	FOLLOWUP - 1	FOLLOWUP - 2
C O M B I N E D S A M P L E S D A T A (N = 29)				
PSYCHOSOCIAL	23.9	27.1	27.1	26.2
GROUP (N = 10)	(2.85)	(4.09)	(4.04)	(3.99)
SUPPORT	27.2	25.3	22.8	22.3
GROUP (N = 10)	(3.91)	(3.65)	(3.74)	(6.13)
WAITING-LIST	23.7	22.0	19.1	19.0
CONTROL (N = 9)	(6.04)	(5.72)	(5.18)	(4.69)

NOTE. () INDICATES STANDARD DEVIATION. POSSIBLE RANGE OF SCORE: 6 to 36.

TABLE 22
 MEAN MHLC INTERNAL HEALTH LOCUS OF CONTROL SCORES FOR BOTH SAMPLES

TREATMENT CONDITION	PHASE OF TREATMENT		
	PRETREATMENT	POSTTREATMENT	FOLLOWUP - 1 FOLLOWUP - 2
V I R G I N I A D A T A (N = 15)			
PSYCHOSOCIAL GROUP	23.2 (2.59)	26.0 (2.45)	26.0 (4.47) 25.8 (4.09)
SUPPORT GROUP	28.4 (4.04)	25.0 (3.67)	23.2 (3.83) 21.0 (5.57)
WAITING-LIST CONTROL	23.6 (6.02)	21.2 (6.14)	19.2 (4.38) 19.6 (5.22)
P E N N S Y L V A N I A D A T A (N = 14)			
PSYCHOSOCIAL GROUP	24.6 (3.21)	28.2 (5.36)	28.2 (3.70) 26.6 (4.33)
SUPPORT GROUP	26.0 (3.81)	25.6 (4.04)	22.4 (4.05) 23.4 (7.20)
WAITING-LIST CONTROL	23.8 (6.99)	23.0 (5.89)	19.0 (6.78) 18.3 (4.57)

NOTE. () INDICATES STANDARD DEVIATION. POSSIBLE MHLC SCORE RANGE: 6 to 36

TABLE 23

ANALYSIS OF VARIANCE SUMMARY TABLE: HSV FREQUENCY RATES PER YEAR

EFFECT	SUM OF SQUARES	D F	MEANS SQUARE	F - RATIO
SAMPLE	0.47	1	0.47	0.278
TREATMENT	84.93	2	42.47	1.595
SAMPLE X TREATMENT	13.63	2	6.82	0.256
ERROR 1	612.43	23	26.63	
PHASE OF TREATMENT	29.52	1	29.52	3.039
SAMPLE X PHASE OF TREATMENT	15.93	1	15.93	1.640
TREATMENT X PHASE OF TREATMENT	102.48	2	51.24	5.276*
SAMPLE X TREAT X PHASE OF TREAT	16.43	2	8.22	0.846
ERROR 2	223.35	23	9.71	

Note: *p < .01

TABLE 24
 MONTHLY CONTACT QUESTIONNAIRE
 COMBINED MEAN HSV FREQUENCY RATE/YEAR

TREATMENT CONDITION	PHASE OF TREATMENT	
	PRETREATMENT	POSTTREATMENT
C O M B I N E D S A M P L E S D A T A (N = 29)		
PSYCHOSOCIAL GROUP (N = 10)	10.9 (5.35)	5.8 (3.42)
SUPPORT GROUP (N = 10)	10.6 (3.75)	10.1 (4.35)
WAITING-LIST CONTROL (N = 9)	10.5 (3.97)	12.2 (3.44)

NOTE. () INDICATES STANDARD DEVIATION.

TABLE 25
 MONTHLY CONTACT QUESTIONNAIRE
 MEAN HSV FREQUENCY RATE/YEAR FOR BOTH SAMPLES

TREATMENT CONDITION	PHASE OF TREATMENT	
	PRETREATMENT	POSTTREATMENT
V I R G I N I A D A T A (N = 15)		
PSYCHOSOCIAL	10.40	5.28
GROUP	(4.64)	(3.56)
SUPPORT	10.38	10.56
GROUP	(3.29)	(3.64)
WAITING-LIST	10.10	13.86
CONTROL	(3.94)	(3.06)
P E N N S Y L V A N I A D A T A (N = 14)		
PSYCHOSOCIAL	11.40	6.40
GROUP	(6.50)	(3.58)
SUPPORT	10.80	9.61
GROUP	(4.55)	(5.37)
WAITING-LIST	11.25	10.00
CONTROL	(4.50)	(2.83)

NOTE. () INDICATES STANDARD DEVIATION.

TABLE 26

ANALYSIS OF VARIANCE SUMMARY TABLE: HSV EPISODE DURATION

EFFECT	SUM OF SQUARES	D F	MEANS SQUARE	F - RATIO
SAMPLE	0.19	1	0.19	0.299
TREATMENT	68.62	2	34.31	5.148*
SAMPLE X TREATMENT	44.52	2	22.26	3.339
ERROR 1	153.31	23	6.67	
PHASE OF TREATMENT	0.93	1	0.93	0.249
SAMPLE X PHASE OF TREATMENT	1.72	1	1.72	0.459
TREATMENT X PHASE OF TREATMENT	37.60	2	18.80	5.019*
SAMPLE X TREAT X PHASE OF TREAT	1.44	2	0.72	0.192
ERROR 2	86.16	23	3.75	

Note: *p < .01

TABLE 27
 MONTHLY CONTACT QUESTIONNAIRE
 COMBINED MEAN HSV EPISODE DURATION

TREATMENT CONDITION	PHASE OF TREATMENT	
	PRETREATMENT	POSTTREATMENT
C O M B I N E D S A M P L E S D A T A (N = 29)		
PSYCHOSOCIAL	8.3	5.8
GROUP (N = 10)	(2.09)	(2.89)
SUPPORT	8.2	9.6
GROUP (N = 10)	(2.12)	(3.21)
WAITING-LIST	9.5	9.8
CONTROL (N = 9)	(1.14)	(1.92)

NOTE. () INDICATES STANDARD DEVIATION. DURATION IN DAYS.

TABLE 28
 MONTHLY CONTACT QUESTIONNAIRE
 MEAN HSV EPISODE DURATION FOR BOTH SAMPLES

TREATMENT CONDITION	PHASE OF TREATMENT	
	PRETREATMENT	POSTTREATMENT
V I R G I N I A D A T A (N = 1 5)		
PSYCHOSOCIAL GROUP	7.21 (0.49)	4.90 (3.65)
SUPPORT GROUP	8.94 (0.79)	11.08 (3.42)
WAITING-LIST CONTROL	9.50 (0.93)	9.94 (0.68)
P E N N S Y L V A N I A D A T A (N = 1 4)		
PSYCHOSOCIAL GROUP	9.31 (2.61)	6.80 (1.80)
SUPPORT GROUP	7.59 (2.86)	8.08 (2.40)
WAITING-LIST CONTROL	9.51 (1.52)	9.66 (3.03)

NOTE. () INDICATES STANDARD DEVIATION. DURATION IN DAYS.

TABLE 29

ANALYSIS OF VARIANCE SUMMARY TABLE: HSV EPISODE SEVERITY

EFFECT	SUM OF SQUARES	D F	MEANS SQUARE	F - RATIO
SAMPLE	1.15	1	1.15	2.451
TREATMENT	2.19	2	1.09	2.328
SAMPLE X TREATMENT	0.46	2	0.23	0.494
ERROR 1	10.81	23	0.47	
PHASE OF TREATMENT	0.42	1	0.42	0.882
SAMPLE X PHASE OF TREATMENT	0.08	1	0.08	0.177
TREATMENT X PHASE OF TREATMENT	4.13	2	2.06	4.357*
SAMPLE X TREAT X PHASE OF TREAT	0.99	2	0.49	1.053
ERROR 2	10.89	23	0.47	

Note: *p < .02

TABLE 30
 MONTHLY CONTACT QUESTIONNAIRE
 COMBINED MEAN HSV EPISODE SEVERITY

TREATMENT CONDITION	PHASE OF TREATMENT	
	PRETREATMENT	POSTTREATMENT
C O M B I N E D S A M P L E S D A T A (N = 29)		
PSYCHOSOCIAL	3.5	2.6
GROUP (N = 10)	(0.56)	(1.09)
SUPPORT	3.4	3.6
GROUP (N = 10)	(0.65)	(0.60)
WAITING-LIST	3.4	3.6
CONTROL (N = 9)	(0.56)	(0.39)

NOTE. () INDICATES STANDARD DEVIATION. POSSIBLE RANGE: 1-5.

TABLE 31
 MONTHLY CONTACT QUESTIONNAIRE
 MEAN HSV EPISODE SEVERITY FOR BOTH SAMPLES

TREATMENT CONDITION	PHASE OF TREATMENT	
	PRETREATMENT	POSTTREATMENT
V I R G I N I A D A T A (N = 15)		
PSYCHOSOCIAL GROUP	3.71 (0.19)	2.50 (1.58)
SUPPORT GROUP	3.48 (0.58)	4.00 (0.47)
WAITING-LIST CONTROL	3.45 (0.30)	3.84 (0.29)
P E N N S Y L V A N I A D A T A (N = 14)		
PSYCHOSOCIAL GROUP	3.38 (0.78)	2.75 (0.35)
SUPPORT GROUP	3.35 (0.73)	3.25 (0.50)
WAITING-LIST CONTROL	3.27 (0.83)	3.26 (0.25)

NOTE. () INDICATES STANDARD DEVIATION. POSSIBLE RANGE: 1-5

TABLE 32
INDIVIDUAL HSV YEARLY FREQUENCY RATES

VIRGINIA DATA (N = 15)											
PSYCHOSOCIAL GROUPS			SOCIAL SUPPORT GROUPS			WAITING-LIST CONTROL					
SUBJECT	PRETREAT	POSTTREAT	SUBJECT	PRETREAT	POSTTREAT	SUBJECT	PRETREAT	POSTTREAT	SUBJECT	PRETREAT	POSTTREAT
1	16.0	7.2	11	13.5	12.0	21	8.0	9.6			
2	10.0	4.8	12	7.2	14.4	22	7.2	12.0			
3	14.0	9.6	13	14.0	12.0	23	16.8	16.5			
4	4.8	4.8	14	10.0	9.6	24	8.0	14.4			
5	7.2	0.0	15	7.2	4.8	25	10.3	16.8			
PENNSYLVANIA DATA (N = 14)											
6	21.0	10.0	16	6.0	14.0	26	9.0	10.0			
7	6.0	2.0	17	12.0	6.0	27	6.0	12.0			
8	15.0	10.0	18	6.0	2.0	28	15.0	12.0			
9	9.0	4.0	19	15.0	14.0	29	15.0	6.0			
10	6.0	6.0	20	15.0	12.0	--	--	--			

TABLE 32. INDIVIDUAL HSV FREQUENCY RATES

TABLE 33
 INDIVIDUAL HSV EPISODE DURATION (IN DAYS)

V I R G I N I A D A T A (N = 15)											
PSYCHOSOCIAL GROUPS			SOCIAL SUPPORT GROUPS			WAITING-LIST CONTROL					
SUBJECT	PRETREAT	POSTTREAT	SUBJECT	PRETREAT	POSTTREAT	SUBJECT	PRETREAT	POSTTREAT	SUBJECT	PRETREAT	POSTTREAT
1	7.5	7.0	11	9.8	8.8	21	8.3	9.7			
2	7.3	5.0	12	9.3	11.0	22	10.7	10.3			
3	7.8	9.5	13	9.2	13.0	23	9.0	11.0			
4	6.5	3.0	14	8.8	15.7	24	10.0	9.4			
5	7.0	0.0	15	7.7	7.0	25	9.6	9.4			
P E N N S Y L V A N I A D A T A (N = 14)											
6	13.5	6.7	16	5.5	7.9	26	10.3	10.5			
7	6.5	4.0	17	6.3	9.7	27	7.5	10.4			
8	9.8	7.2	18	5.5	6.5	28	11.0	12.4			
9	8.3	9.0	19	8.0	5.2	29	9.3	5.4			
10	8.5	7.0	20	12.3	11.2	--	---	---			

TABLE 34
INDIVIDUAL HSV EPISODE SEVERITY RATINGS (1 - 5)

VIRGINIA DATA (N = 15)											
PSYCHOSOCIAL GROUPS			SOCIAL SUPPORT GROUPS					WAITING-LIST CONTROL			
SUBJECT	PRETREAT	POSTTREAT	SUBJECT	PRETREAT	POSTTREAT	SUBJECT	PRETREAT	POSTTREAT	SUBJECT	PRETREAT	POSTTREAT
1	4.0	4.0	11	3.6	4.8	21	3.0	3.7			
2	3.8	2.0	12	4.0	3.8	22	3.3	3.5			
3	3.6	3.5	13	4.0	4.0	23	3.8	4.3			
4	3.5	3.0	14	2.8	4.0	24	3.5	3.8			
5	3.7	0.0	15	3.0	3.5	25	3.6	4.0			
PENNSYLVANIA DATA (N = 14)											
6	4.0	2.5	16	2.5	2.9	26	2.7	3.3			
7	3.5	3.0	17	2.5	3.7	27	2.5	3.2			
8	4.3	2.2	18	4.0	3.5	28	3.7	3.6			
9	2.7	3.0	19	3.8	2.6	29	4.3	3.0			
10	2.5	3.0	20	4.0	3.7	---	---	---			

TABLE 34. INDIVIDUAL HSV EPISODE SEVERITY

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