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# Effects of the Presence of a Same-Sex Friend or Stranger on Coping with Stress

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# EFFECTS OF THE PRESENCE OF A SAME-SEX FRIEND OR STRANGER ON COPING WITH STRESS

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ABSTRACT

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SAME SEX FRIEND OR STRANGER
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To induce stress, subjects were told they would be maneuvering a tarantula spider through a decision maze. While waiting to perform this task subjects were randomly assigned to one of five experimental conditions. In four conditions subjects were paired with either a friend or a stranger, and they were instructed to either communicate or not. In the fifth condition subjects waited alone as they anticipated performing the task. Negative mood state and blood pressure measures were obtained before and after the treatment conditions. A behavioral fear measure was obtained after treatment manipulation. Higher amounts of anxiety were reported between friends who communicated than friends who did not talk. Of those who did not communicate, there was less anxiety reported in the friend than the stranger dyads. Subjects in the alone condition reported more anxiety than those who waited with someone and did not communicate, higher depression scores than those who talked to someone, and more depression and subjective fear than those subjects who waited with a friend.

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# Effects of the Presence of a Same-Sex Friend or Stranger on Coping with Stress

Though a vast body of research exists on the positive association between social support and coping with stress (Cohen & Wills, 1985), few studies have examined the variables that might mediate this relationship. The present research focuses on how the personal relationship between individuals (friends versus strangers) and the opportunity to communicate with one another in anticipation of a stressful event (communication versus no communication) affects coping.

Historically, Festinger's (1954) theory of social comparison processes provides a useful framework for examining how social interactions may influence coping with stress. Social comparison theory states that individuals assess their opinions, attitudes, and beliefs by comparing them with those of other individuals who they consider to be similar to themselves. The beliefs and attitudes of those who they perceive as being similar to themselves become the standard for comparison. It is therefore possible that, dependent on the group chosen for comparison, an individual may benefit or suffer from this process. For example, Festinger (1954) illustrates a case in which individuals, through social interaction, experienced either a calming effect or a hightened sense of fear. After an earthquake, those who associated with others who believed that further earthquake activity was

immanent experienced increased fear. On the other hand, those who affiliated with others who believed that the distruction was over experienced a calming effect. One's final perception of the situation was very much affected by social comparison.

When under stress, with whom do we choose to affiliate in order to perform social comparisons? Schachter (1959) examined this question in his research on the dynamics of affiliation. He created a stressful situation by informing his subjects (female strangers) that in the process of the experiment they would have to receive a painful electrical shock. In support of Festinger's (1954) theory, Schachter (1959) found that the majority of subjects preferred to wait with the others who were also anticipating this stressful event as opposed to waiting alone. He proposed that due to the anxiety producing situation, the subjects felt the need to affiliate with others in a similar situation. This would allow the subjects to engage in social comparison and subsequently alter or influence the perception/evaluation of the situation, presumably reducing the anxiety. It has been suggested (Fleming & Baum, 1986) that the subjects in the Schachter (1959) study expected that those who would wait with them would provide an adequate comparison. Therefore, when considering the support of a friend in a stressful situation, it is not just any friend who could be helpful in alleviating anxiety. For instance, Fleming and Baum (1986) indicate that a pregnant woman might receive a lesser degree of support from a friend who is not or has never been pregnant as opposed to a friend who is currently pregnant.

Based on this analysis, there can be both beneficial and detrimental effects of associating with others in

anticipation of a stressful event. Whether the effects on stress coping will be beneficial or detrimental is determined in part by the actual interaction (social comparison) and the relationship of the individuals interacting. The dynamics of the interaction and the relationship between those involved are two important components of a very complex process. The effects of affiliation on perceived stress is also affected by the reaction to and anxiety associated with the stressful event itself, the coping styles of individuals, and the type of social support being offered. A discussion of each of these factors is needed for a better understanding of the present research topic.

## Stress Reactions

Stress reactions (or responses) have been analyzed in three areas of research. The physiological stress reaction takes place when the body prepares and adapts (either positively or negatively) to stressful stimuli. The behavioral stress reaction takes place when the individual takes action to avoid or reduce stress. The affective stress reaction (e.g., anxiety, depression, hostility, fear) is the emotional or mental consequence of stress and/or stressful stimuli (Fleming & Baum, 1986). These physiological, affective, and behavioral responses are not mutually exclusive, but reflect a pattern of response to a stressful event.

Physiologically, the stress response has been viewed from two perspectives. Cannon (1936) introduced the notion of the "flight or fight" response shortly after investigations into the autonomic nervous system were initiated. This reaction involves physical changes that include increases in cardiovascular response (blood

pressure and heart rate), respiration, muscle strength, and perspiration. These changes are explained through Darwinian theory and ready the individual (animal) for fleeing, fighting off, or otherwise withdrawing from the stressful or threatening stimuli. It could be said that this physical response readies the body for a behavioral response. The second major physiological theory was introduced in 1956. Selye (1956) suggested the notion of the General Adaptation Syndrome (GAS). Alarm, resistance, and exhaustion are the three stages comprising the GAS. The alarm stage prepares the organism to respond with the release of pro- and anti-inflammatory corticosteroids. Hyperactivity is also evidenced during this short lived stage. Alarm is followed by the resistance stage in which the hyperactivity ceases and it appears as though the organism has adapted to the stressful stimuli. Finally, the exhaustion stage takes place. This stage entails the reoccurrence of hyperactivity and appears to be much like the alarm stage. It is during this final stage that physical symptoms of stress may come about (e.g., gastric ulceration, hypertension, insomnia, etc.).

As compared to the physiological reactions, the behavioral and affective stress reactions (in humans) are much less easily studied due to their idiosyncratic and indefinite nature. Evaluation and measurement of an individual's readiness to fight or flee can be accomplished rather easily, but in many cases, accurately determining which one of these options the individual will choose is quite difficult. Many factors unique to the situation and individual need to be considered in these cases. Although physiological, behavioral, and affective stress reactions are quite different in many respects, one characteristic common to all three reactions is their

relationship to coping responses.

Coping Responses

Coping responses are related to stress reactions in that many times the stress reaction will, if not extinguish the stressful stimuli completely, at least lessen the impact of the experience. Therefore, stress reactions can indeed be a part of coping. Beyond the stress reaction other factors come into play in the long term that influence how well an individual will cope with a stressful event. Lazarus (1966) presented a two-part appraisal theory of perceving and coping with stressful stimuli that has been influential.

Using a psychosocial approach, Lazarus (1966) proposed that (psychologically) in order for a stimulus to be stressful and require a coping response, it must first be appraised as such by the individual. Recent research supports Lazarus' proposition. One study found that the perception of airport noise as bothersome could be easily manipulated by giving subjects either a positive or negative impression of the noise before exposure (Jonsson & Sorenson, 1967). And, Sundstrom, Lounsbury, DeVault, and Peel (1981) reported that perceptions of hazardous operations at a nuclear power plant were related to negative attitudes (e.g., fear and hostility) toward the plant.

Lazarus (1966) indicated that once the individual had appraised the situation as stressful, there was a need for a coping response called "secondary appraisal." He outlined two basic coping responses that come about as a result of the secondary appraisal. "Direct action coping" is when the stressful stimulus is confronted and changed. For example, if an individual's work environment is

stressful due to constant talking by co-workers, the person would confront the coworkers and actually ask them to stop talking. Lazarus referred to the second basic coping response as "palliative coping," when an individual copes by changing his or her emotional response to the stressful stimulus as opposed to changing the situation. Following through with the example above, the individual would try not to let the talking become bothersome, or try to ignore the irritation of the stressful talking in order to cope or adapt to the situation. Coping theorists have referred to these two basic methods of coping as problem-focused and emotion-focused, respectively (Lazarus & Folkman, 1984; Mechanic, 1978; Thoits, 1986). In addition to these two coping strategies, Pearlin and Schooler (1978) have proposed a third strategy called perception-focused coping, where the individual cognitively attempts to alter their perception of the stressful situation. It should be noticed that Pearlin and Schooler's (1978) third strategy ties in very closely with Lazarus' (1966) initial stage of appraisal.

Coping responses can be seen as extensions of stress reactions, but coping can also be viewed in terms of variables that mediate the reactions to stressors. One of these mediating variables is control. Actual control over a situation has been shown to affect the stress response (Glass & Singer, 1972; Rodin, Rennert & Solomon, 1980). The loss of control can be perceived as stressful (Baum & Valins, 1977), and the simple illusion of control is very influential in mediating the effects of stress (Glass & Singer, 1972; Langer, 1975). As mentioned above, another factor affecting the response to stress is the attitudes and/or opinions an individual holds about a possible stressor (Fleming & Baum, 1986). The factor that has been

written about most extensively that may influence one's ability to cope with stress is the personal relationship that person has with others. A large body of research on social support examines this topic.

## Social Support

Social support is usually conceptualized in terms of the functions performed for a distressed person by significant others (Thoits, 1986). Significant others may include family members, friends, co-workers, relatives, and neighbors. The functions performed for the distressed individual could involve support in the form of socioemotional (or simply emotional), instrumental (or tangible), and informational support (House, 1981; Schaefer, Coyne & Lazarus, 1981; Thoits, 1986; Turner, 1983). Socioemotional support constitutes the assertions or demonstrations of intimacy, love, reassurance, caring, esteem, sympathy, and belonging. All of these elements of support connote the acceptance of the individual as a member of the group, or someone who is cared for and loved (Cobb, 1976; House, 1981; Schaefer et al., 1981; Thoits, 1986). Instrumental support refers to actions or services such as doing chores and material support such as money or goods that enable an individual to perform his or her normal role responsibilities (Schaefer et al., 1981; Thoits, 1986). Informational support consists of communications of advice, feedback on how an individual is doing, or facts that allow the person to handle stressful situations more effectively (House, 1981; Schaefer et al., 1981; Thoits, 1986).

These three types of social support are similar and have overlapping characteristics in some instances, yet they can be very different in terms of actual effect,

depending on the type and nature of the stress incurred. For example, Cassel (1976) has indicated that when instrumental and informational support are given without the feeling of obligation, they may serve an emotional support function. In this instance, even though the support is tangible and/or informational, it is viewed as an act of caring and therefore acts (or functions) as emotional support. On the other hand, in some stressful situations, if the person has a faltering self or social esteem, the supply of tangible support may be of no help and may even amplify the stressful experience. This is also the case, for example, when instrumental support such as a ride to the store or child care is needed, but caring and affectional sympathy (socioemotional support) are the only forms of aid offered (Schaefer et al., 1981).

Thoits (1986) argued that psychologically-based coping mechanisms and social support have functions in common. Problem-focused coping and instrumental social support are both aimed at altering the actual stressful situation. Emotion-focused coping and emotional social support are both aimed at reducing the negative feelings about a stressful situation. Perception-focused coping and informational social support are directed at altering the reason an individual views a situation as stressful. Because of these similarities, Thoits (1985, 1986) suggests that the coping responses utilized by individuals to reduce stress are the same as the social support functions performed by others in an attempt to assist someone who needs help. Thoits (1986) even proposes the reconceptualization of social support. She would prefer to think of social support as coping assistance, in that significant others are simply attempting to assist the person in their stress-management efforts.

It seems logical that significant others would be the most likely to provide emotional support in times of stress. It is also logical that informational or instrumental support could be supplied by a nonsignificant other -- an acquaintance or even a stranger. Indeed, there could be many times during a week when an individual is faced with the anticipation of a stressful event with no friends or significant others available to offer assistance. In those situations, can strangers supply the support needed? If strangers do offer valuable assistance in the coping process, how does this compare to the assistance offered by friends or significant others? And, in a stressful situation, does the communication between individuals (friends or strangers) help or hinder in the reduction of the stress experienced? These questions are the basic impetus for this research.

## Rationale and Predictions for the Present Research

The present research examines the effects of communication and level of friendship on the ability of individuals to cope with an anticipated stressful situation. The friendship manipulation is based on whether subjects were paired with a friend or stranger after the introduction of the stressful event. The communication manipulation was based on whether or not the partners were instructed to communicate verbally with one another. Coping with stress was primarily represented by assessing the subjects' negative mood state in anticipation of dealing with a stressful event (handling a spider).

If allowed to communicate while in anticipation of a stressful event, individuals may rely on one or more of the three basic modes of conversation (Costanza, 1986).

They may discuss the threatening situation on a problem-solving format. This mode of communication is directed toward evaluating the individuals' actual or potential control over the stressful situation. Planning actions to be taken in order to obtain desired outcomes is the common content of this type of conversation. A second mode of communication is emotion-based. In this type of conversation individuals share their feelings concerning the stressful event and talk about the anxieties and fears they are experiencing. The third mode of communication is based on talking about unrelated topics in which the individuals do not discuss the particulars of the stressful situation. Conversation is turned away from the anticipated threat in a form of avoidance or denial.

Costanza (1986) studied how problem-solving, emotion-based, and unrelated forms of communication between friends influenced coping with stress (anticipating having to handle a spider). He also used a no communication (control) condition. Subjects who were instructed to discuss unrelated topics while waiting to interact with a spider and those who talked about problem-solving experienced the largest reductions in self-reported negative mood state (anxiety and fear), compared to subjects who talked about their feelings or who waited alone.

The State Department of Mental Health in California has portrayed friends as "good medicine" and it is common to think of friends as helpful in times of stress (Winstead & Derlega, in press). Social interactions with friends, however, are not necessarily more beneficial than interactions with strangers in coping with stress (Fischer, 1983; Hobfoll & London, 1986; Lehman, Ellard & Wortman, 1986; Rook, 1984; Winstead & Derlega, 1985).

Lehman, Ellard and Wortman (1986) reported that although 73% of a sample of bereaved individuals indicated that significant others were helpful in the coping process, 62% of their sample said that the interactions (predominantly with friends, acquaintances and relatives) were of no help. Friendship may actually increase stress in that friends may feel that they need to live up to the expectations of the other (Chambliss, 1965; Schlenker, 1984). On the other hand, interaction with a stranger, where there is no burden of a close, personal relationship, may be perceived as stress reducing and allow for effective coping (Winstead & Derlega, in press).

Most studies on friendship and coping are correlational and limited to self-report measures. Prior research on social support has generally relied on survey data that was gathered by asking individuals to remember the extent and effectiveness of social support that may have been provided by others in the past. Although these studies are generally useful, the survey methodology creates some difficulty in evaluations and comparisons across studies. For example, Antonucci and Israel (1986) found that the agreement between individuals as to whether or not support was actually provided to one another ("veridicality" of social support) varied according to closeness of relationship. They reported that agreement between spouses was 89%, veridicality between family members was 81%, and the least amount of agreement, 55%, was found between friends. Many researchers point out that survey studies create difficulties when attempting to determine cause and effect relationships between social support variables and coping with stress (Dooley, 1985; Heller, 1979; House, 1981; Thoits, 1982; Winstead & Derlega, in press; Wortman & Conway, 1985). Associated

with correlational designs are the well known directionality and third variable problems. Winstead and Derlega (in press) note:

> Though individuals who report having friends may be better able to cope with stressful events, the causal sequence may actually operate in a reverse direction so that well-adjusted persons who handle crises easily may have more friends or find it easier to confide in others. (p. 7)

Researchers have begun to call for experimental research on social support (Sarason, 1987; Thoits, 1987). There are a few researchers using this methodology. Studies conducted by Costanza (1986), McGuire and Gottlieb (1979), and Whitcher and Fisher (1979) have used experimental methods in conducting social support research.

Winstead and Derlega (1985) have studied (experimentally) the effects of waiting with a friend versus stranger on stress. In Winstead and Derlega's (1985) research, subjects waited with either a friend or stranger while anticipating having to handle a snake. Measures of negative mood state (anxiety, depression, hostility, and fear) were taken before and after the social interaction with the friend or stranger took place. Interaction with a friend significantly reduced hostility and depression but did not significantly reduce anxiety and fear. No changes in negative mood states were found for subjects who had interacted with a stranger.

If interaction with a friend tends to reduce negative mood state in anticipation of a stressor more than interaction with a stranger, it is not clear whether the effect derives from the mere presence of the friend or as a by-product of the verbal interaction. In other words,

when anticipating a stressful event, are the beneficial effects of interacting with a friend due to something specific about the verbal interaction? Or, are the beneficial effects due to the sole fact that the friend is present? The experimental designs employed by Winstead and Derlega (1985) and Costanza (1986) did not address these important questions.

The unique feature of the present study is that it takes into consideration the possibility that the mere presence of an individual could have an effect on coping with an anticipated stressful event. To test this notion, some subjects were paired with either a friend or a stranger and instructed not to communicate while they waited for the stressful event to occur.

A summary of this study's experimental design appears in Figure 1. The design and procedures of the present

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Insert Figure 1 about here

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research are similar to those employed by Costanza (1986). However, there are some essential differences. The present study does not consider the effects of various modes of communication. More importantly, the "no communication" condition is operationalized by keeping the pair of individuals (friends or strangers) in the same room and instructing them not to communicate. Costanza (1986) constructed a no communication group by physically separating subjects in an alone (control) condition. The present research also has an alone condition, so as to allow for the comparison of benefits of simply being with another individual (friend or stranger) as opposed to

having no one present to assist in the coping process.

The predicted results for this study were as follows:

1. Being with a friend (communicating or not) during the anticipation of a stressful event will produce significantly lower negative mood state than being with a stranger.

2. Partners (friends or strangers) who communicate while anticipating a stressful event will have significantly lower negative mood state scores than partners who do not communicate.

3. Waiting with a partner in anticipation of the stressful event (whether with a friend or stranger, communication or no communication) will produce lower negative mood state scores than waiting alone.

## Method

### Subjects

Volunteers for this study were 100 females enrolled as undergraduates at Old Dominion University. The students responded to an advertisement of a study entitled "Participant Modeling," and were instructed to sign up for the study with a close same-sex friend. Subjects were given credit towards a class requirement for their participation. This study was limited to female subjects. In previous research that has used both male and female same-sex pairs under similar conditions there has been no significant gender interactions with either friendship (Winstead & Derlega, 1985) or communication style (Costanza, 1986) on stress coping. Based on these results, it was decided to study only female same-sex friend and stranger dyads.

Design and Procedure

The experimental design was a 2 (friend versus stranger) x 2 (communication versus no communication) between-subjects factorial. An additional condition in which the subjects were not paired with a partner and waited alone for the stressful event served as a control group.

Two pairs of female friends reported to an experimental session and were greeted by the male experimenter. The subjects were seated together and given a preliminary overview of the study. It was explained that they would be told exactly what would be expected of them and that they could end their participation at any time during the session. After completing an informed consent form subjects were taken to separate rooms and given a questionnaire. This questionnaire asked about the level of friendship between the pair of subjects reporting to the experimental session together and whether or not subjects knew any of the other persons who had reported for the experimental session besides their friend. Subjects were asked how long they had known their friend, and on a nine-point scale, how well they knew each other. The subjects reported knowing their friend for an average of 1.7 years and reported an average level of friendship of 5.8 on the nine-point scale. They were also asked if they were friends with either or both of the individuals making up the other pair of friends. This was to insure that those who were to be in the "stranger" conditions were truly strangers.

Each of the subjects were brought individually into the room to which they first reported. Those subjects waiting for their turn were given a magazine to occupy their time. The experimenter, while the subjects were

filling out the above mentioned questionnaire, had brought the tarantula (contained in the plywood and net box) into the room where the subjects were to be taken. Once the subject was seated in the room near the tarantula, the experimenter explained that participant modeling is a procedure in which she was to observe the experimenter moving the spider through a decision maze (located in the room) with an ink pen and then model the appropriate method of doing this by actually moving the spider through the maze herself. Although the subjects were not told that they would have to perform this task alone, this inference was implied through the one-on-one description of the task and by virtue of the fact that the subjects did not see one another (with the exception of the treatment condition) throughout the entire experiment.

The subjects were each told that before the participant modeling would begin the spider had to be readied and while that was being done they needed to fill out another questionnaire. Each subject was then taken back to her cubicle and a blood pressure measurement was taken immediately. The MAACL and the subjective fear measure were then filled out by the subjects in their separate rooms.

After having the interaction with the spider explained to them and completing the questionnaires, the subjects were either paired with a friend, a stranger, or kept in the separate rooms to be run in the "alone" condition. Subjects were assigned to treatment conditions by systematically rotating through conditions. The pairs of subjects were instructed to either (1) sit together and not talk at all until the experimenter came back to get them for the rest of the experiment, or (2) engage in a conversation though they were not told what to talk about.

This "communication group" was told to talk until the experimenter returned. Tape recorders were placed in rooms where the pairs of subjects waited together. The subjects's verbal social interaction was recorded in order to ensure that they were carrying out the experimenter's instructions. The recorders also served to encourage the subjects to conform to the instructions given. All of the subjects conformed to the communication instructions.

After three minutes subjects who had been paired were physically separated again and their blood pressure taken immediately. Blood pressure was also measured again for subjects in the alone condition after three minutes of being by themselves. Next, all subjects were asked to again fill out the MAACL and subjective fear questionnaires. This time an affiliative preference question was also included with the above questionnaires. The three minutes used as the time period for the treatment conditions has been identified as an optimal amount of time to allow processing of coping strategies, while preventing the subjects from becoming suspicious and restless (Monat, Averill & Lazarus, 1972).

Next, the subjects individually performed the behavioral fear avoidance task on the Phobic Test Apparatus (PTA). The order in which subjects were run on this task was determined randomly. The random selection was accomplished by assigning a single digit number to each of the four rooms and then chosing subjects to perform the task in order of a four digit number drawn blind from a selection of all permutations of the four digits assigned to the rooms. Subjects were instructed to reel the spider toward them, up to the point where they could no longer comfortably stand it. The subjects were also measured on the time they took to perform on the PTA.

Immediately following the performance on the PTA, each subject was asked to complete the self-report Behavioral Avoidance Test (BAT). The greater the number of steps checked off by the subject, the closer the handling of the spider they indicated they were willing to engage in, and presumably the lesser the fear of the spider.

After each subject had performed on the PTA and completed the self-report BAT they were fully debriefed on the nature of the experiment. The debriefing included the experimenter handling the spider and a discussion of some facts about tarantulas. It was explained that this specific breed of tarantula will bite a human only when extremely provoked. Although tarantulas have a reputation of being dangerous, a bite from the spider in this experiment would be roughly equivalent to a bee sting. The subjects were asked if they had any suspicions about the purpose and expected results of the experiment, and they were asked to sign a written agreement of non-disclosure about the nature of the experiment. All of the subjects signed the contract of non-disclosure and none of the subjects had accurate perceptions of the purpose and expected results of the experiment.

Fear Stimulus

A response to fear is considered to be an uncomfortable feeling that accompanies a specific perception of potential danger, threat, disaster or revulsion (Cornelius & Averill, 1983). Fear, then, is conceptualized as more stimulus specific than anxiety. Stimuli such as spiders, rats, snakes, worms, and insects are commonly used in research to elicit fear.

The fear stimulus used to induce stress was a live orange-kneed tarantula (Brachypelma Smithi) that measured

approximately 3½ (8.89 cm) inches in diameter. Spiders used as fear stimuli have been shown to successfully elicit both self-reported and behavioral fear responses in many previous studies (Cornelius & Averill, 1983; Costanza, 1986; Geer, 1968; Katkin & Hoffman, 1976).

Dependent Measures and Apparatus

A modified version of the Multiple Affect Adjective Check List (MAACL) Today Form (Zuckerman & Lubin, 1965) was used to obtain subjective measures of anxiety, depression, and hostility. Subjects were instructed to check those adjectives, out of the 136 possible choices, that best reflect their feelings "right now," as opposed to "today." This modified version of the MAACL has been successfully used in similar research designs to measure changes in affective states that were induced by the anticipation of handling a fearful stimulus (Costanza, 1986; Winstead & Derlega, 1985).

Subjective fear was measured by simply asking the subjects to rank, on a nine-point scale, how fearful they were of the tarantula. The scale ranged from (1) "no fear at all," to (9) "extreme fear." Single item subjective fear scales such as this have been used by Costanza (1986) and Winstead and Derlega (1985). There was also a question to address the affiliative preference of subjects. Costanza (1986) found that when given a choice his subjects overwhelmingly preferred to be with their friend while interacting with a spider. In an attempt to replicate Costanza's results and determine if a relationship exists between affiliative preference and level of friendship in the reduction of negative mood state, the subjects were asked to rate on a nine-point scale if they would (1) "much rather be alone" or (9)

"much rather be with (their) partner" during the actual interaction with the tarantula.

A behavioral avoidance measure, based on a modified version of the Phobic Test Apparatus (PTA) developed by Levis (1969), was used as a behavioral index of fear. This behavioral measure was chosen due to its ease of use and resistance to cognitive and motivational confounds that tend to affect other nonverbal measures such as skin conductance (Cornelius & Averill, 1983). This behavioral measure of fear has been shown to correlate with self-report affective measures such as Zuckerman's (1960) Affect Adjective Check List (AACL) and its successor, the MAACL (Costanza, 1986; Levis, 1969). The PTA that was used in this research was identical to the apparatus used by Costanza (1986). It consisted of a 2" x 4" (5.08 x 10.16 cm) board, six feet long and marked off into six inch sections. Every other section was painted black, leaving the others unpainted. A 5" x 4½" x 4" (12.7 x 11.43 x 10.16 cm) box was made out of a plywood base and four ¼" (.635 cm) balsa wood corner posts, around which a net of clear fishing line was placed. The net had 3/4" (1.95 cm) openings that allowed the subjects a clear view of the tarantula that was housed within. A Plexiglas lid was hinged onto the top of the box. The box was then mounted on the board in order to permit the subjects to reel the fear stimulus, in a horizontal plane to their faces, to within a distance of 9.05 inches (23 mm). This behavioral measure was based on how close subjects were willing to pull the spider towards themselves, and on the time that elapsed between when the subjects started to pull the spider closer and when they indicated that they would no longer pull it any closer.

In addition to the PTA, a self-report Behavioral

Approach Test (BAT) was used as a (subjective) measure of fear. Lang and Lazovik (1963) were the first to introduce the BAT in an attempt to measure snake fear. Procedures similar to those employed by Lang and Lazovik (1963), only in a self-report format, were used in the present study. Subjects were asked to read over a list of ten steps describing behaviors that involved getting progressively closer to the handling of the spider and then place a check by as many of the steps as they believe they would actually perform. The steps as listed include: (1) be in the same room with the tarantula, (2) walk to within 5 feet of the tarantula's cage, (3) walk right up to the tarantula's cage, (4) put your hand on the tarantula's cage, (5) open the lid to the tarantula's cage, (6) put your hand into the tarantula's cage, (7) touch and/or stroke the tarantula with your finger, (8) have someone hand the tarantula to you to hold in your hand, (9) pick the tarantula up yourself and hold it in your hand, (10) pick the tarantula up yourself and allow it to crawl up your arm. Thus, a score of zero (0) would indicate the most fear or complete avoidance of the spider. A score of ten (10) would indicate no fear at all.

The subjects' blood pressure (BP) was also taken prior to and after the treatment conditions. There were two apparatus used to measure the subjects' BP at different times in the data collection. The first 24 subjects were run using a standard manual BP apparatus. The following 76 subjects were run using a Unisonic Health Watch digital electronic blood pressure monitor (Model EBM-4050).

# Results

## Composition of Data Set

This research was designed to test the effects of social interactions between pairs of friends and strangers. Since pairs of subjects interacted with one another, data collected on one partner may not be independent from data collected on the other partner. To eliminate the possible problems of nonindependence of partners' data, the analyses were based on dyadic scores (that is, a composite index based on the average of the partners' scores) and not the individual subjects' scores. Therefore, the average score of the two partners who were paired with one another in the friend and stranger conditions is the unit of analysis. In order to generate comparable dyadic scores for the alone (or control) condition, subjects in this condition were randomly paired with another person in the alone condition and their scores were averaged.

## Negative Mood State Measures

A 2 (relationship - friend versus stranger) X 2 (communication - communication versus no communication) multivariate analysis of covariance (MANCOVA) was performed on the negative mood state measures (MAACL scores and the subjective fear score) with the pretest scores on the mood states acting as the covariates for the posttest scores. The interaction between relationship and communication was marginally significant, multivariate $F(4, 29) = 2.33$, $p < .07$. Main effects for relationship and communication did not approach significance, multivariate F's were 0.54 and 0.71, respectively. [An alternate form of data analysis, using multivariate and

univariate repeated measures analyses of variance, was conducted on the negative mood state and blood pressure data - results of these analyses are summarized in appendicies Q through U.]

Univariate analyses of covariance (ANCOVA - pretest scores as covariates for the posttest scores) were performed on each of the MAACL scores and the fear score resulting in a significant interaction between relationship and communication, $F(1, 35) = 4.87$, $p < .03$, on the MAACL anxiety scale. The summary table for the univariate ANCOVA's is presented in Table 1. A simple

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Insert Table 1 about here

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effects analysis indicated that friends who communicated with one another had higher anxiety scores ($M = 9.15$) than friends who did not communicate ($M = 7.04$), $F(1, 35) = 5.78$, $p < .05$. In the dyads where subjects were instructed not to communicate, stranger dyads ($M = 8.88$) scored higher on anxiety compared to the friend dyads ($M = 7.04$), $F(1, 35) = 4.41$, $p < .05$. Table 2 displays the means associated with the mood and fear measures. In

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Insert Table 2 about here

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addition to this significant interaction on anxiety, the interaction was marginally significant on the hostility scale of the MAACL, $F(1, 35) = 3.06$, $p < .08$, with the nature of the interaction on hostility being identical to that just described for anxiety. No other significant effects were found on the MAACL and fear measures.

Physiological Measure

A 2 X 2 MANCOVA was conducted on the blood pressure (systolic and diastolic) data. No significant multivariate effects were found. Univariate ANCOVA's, however, indicated a marginally significant, $F(1, 35) = 3.54$, $p < .06$, relationship main effect for the systolic blood pressure measure. Those subjects paired with their friend ($M = 100.03$) tended to have higher systolic pressure than those subjects paired with a stranger ($M = 96.60$).

Behavioral and Affiliative Preference Measures

The data pertaining to the affiliative preference, BAT, and PTA (time and distance) measures were analyzed using 2 X 2 analyses of variance (ANOVA). It was found that none of these measures even approached significance for any effect. Summary tables for the ANOVAs can be found in appendix K. The PTA distance data indicated that 25% of the subjects in the "friend-communication" and "friend-no communication" conditions, 30% of the subjects in the "stranger-communication" and "alone" conditions, and 20% of the subjects in the "stranger-no communication" condition reeled the spider as close as possible, 9.05 inches (23.0 cm). The affiliative preference data indicated that 73% (73 out of 100) of the subjects would have preferred to be with their partner (those who responded with 6 through 9 on a 9 point scale) when interacting with the spider. Of the total sample, 45% (45 out of 100) indicated that they would "much rather be with (their) partner" (those responding with 8 or 9 on the scale). Table 3 summarizes how the subjects paired with friends and strangers as partners responded to the affiliative preference measure.

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Insert Table 3 about here

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Planned Comparisons

Planned comparisons (Kirk, 1968), using adjusted means where appropriate, were conducted in order to test the prediction that the alone condition would be found to have higher scores (after treatment) on the subjective negative mood and fear measures as well as higher scores on the behavioral measure in comparison to the other treatment conditions. The comparisons were performed with the use of one-tailed $t$ tests in order to represent the directional nature of the hypotheses.

In reference to the adjusted means of the MAACL and subjective fear scores, there were four comparisons of treatment conditions that were performed. The treatment categories that were compared included communication vs. alone, no communication vs. alone, friend versus alone, and stranger vs. alone. For the communication versus alone comparison, the only measure reaching significance was the depression scale of the MAACL, $t(45) = -2.29$, $p < .05$. Subjects in the alone condition ($M = 16.35$) scored higher on depression than those subjects in treatment conditions that required communication ($M = 14.16$). A significant difference was found for the no communication versus alone comparison on anxiety, $t(45) = -1.70$, $p < .05$, with subjects in the alone condition ($M = 9.20$) having scored higher on anxiety than the subjects in the no communication condition ($M = 7.94$). The test for friend versus alone was significant for both depression, $t(45) = -2.09$, $p < .05$, and subjective fear, $t(45) = -1.98$, $p < .05$. Depression ($M = 16.35$) and fear ($M =$

5.66) for subjects in the alone group were higher than the corresponding scores (M = 14.35 and 5.14, respectively) in the friend condition. For the stranger versus alone comparison there was no significant difference found on any of the MAACL and fear measures. The means associated with these comparisons are summarized in Table 4.

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Insert Table 4 about here

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The four planned comparisons just mentioned were also conducted on the mean scores for the PTA (distance and time), BAT, and affiliative preference measures. There were no significant findings as a result of these analyses. The results associated with these comparisons can be found in appendix P.

## Discussion

### Negative Mood State Measures

It had been predicted that there would be main effects for both relationship and communication on the negative mood state measures. However, neither of these predictions were confirmed. The results indicate that it is not simply a question of whether a friend is more beneficial to wait with than a stranger, or whether communication as opposed to no communication is more likely to reduce negative mood states, but it is the interaction of these two factors that is important.

The results indicate that subjects in the friend dyads who communicated had higher anxiety scores than subjects in the friend dyads who were instructed not to communicate. The simple presence of a friend was more beneficial in reducing anxiety compared to allowing verbal

interaction with a friend. Communication between friends while anticipating a stressful event may be detrimental, at least in terms of aggravating anxiety.

The results of previous studies may explain why communication between friends may be occasionally harmful. Consider the results of studies conducted by Costanza (1986) and Derlega, Winstead, Wong, and Greenspan (1987). In Constanza's (1986) study friends who were instructed to discuss their feelings about the anticipated stressful event (the emotion-based condition) had the highest negative mood state scores in comparison to those who were instructed to discuss problem solving or unrelated content. In Derlega, et al.'s (1987) study verbal disclosures between friends were more intimate than the disclosures between strangers. The friends in the present research who talked with one another may have engaged in relatively intimate and therefore emotion- or feeling-oriented dialogue. Talking about the anxieties and fears being experienced in anticipation of a stressful event could have actually increased subjects' negative mood states. Hobfoll and London (1986) reported that Israeli women who had husbands or boyfriends in the 1982 Israel-Lebanon military conflict experienced greater state anxiety and state depression if they had friends with whom they could talk. Anxiety was positively correlated with intimacy among friends. Hobfoll and London (1986) called this phenomenon the "pressure-cooker" effect. Talking with others in the same situation may lead to exaggerated accounts of what is actually happening, which may exacerbate people's negative mood states. Therefore, in the present research it could be speculated that the subjects who were instructed to communicate with their friend maintained, if not increased, their anxiety scores

through discussion focused on the anxiety provoking aspects of the anticipated stressful situation. Also, the friend condition in which there was no communication may have had lower scores on the anxiety measure because the subjects were prevented from verbally focusing on the anticipated stressful event.

Demand characteristics based on instructions given to subjects in the treatment conditions may offer an alternate explanation of the finding that friends who commmunicated had higher self-reported anxiety than friends who did not communicate. Simply telling the friends in the no communication condition not to talk may have inhibited their expression of negative or anxiety related feelings, which might artifactually reduce their anxiety mood score compared to the friends in the communication condition. Hence, the subjects in the friend-no communication condition appear to be feeling less anxious than those subjects in the friend-communication condition, but in reality this may not be the case.

The relationship by communication interaction effect is also interesting because it was found that in the no communication condition it was of greater benefit to have been with a friend than with a stranger in terms of lower anxiety scores. In other words, it appears that if no communication is possible, simply waiting with a friend is more beneficial (at least on an anxiety measure) than waiting with a stranger. In summary, it was better if same-sex friends waiting for a stressful event did not talk, and if one could not talk while waiting for a stressful event, it was better to wait with a friend than a stranger.

Planned Comparisons

One of the primary purposes of this research was to determine if the mere presence of an individual while waiting for a stressful event was of greater benefit than simply waiting alone. The results that addressed this issue most directly were the planned comparisons between the no communication conditions (collapsed across relationship) and the alone condition. It was found that the mere presence of someone was more beneficial in coping with stress than waiting alone. The anxiety scores on the MAACL were higher in the alone condition when compared to the anxiety scores of those subjects who were paired with someone and instructed not to communicate. Being the social creatures that we humans are, this finding is not surprising. In addition, those subjects in the friend and stranger combined conditions who were instructed to communicate scored lower on the depression scale of the MAACL than those subjects assigned to the alone condition. So it appears that whether one communicates or not, in at least one way (depression when communicating and anxiety when not talking) it is more beneficial to be with "someone" than to be alone while waiting for a stressful event.

The friend versus alone comparisons reached significance on both the MAACL depression scale and the subjective fear measure. It is of greater benefit to be with a same-sex friend while waiting for a stressor than it is to wait alone. As opposed to the friend versus alone comparison, the result of the comparisons between the stranger conditions (collapsed across communication) and the alone condition indicated that there was no apparent advantage to waiting with someone whom you did not know compared to being alone when anticipating a

stressful event. In terms of relationship, then, it can be stated that being with a same-sex friend (whether communicating or not) is of more benefit than waiting alone while in anticipation of a stressful event. And, it is not more beneficial to wait with a same-sex stranger (whether communicating or not) compared to waiting alone in stress coping.

Behavioral Measures

It might be anticipated that results on the analyses of behavioral measures would be similar to results found on the analyses of self-report measures. This pattern did not occur in the present study. There were no significant results found on any of the analyses using the behavioral measures (time and distance on the PTA).

Previous studies using the PTA have shown similar relationships between behavioral approach measures and subjective fear and negative mood state scores. Using his PTA, Levis (1969) found that the higher the scores received on Zuckerman's (1960) AACL (negative mood state scale) and a fear rating scale, the further away his subjects kept the fear stimulus (a snake). Costanza (1986) used the same PTA and fear stimulus that was used in the present research. He found few significant results on his behavioral analyses. He conducted a 2 X 4 (gender by treatment) ANOVA and found no significant treatment main effect. Costanza (1986) did, however, find significant results using planned comparisons with the alone condition. Costanza (1986) reported that his subjects in the alone condition kept the spider further away than those subjects in the conditions where they used unrelated content and problem-solving type communication. With the exception of a gender main effect (females more

fearful than males), these were the only two significant results found on the behavioral measure in his research.

An understanding of why there were no significant results on the behavioral measures used in this research can be suggested by comparing the experimental designs used in Costanza's (1986) study and the present research. There were two variables that were manipulated in both studies. Gender in Costanza's (1986) study and relationship in the present study are basically equivalent in terms of structure or specificity of levels. The subjects were either male or female (gender), or friends or strangers (relationship); both levels of each variable are narrow with respect to classification and equal in number of levels. The second variable manipulated, communication, was common to both studies. Costanza (1986) created four levels of communication by manipulating what the subjects talked about and whether they could talk to each other. He had conditions of emotion-based, problem-solving, and unrelated content conversations, as well as a no communication group in which the subjects waited alone. In the present research there were only two levels of communication. The subjects either communicated (in any style they desired) or did not communicate while waiting together. The communication condition in the present research may have encompassed all the distinctions among types of communication (with the exception of the alone condition) utilized in Costanza's (1986) research. In other words, Costanza's (1986) manipulation of the communication variable was much more refined in comparison to the manipulation of the same variable in this study. If the content or structure of the condition was more specific (or structured), it should be expected that the results would be more specific and

therefore more sensitive to analyses that determine if differences exist between conditions. With this in mind, and knowing that there were only two significant results on the behavioral measure in Costanza's (1986) study, it is perhaps understandable why no significant results were found in the present study, using the same instrument to measure behavioral fear.

The lack of specificity used in the communication manipulation is a very plausible explanation for the difference that was found between the number of significant effects in this study and Costanza's (1986) research. But, in addition to the lack of specificity used in the communication manipulation, the actual instrument used to measure behavioral fear could be the underlying reason for the overall limited number of significant effects found by Costanza (1986) and the lack of significance found in the present research. Of those subjects who were instructed to verbally communicate, 45% (18 out of 40) reeled the spider as close as possible, 9.05 inches (23.0 mm). Almost one half of the subjects who were run in the communication conditions were identified by the PTA to have no fear of the spider. In Costanza's (1986) study, 33.33% (14 out of 42) of his female subjects who were paired together, and therefore verbally communicating in some manner, showed no fear by reeling the spider to the closest point. The apparatus used in these studies may not be sensitive with respect to measuring fear of individuals who are not considered truly phobic. It should be remembered that during the PTA procedure the spider is in a cage from which it cannot escape. The subjects are obviously aware of this fact. Even if an individual is experiencing fear and a heightened negative mood state, for the "normal" subject

there may not be enough fear inherent in the situation to promote the reflection of different levels of fear in different distance (or time) measures. It is probable that the PTA could be more appropriately and effectively used as an instrument to assess the improvements of individuals making the transition from phobic reactions to "normal" fear.

Future researchers using similar experimental designs may wish to use an alternate behavioral measurement of fear. The BAT as originally used by Lang and Lazovik (1963) may be a more appropriate and sensitive means of fear measurement. Researchers have used the BAT successfully in studies that assess the effectiveness of various methods of alleviating phobias (e.g., Bandura, Blanchard & Ritter, 1969; Bandura, Jeffery, & Wright, 1974). The PTA used in this and Costanza's (1986) study measures a range of fear associated with proximity. The BAT measures a range of fear that spans the continuum from distant proximity to levels of actual physical interaction with the fear stimulus. This wider range of behavior could possibly be significant in that the sensitivity (or specificity of actual behavioral fear) is greatly increased. The increase in range could conceivably allow for the teasing out of the effects sought after in this study. A BAT measure was originally planned for use in the present study, but was transformed into a self-report (subjective) measure after a Human Subjects Committee deemed the behavioral procedure unsafe. Perhaps with the use of an alternate fear stimulus such as a nonpoisionous snake, the BAT procedure would be considered an ethical and safe method of fear assessment for college student samples.

Physiological Measure

A physiological measure, blood pressure, was taken immediately before and after the treatment induction. It was anticipated that the fluctuations in blood pressure would mirror the changes in stress and negative mood state and therefore give additional support to the final conclusions. Unfortunately, the analyses involving the blood pressure measurement resulted in nonsignificant findings.

A marginal, but nonsignificant, main effect was found for relationship with friends tending to have higher systolic pressure than strangers. The rest of the findings on this measure were the same as those of the behavioral fear measures in that significance was not even approached. One rationale for the physiological measure resulting in nonsignificance is much the same as that offered above for the behavioral measures. It could be that by defining the communication condition in such a way so as to incorporate all styles of coping, the desired effects were unable to be detected by the analyses. Although Costanza (1986) did not use a physiological measure, it may be possible that a blood pressure reading would be sensitive enough to give a significant result for an alone versus emotion-based planned comparison. Using this rationale, blood pressure is evidently not sensitive enough to pick up significant differences involving communication versus no communication or friend versus stranger conditions.

It is possible that blood pressure simply does not fluctuate to the same extent as mood states in the type of experimental setting used in the present research. Blood pressure may be sensitive to the dramatic changes before and after the treatment conditions, but it may not be

sensitive to less dramatic changes in the experimental situation.

Affiliative Preference Measure

On a nine-point scale, subjects were asked to indicate their choice as to whether they wanted to be alone (by marking 1 through 4 on the scale), had no preference (by marking 5), would rather be with the partner they waited with in the treatment condition (by marking 6 or 7), or would much rather be with the partner (by marking 8 or 9 on the scale). Those individuals in the alone condition responded to this question by considering their "partner" to be the friend who came with them to the experiment. The results indicate that the large majority of subjects (73%) preferred to be with their partner (those who responded with 6 through 9) when interacting with the spider. Almost half of the subjects (45%) indicated that they would "much rather be with (their) partner." These results support Schachter's (1959) findings. The majority of his subjects felt the need to affiliate with others who were also anticipating a stressful event.

As was the case with the behavioral and physiological measures, there were no significant results associated with the experimental manipulations on the affiliative preference ratings. Costanza (1986) used pre- and post-measurements of affiliative preference and he found no significant results from a repeated measures ANOVA. Since Costanza (1986) found significant differences on the negative mood states of depression, anxiety, and fear as a function of treatment conditions, he inferred that the generally high affiliative preference of his subjects was not motivated strictly by the stress reducing resources

that might be provided by a friend. Other factors outside of the experimental manipulations may drive the desire for affiliation in this situation. The same inference can be made with reference to the current study.

Two other explanations for this lack of relationship were given by Costanza (1986) that could equally apply here. He mentioned that past positive experiences with affiliation could have prompted the subjects to respond with a preference for affiliation even though the actual interaction experience in the experiment might have been stress producing. He mentioned that nonverbal communications during the interaction may also have maintained a desire to affiliate even if verbalizations during this period tended to increase negative mood state.

The present research asked subjects about their preferences to affiliate with the individual she waited with in the treatment condition (her friend in the case of the alone condition). That person could have been a friend or stranger. Of the 60 individuals questioned on their preference to wait with their friend, 48.33% (29) indicated that they would much rather be with their partner. Of the 40 individuals questioned on their preference to wait with a stranger, 40% (16) indicated that they would much rather be with their partner. It appears, then, that it is not the relationship that is of importance in the drive to affiliate with someone while in anticipation of a stressful event. What is important, as Schachter (1959) has pointed out, is that there be some other individual present who may expect to go through the same situation and who has showed similar experiences.

## Summary

This research studied whether the presence of a

same-sex partner positively or negatively influenced the negative mood states of individuals anticipating a stressful event. Several significant results occurred that could have important implications. These results should be viewed in light of the experimental situation, however, and generalizations shoud be limited accordingly. It may not be appropriate to generalize the results beyond the undergraduate female (ages 18 to 23) population, or to stressful situations that are not potentially controllable and temporary in nature. Although the treatment conditions were short in duration, effects of relationship and communication were significant. These findings confirm that potentially important aspects of social interaction may mediate social support even in a relatively brief time period.

The present results suggest that interaction with a same-sex friend while anticipating a stressful event may not lead to a reduction in anxiety. It was found that the friends who talked while waiting together had higher self-reported anxiety states than those friends who did not talk while waiting for the stressful event. The conversation that took place between the friends served to maintain a higher state of anxiety than that of those friends who sat together without talking. What is it about the conversation that maintains the anxiety? The results of Costanza's (1986) research suggests that emotion-based discussions serve to maintain anxiety and depression. Unrelated content and problem-solving modes of verbal communication, however, are associated with relatively low negative mood states.

The present results indicate that if an individual waits for a stressful event in the company of a same-sex other, the personal relationship between the individuals

and how they interact will influence anxiety. Of those subjects who waited with a same-sex other and did not verbally communicate, subjects who waited with a friend reported lower anxiety states than those subjects who waited with a stranger. There was something unique about waiting with someone the subjects knew that was particularly beneficial and/or special in terms of reducing their perceived level of anxiety. What special quality or qualities do same-sex friends have that is of benefit in this situation? What is unique about strangers that make them less beneficial than friends? Does nonverbal communication play a role in the effects on anticipatory stress? Is it the visual contact with the other, or is it simply a matter of proximity that is of benefit in this situation? These are questions that deserve attention in future research. With the use of video tapes, controls on nonverbal communication, and other simple modifications to the present experimental design, these questions can be answered.

Another unique and interesting finding derived from this research is that the mere presence of a same-sex other is beneficial in reducing anxiety. Subjects who waited for the stressful event alone reported higher states of anxiety than those subjects who waited with a same-sex partner without verbally communicating. Therefore, something unique to the presence of the other individual, including nonverbal communication/gestures, had a beneficial affect on level of anxiety. Or, perhaps, there was something particular to the experience of waiting for the stressful event alone that was detrimental to the subjects' perceived level of anxiety. Also, higher levels of depression were reported by subjects who waited alone than by subjects awaiting the stressful event while

talking to a partner. There is an important question raised by these findings. When significant effects involving communication between partners are found, as in the case of Costanza's (1986) analysis of modes of communication, what portion of those effects is attributable to the verbal influence and what portion is due to the partner's presence? Again, future research should attempt to disentangle these variables and their relative effects.

In other comparisons involving the alone condition, it was determined that waiting for a stressful event with a same-sex friend resulted in significantly less depression and subjective fear than was reported by subjects in the alone condition. There was no significant difference between the reported negative mood states of subjects who waited with a stranger and those who waited alone. These results indicate that there is something uniquely beneficial about the relationship that friends have, and their interactions (whether communicating or not in this case), that is helpful in alleviating negative mood state.

This experimental design, used in conjunction with any number of stress, fear, or anxiety provoking stimuli, offers a promising method for continued investigation of the relationships between dyadic interaction, stress, and coping. Variations on this design could answer questions concerning the effects of nonverbal interactions, cognitive coping strategies, age, intimacy of relationship, information disclosure, and numerous other qualitative components of social support. Information gained through these investigations may one day add to the effectiveness of treatment and prevention of various maladaptive stress reactions and related illnesses.

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Table 1

Results of Univariate Analyses of Covariance on MAACL Mood States and Self-Reported Fear Measures

| | MAACL Anxiety | | | | | MAACL Depression | | | |
|---|---|---|---|---|---|---|---|---|---|
| Source Term | df | SS Between | SS Error | F | P | SS Between | SS Error | F | P |
| Relationship | 1,35 | 2.06 | 3.84 | 0.54 | N.S. | 1.57 | 6.29 | 0.25 | N.S. |
| Communication | 1,35 | 5.41 | 3.84 | 1.41 | N.S | 6.43 | 6.29 | 1.02 | N.S. |
| Relationship X Communication | 1,35 | 18.70 | 3.84 | 4.87 | 0.03 | 6.97 | 6.29 | 1.11 | N.S. |

| | MAACL Hostility | | | | | Self-Reported Fear | | | |
|---|---|---|---|---|---|---|---|---|---|
| Source Term | df | SS Between | SS Error | F | P | SS Between | SS Error | F | P |
| Relationship | 1,35 | 0.69 | 2.14 | 0.32 | N.S | 0.71 | 0.57 | 1.24 | N.S. |
| Communication | 1,35 | 0.51 | 2.14 | 0.24 | N.S. | 0.04 | 0.57 | 0.06 | N.S. |
| Relationship X Communication | 1,35 | 6.56 | 2.14 | 3.06 | 0.08 | 0.001 | 0.57 | 0.002 | N.S. |

Table 2

Adjusted Means for MAACL Mood States and Self-Reported Fear Measures by Treatment

| Treatment | N | Anxiety | Depression | Hostility | Fear |
|---|---|---|---|---|---|
| Friend-Communication | 10 | 9.11 | 14.37 | 8.56 | 5.20 |
| Friend-No Communication | 10 | 7.01 | 14.35 | 7.52 | 5.08 |
| Stranger-Communication | 10 | 8.25 | 13.97 | 8.04 | 5.45 |
| Stranger-No Communication | 10 | 8.88 | 15.66 | 8.63 | 5.40 |
| Alone | 10 | 9.20 | 16.36 | 8.94 | 5.66 |
| Total | 50 | 8.49 | 14.94 | 8.34 | 5.36 |

Note. Each mean has been adjusted for the pretest score on its respective measure.

Table 3

Affiliation Choice by Friends, Strangers, and Alone Treatment Conditions

| Affiliative Choice | Alone | Friends | Strangers | Total |
|---|---|---|---|---|
| N | 20 | 40 | 40 | 100 |
| Frequency Rather Be Alone | 1 (5) | 1 (2.5) | 2 (5) | 4 |
| Frequency With No Preference | 5 (25) | 11 (27.5) | 7 (17.5) | 23 |
| Frequency Rather Be With Partner | 5 (25) | 8 (20) | 15 (37.5) | 28 |
| Frequency Much Rather Be With Partner | 9 (45) | 20 (50) | 16 (40) | 45 |
| Mean Score | 7.1 | 7.4 | 7.1 | 7.1 |

Note. The affiliation choice question was in a 1 to 9 format. To generate the frequency data, subjects' original scores were reorganized into the following catagories which replicate the actual wording used on the questionnaire. "Rather Be Alone" represents responses 1 thru 4, "No Preference" represents response 5, "Rather Be With Partner" represents responses 6 and 7, and "Much Rather Be With Partner" represents responses 8 and 9. The numbers in parentheses represent the percentage of subjects in the treatment condition associated with that affiliation choice. The subjects in the alone condition considered their "partner" to be the friend who came with them to the experimental session.

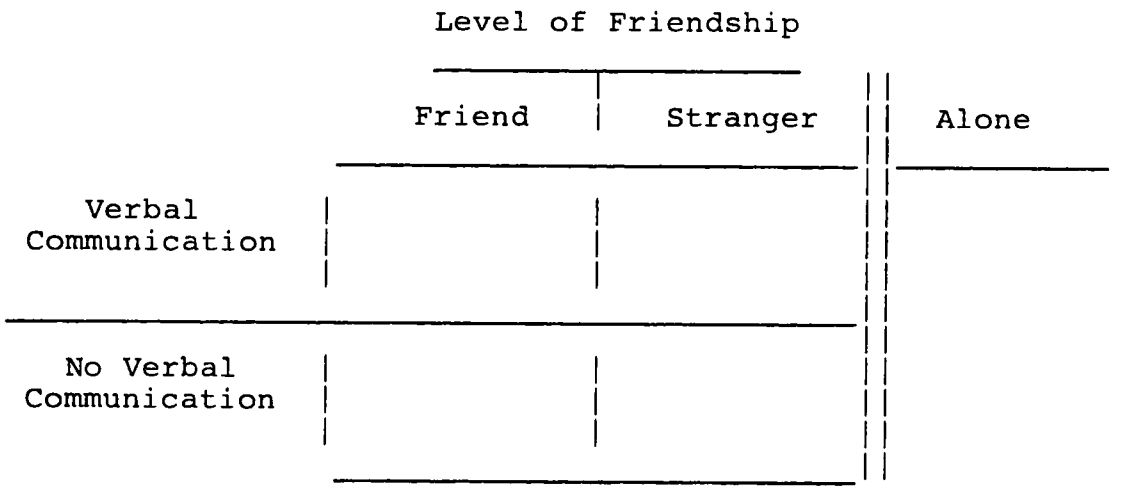
Table 4

Planned Comparisons For MAACL Mood States and Self-Reported Fear Measures

| MAACL Anxiety | Friend Alone | Stranger Alone | Communi-cation Alone | No Communi-cation Alone |
|---|---|---|---|---|
| | 8.06 | 8.57 | 8.68 | 7.94 |
| Means | 9.20 | 9.20 | 9.20 | 9.20 |
| *t*(45) | -1.55 | -0.86 | -0.71 | -1.70 |
| P | N.S. | N.S. | N.S. | .05 |
| MAACL Depression | | | | |
| | 14.35 | 14.82 | 14.16 | 15.01 |
| Means | 16.35 | 16.35 | 16.35 | 16.35 |
| *t*(45) | -2.09 | -1.62 | -2.29 | -1.42 |
| P | .05 | N.S. | .05 | N.S. |
| MAACL Hostility | | | | |
| | 8.04 | 8.34 | 8.30 | 8.08 |
| Means | 8.94 | 8.94 | 8.94 | 8.94 |
| *t*(45) | -1.53 | -1.25 | -1.09 | -1.47 |
| P | N.S. | N.S. | N.S. | N.S. |
| Self-Reported Fear | | | | |
| | 5.14 | 5.43 | 5.33 | 5.24 |
| Means | 5.66 | 5.66 | 5.66 | 5.66 |
| *t*(45) | -1.98 | -1.09 | -1.57 | -1.59 |
| P | .05 | N.S. | N.S. | N.S. |

Figure 1

A 2 (Friendship) X 2 (Communication) Factorial Design With An Alone Control Condition




Note. There were 20 subjects in each cell, making a total N of 100.

# APPENDICIES

Appendix A

Subject Consent Form

This is to certify that I, _____ hereby agree to participate as a volunteer in a scientific investigation as a part of the educational and research program of Old Dominion University under the direct supervision of the experimenter Scott Harrison.

This investigation will involve what is known as participant modeling. This is a procedure in which the individual volunteering for the study (the participant) models a method of performing a task that is demonstrated by the experimenter. Some details of the study, such as the task that you will be asked to model, can not be explained at this time due to the affects that this advance knowledge may have on the results of the study. Each step of the study will be completely explained to you as the study progresses. During the experiment you will also be asked to fill out several questionnaires. Overall, the experiment should take approximately one hour and a half to complete. The exact nature of the study will be explained to you at the end of the experiment during a debriefing. Complete confidentiality of your identity and performance in the study will be maintained.

If you follow the experimenter's instructions carefully and completely there will be no risks to your health or well being associated with your participation. You are free to withdraw your consent and terminate your participation at any time, without penalty. At the conclusion of the study you will be given a credit slip worth two (2) credits and given instructions on how to claim those credits.

If you have any questions, you are expected to ask the experimenter, Scott Harrison. If you have any questions later, either Scott Harrison, phone 440-3755, or Dr. Valerian Derlega, phone 440-3118, will be happy to answer them.

Your signiture below indicates that you have decided to participate having read the information provided above.

Date: _____ Signature: _____

Witnessed by: _____ Date of Birth: ____/____/____

Appendx B

Questions to Determine The Level of Friendship Between Dyads Reporting to The Experimental Session

You came to this experiment with a friend. Approximately how long have you known this friend?

Years ____ Months ____

How well do you know this friend?

| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
|---|---|---|---|---|---|---|---|---|
| not well at all | | | | | | | | extremely well |

Along with you and your friend, there are two other individuals participating in the experiment at this time. Are you friends with either one (or both) of these individuals?

Yes ____ No ____

Appendix C

Multiple Affect Adjective Check List (MAACL)

Directions: On this sheet you will find words that describe different kinds of moods and feelings. Mark an "X" beside the words that describe how you feel right now. Some of the words may sound alike, but we want you to check all the words that describe your feelings. Work rapidly.

__active
__adventurous
__affectionate
__afraid
__agitated
__agreeable
__aggressive
__alive
__alone
__amiable
__amused
__angry
__annoyed
__awful
__bashful
__bitter
__blue
__bored
__calm
__cautious
__cheerful
__clean
__complaining
__contented
__contrary
__cool
__cooperative
__critical
__cross
__cruel
__daring
__desperate
__destroyed
__devoted
__disagreeable
__discontented
__discourage
__disgusted
__displeased
__energetic
__enraged
__enthusiastic
__fearful
__fine
__fit
__forlorn
__frank
__free
__friendly
__frightened
__furious
__gay
__gentle
__glad
__gloomy
__good
__good-natured
__grim
__happy
__healthy
__hopeless
__ hostile
__impatient
__incensed
__indignant
__inspired
__interested
__irritated
__irritated
__jealous
__joyful
__kindly
__lonely
__lost
__loving
__low
__lucky
__mad
__mean
__meek
__merry
__mild
__miserable
__nervous
__obliging
__offended
__outraged
__panicky
__patient
__peaceful
__pleased
__pleasant
__polite
__powerful
__quiet
__reckless
__rejected
__rough
__sad
__safe
__satisfied
__secure
__shaky
__shy
__soothed
__steady
__stubborn
__stormy
__strong
__suffering
__sullen
__sunk
__sympathetic
__tame
__tender
__tense
__terrible
__terrified
__thoughtful
__timid
__tormented
__understand
__unhappy
__unsociable
__upset
__vexed
__warm
__whole
__wild
__willful
__wilted
__worrying
__young

Appendx D

Self-Reported (Subjective) Fear

Please rate your fear of the tarantula.

| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
|---|---|---|---|---|---|---|---|---|
| no fear at all | | | | | | | | extreme fear |

Appendix E

Affiliative Preference Question

Would you rather be with the tarantula alone or with your partner (the person you waited with)?

| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
|---|---|---|---|---|---|---|---|---|
| much rather be alone | | rather be alone | | does not matter | | rather be with partner | | much rather be with partner |

Appendix F

Behavioral Avoidance Test (BAT)

Instructions: The following is a list of progressively closer steps that one might take when approaching the tarantula spider that you have seen. Place a check in the blank next to as many of the steps that you would be willing and feel comfortable taking.

_____ Be in the same room with the tarantula

_____ Walk to within 5 feet of the tarantula's cage

_____ Walk right up to the tarantula's cage

_____ Put your hand on the tarantula's cage

_____ Open the lid to the tarantula's cage

_____ Put your hand into the tarantula's cage

_____ Touch and/or stroke the tarantula with your finger

_____ Have someone hand the tarantula to you to hold in your hand

_____ Pick the tarantula up yourself and hold it in your hand

_____ Pick the tarantula up yourself and allow it to crawl up your arm

Appendix G

Questions to Explore The Extent of The Subjects' Knowledge of The Nature of The Experiment

What do you believe is the purpose of the study in which you have just participated?

What results do you think the experimenter will find from conducting the experiment?

Appendix H

Contract of Non-Disclosure

I have received a credit slip worth 2 credits for the completion of the "Participant Modeling" study and understand the procedures for claiming these credits.

I understand that it is very important to the success of the study that those individuals participating should not know the full extent of the purpose of the experiment.

My signiture below is certification of completion of the "Participant Modeling" study and I hereby agree not to disclose any information about the study's purpose or procedures.

Participant's Signiture _____ Date _____

Appendix I

Multivariate Analysis of Covariance on MAACL Mood States and Self-Reported Fear Measures

| Effects | Multivariate Analysis of Covariance | | | |
|---|---|---|---|---|
| Source Term | Wilkes Lambda | F | df | P |
| Relationship | 0.93 | 0.54 | 4,29 | N.S. |
| Communication | 0.91 | 0.71 | 4,29 | N.S. |
| Relationship X Communication | 0.76 | 2.33 | 4,29 | 0.07 |

Appendix J

Multivariate Analysis of Covariance on Blood Pressure

| Effects | Multivariate Analysis of Covariance | | | |
|---|---|---|---|---|
| Source Term | Wilkes Lambda | F | df | P |
| Relationship | 0.95 | 0.90 | 2,33 | N.S. |
| Communication | 0.98 | 0.28 | 2,33 | N.S. |
| Relationship X Communication | 0.98 | 0.41 | 2,33 | N.S. |

Appendix K

Results of Univariate Analyses of Variance on Affiliative Preference, BAT, and PTA Measures

| | Affiliative Preference | | | | | BAT | | | |
|---|---|---|---|---|---|---|---|---|---|
| Source Term | df | SS Between | SS Error | F | P | SS Between | SS Error | F | P |
| Relationship | 1,36 | 0.06 | 1.73 | 0.03 | N.S. | 0.006 | 2.86 | .002 | N.S. |
| Communication | 1,36 | 1.06 | 1.73 | 0.61 | N.S. | 0.006 | 2.86 | .002 | N.S. |
| Relationship X Communication | 1,36 | 0.51 | 1.73 | 0.29 | N.S. | 0.510 | 2.86 | .180 | N.S. |

| | PTA Distance | | | | | PTA Time | | | |
|---|---|---|---|---|---|---|---|---|---|
| Source Term | df | SS Between | SS Error | F | P | SS Between | SS Error | F | P |
| Relationship | 1,36 | 38.93 | 247.48 | 0.16 | N.S. | 21.03 | 83.29 | .25 | N.S. |
| Communication | 1,36 | 279.35 | 247.48 | 1.13 | N.S. | 78.40 | 83.29 | .94 | N.S. |
| Relationship X Communication | 1,36 | 391.93 | 247.48 | 1.58 | N.S. | 36.10 | 83.29 | .43 | N.S. |

Appendix L

Results of Univariate Analyses of Covariance on Systolic and Diastolic Measures of Blood Pressure

| | Systolic Pressure | | | | |
|---|---|---|---|---|---|
| Source Term | df | SS Between | SS Error | F | P |
| Relationship | 1,35 | 117.22 | 33.15 | 3.54 | 0.06 |
| Communication | 1,35 | 18.88 | 33.15 | 0.57 | N.S. |
| Relationship X Communication | 1,35 | 3.15 | 33.15 | 0.10 | N.S. |

| | Diastolic Pressure | | | | |
|---|---|---|---|---|---|
| Source Term | df | SS Between | SS Error | F | P |
| Relationship | 1,35 | 56.91 | 57.31 | 0.99 | N.S. |
| Communication | 1,35 | 16.94 | 57.31 | 0.30 | N.S. |
| Relationship X Communication | 1,35 | 13.76 | 57.31 | 0.24 | N.S. |

Appendix M

Adjusted Means for Systolic and Diastolic Measures of Blood Pressure by Treatment

| Treatment | N | Systolic | Diastolic |
|---|---|---|---|
| Friend-Communication | 10 | 101.02 | 72.03 |
| Friend-No Communication | 10 | 99.04 | 71.87 |
| Stranger-Communication | 10 | 97.02 | 70.75 |
| Stranger-No Communication | 10 | 96.17 | 68.24 |
| Total | 40 | 98.31 | 70.72 |

Appendix N

Adjusted Means for the Significant ANCOVA Relation X Communication Interaction Effect on the MAACL Anxiety Measure

| Treatment | N | Mean Anxiety Score |
|---|---|---|
| Friend-Communication | 10 | $9.15_a$ |
| Friend-No Communication | 10 | $7.04_b$ |
| Stranger-Communication | 10 | $8.26_a$ |
| Stranger-No Communication | 10 | $8.88_a$ |
| Total | 10 | 8.33 |

Appendix O

Means for Affiliative Preference, BAT, and PTA Measures by Treatment

| Treatment | N | Affiliative Preference | BAT | PTA | |
|---|---|---|---|---|---|
| | | | | Distance | Time |
| Friend-Communication | 10 | 6.90 | 4.15 | 24.15 (40) | 22.9 |
| Friend-No Communication | 10 | 7.45 | 4.40 | 12.60 (45) | 27.6 |
| Stranger-Communication | 10 | 7.05 | 4.35 | 15.91 (50) | 26.3 |
| Stranger-No Communication | 10 | 7.15 | 4.15 | 16.89 (50) | 27.2 |
| Alone | 10 | 6.95 | 4.55 | 17.14 (50) | 24.4 |
| Total | 50 | 7.10 | 4.32 | 17.34 (47) | 25.7 |

Note. The numbers in parentheses represent the percent of subjects in that treatment condition who were able to bring the spider as close as physically possible to their faces (23.0 cm).

Appendix P

Planned Comparisons For Affiliative Preference, BAT, and PTA (Distance and Time) Measures

| Affiliative Preference | Friend Alone | Stranger Alone | Communication Alone | No Communication Alone |
|---|---|---|---|---|
| | 7.18 | 7.10 | 6.98 | 7.30 |
| Means | 6.95 | 6.95 | 6.95 | 6.95 |
| *t*(45) | 0.41 | 0.28 | 0.05 | 0.64 |
| P | N.S. | N.S. | N.S. | N.S. |
| BAT | | | | |
| | 4.28 | 4.25 | 4.25 | 4.28 |
| Means | 4.55 | 4.55 | 4.55 | 4.55 |
| *t*(45) | -0.42 | -0.46 | -0.46 | -0.42 |
| P | N.S. | N.S. | N.S. | N.S. |
| PTA Distance | | | | |
| | 18.38 | 16.40 | 20.03 | 14.75 |
| Means | 17.14 | 17.14 | 17.14 | 17.14 |
| *t*(45) | 0.20 | -0.12 | 0.46 | -0.39 |
| P | N.S. | N.S. | N.S. | N.S. |
| PTA Time | | | | |
| | 25.25 | 26.70 | 24.58 | 27.38 |
| Means | 24.40 | 24.40 | 24.40 | 24.40 |
| *t*(45) | 0.25 | 0.68 | 0.05 | 0.88 |
| P | N.S. | N.S. | N.S. | N.S. |

Appendix Q

## Results of Multivariate and Univariate Repeated Measures Analyses of Variance on MAACL Mood States, Self-Reported Fear, and Blood Pressure Measures

A 2 (relationship - friend versus stranger) X 2 (communication - communication versus no communication) X 2 (time - time 1 versus time 2) multivariate repeated measures analysis of variance was performed on the negative mood state measures (MAACL scores and the subjective fear score). There was a significant main effect for time, multivariate $F(1,36) = 6.65$, $p < .01$, and a marginally significant interaction between time and relationship, multivariate $F(1,36) = 3.37$, $p < .07$. These were the only significant effects found for this analysis.

Univariate repeated measures analyses of variance were performed on the MAACL and self-reported fear scores. Significant time main effects were found on the MAACL anxiety scale, $F(1,36) = 11.30$, $p < .001$, and the subjective fear measure, $F(1,36) = 17.65$, $p < .002$. Subjects reported higher levels of anxiety ($M = 9.92$) and subjective fear ($M = 5.94$) at time 1 than at time 2 ($M = 8.34$ and $5.42$, respectively). No other significant effects were found on these measures for the univariate repeated measures analyses of variance.

Systolic and diastolic measures of blood pressure were analyzed with a multivariate repeated measures analysis of variance. The only significant result was a time main effect, multivariate $F(1,36) = 10.26$, $p < .002$. Univariate repeated measures analyses of variance on these blood pressure measures resulted in a significant time main effect on the systolic pressure, $F(1,36) = 30.71$,

$p < .0001$. The subjects' systolic pressure was higher at time 1 (M = 103.98) than time 2 (M = 98.31). No other significant effects were found for the univariate repeated measures analyses of variance on blood pressure.

Summary tables of the results for the multivariate and univariate repeated measures analyses of variance on the MAACL mood states, self-reported fear, and blood pressure measures are reported in appendicies R, S, T, and U.

Appendix R

Multivariate Repeated Measures Analysis of Variance on MAACL Mood States and Self-Reported Fear Measures

| Source Term | Wilkes Lambda | F | df | P |
|---|---|---|---|---|
| Time | 0.84 | 6.65 | 1,36 | 0.01 |
| Relationship | 0.82 | 0.78 | 1,36 | N.S. |
| Communication | 0.88 | 0.50 | 1,36 | N.S. |
| Time X Relationship | 0.91 | 3.37 | 1,36 | 0.07 |
| Time X Communication | 0.99 | 0.00 | 1,36 | N.S. |
| Relationship X Communication | 0.72 | 1.37 | 1,36 | N.S. |
| Time X Relationship X Communication | 0.93 | 2.69 | 1,36 | N.S. |

Appendix S

Multivariate Repeated Measures Analysis of Variance on Blood Pressure

| Source Term | Wilkes Lambda | F | df | P |
|---|---|---|---|---|
| Time | 0.78 | 10.26 | 1,36 | 0.002 |
| Relationship | 0.83 | 1.17 | 1,36 | N.S. |
| Communication | 0.92 | 0.74 | 1,36 | N.S. |
| Time X Relationship | 0.93 | 2.90 | 1,36 | N.S. |
| Time X Communication | 0.95 | 1.99 | 1,36 | N.S. |
| Relationship X Communication | 0.97 | 0.22 | 1,36 | N.S. |
| Time X Relationship X Communication | 0.99 | 0.01 | 1,36 | N.S. |

Appendix T

Univariate Repeated Measures Analyses of Variance on MAACL Mood States and Self-Reported Fear Measures

| | | MAACL Anxiety | | MAACL Depression | | MAACL Hostility | | Self-Reported Fear | |
|---|---|---|---|---|---|---|---|---|---|
| Source Term | df | F | P | F | P | F | P | F | P |
| Time | 1,36 | 11.30 | 0.001 | 0.14 | N.S. | 0.06 | N.S. | 17.65 | 0.002 |
| Relationship | 1,36 | 1.56 | N.S. | 0.51 | N.S. | 1.41 | N.S. | 0.63 | N.S. |
| Communication | 1,36 | 0.71 | N.S. | 0.70 | N.S. | 0.12 | N.S. | 0.06 | N.S. |
| Time X Relationship | 1,36 | 3.01 | N.S. | 0.72 | N.S. | 1.68 | N.S. | 1.27 | N.S. |
| Time X Communication | 1,36 | 0.62 | N.S. | 1.43 | N.S. | 0.19 | N.S. | 0.09 | N.S. |
| Relationship X Communication | 1,36 | 2.51 | N.S. | 0.63 | N.S. | 1.57 | N.S. | 0.03 | N.S. |
| Time X Relationship X Communication | 1,36 | 1.34 | N.S. | 1.29 | N.S. | 2.82 | N.S. | 0.01 | N.S. |

Appendix U

Univariate Repeated Measures Analyses of Variance on Systolic and Diastolic Measures of Blood Pressure

| Source Term | Systolic Pressure df | F | P | Diastolic Pressure F | P |
|---|---|---|---|---|---|
| Time | 1,36 | 30.71 | 0.0001 | 0.76 | N.S. |
| Relationship | 1,36 | 1.89 | N.S. | 1.52 | N.S. |
| Communication | 1,36 | 1.39 | N.S. | 1.11 | N.S. |
| Time X Relationship | 1,36 | 2.12 | N.S. | 2.55 | N.S. |
| Time X Communication | 1,36 | 1.98 | N.S. | 1.37 | N.S. |
| Relationship X Communication | 1,36 | 0.05 | N.S. | 0.14 | N.S. |
| Time X Relationship X Communication | 1,36 | 0.08 | N.S. | 0.11 | N.S. |