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Changes in Loneliness:  
The Effects of Attributions, Coping Strategies, Changes in  
Personality Variables and Changes in Social Networks

by  
Linda Carroll

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CHANGES IN LONELINESS:  
THE EFFECTS OF ATTRIBUTIONS, COPING STRATEGIES, CHANGES IN  
PERSONALITY VARIABLES AND CHANGES IN SOCIAL NETWORKS

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A thesis submitted to the Faculty of Graduate Studies of  
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This project investigated changes in loneliness over a three-month period of time. The sample consisted of 140 Introductory Psychology students, initially identified as being high in loneliness. The study examined how changes in coping strategies, personality, and social network variables related to changes in loneliness.

Subjects were tested at the beginning and at the end of the three month period, so initial scores and changes in scores were used to predict the course of loneliness. Changes in scores over time were represented by residual scores, and data were analyzed using correlation, multiple regression, and cross-lagged panel correlation (CLPC).

As hypothesized, a decrease in loneliness was found to be significantly correlated with low initial depression, not having internal, stable attributions, being optimistic, an increase in satisfaction with the social network, and an increase in self-esteem. Although not significantly correlated active coping strategies, and an increase in network density and multiplexity were significant predictors of a decrease in loneliness. Contrary to prediction, frequency of contact was not related to change in loneliness and rather than predicting a decrease in loneliness, an increase in network size was predictive of an increase in loneliness.

The variables examined in this study were found to account for 62% of the variance in change in loneliness, and the best predictors of a decrease in loneliness included an increase in satisfaction with the network, and both initial and change in self-esteem. The CLPC provides evidence that self-esteem, depression, and social network satisfaction may be causal factors in loneliness.

Results were discussed with respect to theoretical and practical implications. Various therapy programs designed to alleviate loneliness were examined in view of the present results, and suggestions were made with respect to utilizing some of the practical implications of the results of this study, both in therapy programs and in a self-help context.

Loneliness is a common and distressing, perhaps even life-threatening, condition (Gordin, 1976; Weiss, 1973). Lynch (1976), for instance, has made the case for such severe effects in his provocatively titled book The Broken Heart: The Medical Consequences of Loneliness. Similarly, many years earlier, Durkheim (1897) linked an individual's lack of integration into some social group, such as church or family, with suicide. Recent epidemiology work (Berkman & Syme, 1979) shows that the age-adjusted death rate is clearly higher for social isolates.

Loneliness is a widespread phenomenon that seems to hit people at all ages and socioeconomic levels. In a national survey, one-quarter of all Americans reported having felt lonely in the past few weeks (Bradburn, 1969). Loneliness is, therefore, a problem of substantial significance to a great number of people.

In a review of philosophical and literary views on the nature of loneliness, Mijuskovic (1979) states that loneliness is a primary, universal, and necessary condition of being human; that everyone is necessarily alone (and thus lonely). This kind of philosophical conceptualization of loneliness, however, is difficult to study empirically, and, certainly, some individuals seem to be more troubled by loneliness than others. It is important to be able to examine the parameters of loneliness as people actually experience it: While it may be true that everyone experiences loneliness at one time or other, it also seems true that some people experience much more loneliness than others. An empirical view would seem more useful, therefore, in the analysis of loneliness.

Loneliness has been defined as a state of perceived social deficit, in which a person's network of social relationships is smaller or less satisfying than (s)he would desire, reflecting a discrepancy between actual and desired levels of social interaction (see Peplau & Caldwell, 1978; Peplau, Russell & Heim, 1980; Perlman & Peplau, 1979; Solano, Batten & Parish, 1982). This allows loneliness to be conceived of as a temporary condition or as a persistent one.

It also allows for a more experiential view of loneliness than would a definition equating loneliness with social isolation. This is important because loneliness is not always a direct function of objective isolation. In one sample, elderly people with long histories of social isolation were found to be less lonely than elderly people with histories of higher levels of social contact (Lowenthal, 1964). Presumably, in this study, people with previously low levels of social interaction had adjusted (i.e., lowered) their desired levels of contact and thereby avoided feelings of loneliness. This is consistent with other observations (Russell, Steffen & Salih, Note 1), that the desired level of social contact and the level of social contact others are perceived as having.

Some factors which people commonly cite as causes of loneliness have been discovered to be unrelated. For example, people who move frequently have been found to be no more lonely than those who stay in the same area throughout their lives, and the elderly are, on the whole, less lonely than younger people (Rubenstein, Shaver & Peplau, 1979).

However, many other commonsense factors have been related to loneliness (see Perlman & Peplau, 1979, for a literature review). For

instance, in terms of major life events, the ending of a close emotional relationship (through death, divorce or "breaking-up" of a dating relationship) is, not surprisingly, related with loneliness (Abrams, 1972; Gordon, 1976; Hill, Rubin & Peplau, 1976; Lopata, 1969; Weiss, 1976a). Perlman and Peplau (1981) have suggested that the major determinants of loneliness can be organized in a model that considers predisposing factors (e.g., personality traits), precipitating factors, and cognitive processes (i.e., attributions and social comparison mechanisms).

Feelings of loneliness are associated with feelings of depression, boredom, self-pity, desperation, self-depreciation (Rubenstein & Shaver, 1982), shyness, public self-consciousness, social anxiety, and lower self-esteem (Jones, Freeman & Goswick, 1981). In short, lonely people tend to hold negative views of themselves.

Lonely people also seem to be more self-focussed in their interaction patterns (Jones, Hobbs & Hockenbury, 1982); they talk more about themselves and ask fewer questions of others. Lonely people also seem to be more distractible than nonlonely people (Florentine, Perlman & McIntyre, Note 2).

A great deal is known about the correlates of loneliness. This is one way of inferring its causes; but, to the extent that the identified factors are causes of loneliness, as they change, so too should loneliness. Another way to study loneliness would be to follow it over time to see if changes in the predictors of loneliness correspond to meaningful changes in loneliness itself. Research of this sort in the field of loneliness is

just beginning. There have been three such studies.

In the first, by Ross (Note 3) of Memorial University, Newfoundland, Introductory Psychology students were studied throughout the school year with respect to where they resided, their friends, and a measure of loneliness. This study, however, was not truly longitudinal, since different groups of students were used at each testing period.

Shaver, Furman, Buhrmester and Willems (Note 4) questioned college students just before and just after entering first year university. They gathered data about the students' family backgrounds, dating histories, friendship patterns, social skills, attributions, and styles of coping with social discontent, and examined how these measures were related to loneliness.

The third relevant study (Cutrona, 1982), also examined Introductory Psychology students. The students were assessed three times during their first year: two weeks, seven weeks, and seven months after their arrival on campus, with respect to their loneliness, and various aspects of their social lives. Of the three studies, only this one has been fully analyzed and reported in the literature.

The aim of the present study was to expand on the findings of the previous studies. As in the work of Cutrona (1982) and Shaver et al. (Note 4), in the present study, the same subjects were studied over a period of time. Cutrona, however, had difficulty retaining subjects throughout the study (her return rate was only 46%). It is possible that there were selective differences between returnees and those who did not complete the study.

All three studies looked at the entire range of not-at-all lonely to extremely lonely subjects: None of the studies looked exclusively at lonely subjects. It seems useful, when studying loneliness, to examine a large sample of very lonely subjects only, to see how their loneliness changes over time, and what variables change with loneliness in this particular sample.

This study focuses, then, on the course of loneliness over time. It examines the differences between those people who, lonely at the beginning of the study, manage to overcome their loneliness, and those who remain lonely or get lonelier.

Five areas that may be related to overcoming loneliness are discussed. These areas are: social networks, coping strategies, personality factors, optimism for success in overcoming loneliness, attributions of causation, and demographic characteristics.

### Social Network

It seemed sensible to study the relationship between social networks and loneliness for at least two reasons. First, in the discrepancy view of loneliness articulated by Peplau and her associates, achieved level of social contact is one of the crucial parameters in the equation leading to loneliness. Second, in the past decade, social networks have increasingly been seen as important in the well-being of individuals (Caplan, 1974; Erikson, 1975; Killelea, 1976; Weiss, 1974). The social network has been found to account for spontaneous remission of psychological symptoms (Bergin, 1971), and provides an important contribution to the rehabilitation of ex-hospital patients (Fairweather, Sanders, Cressler & Maynard, 1969).

Social support measures have also been found to discriminate between good and bad outcomes for widows (Madison & Walker, 1967).

Fischer (1977) has described a network as a specified set of links among social actors. There are, however, nearly as many different ways of measuring social networks as there are investigators in the area. Generally, a social network may be defined in either an all-inclusive manner, or in a more restricted sense. An all-inclusive definition of social network would be one which includes every person with whom the individual has a social interaction (for example, Hirsch, 1979; Tolsdorf, 1976). This would involve a great number of people; in fact, anthropological data has suggested that an individual has the ability to sustain face-to-face relations with about 1500 people (Boissevain, 1974). Many writers in the field also include what they call "loose-ties" in the social network, that is, friends of friends, or access through social contacts to new social contacts or sources of information and membership organizations (Granovetter, 1973; Kaplan, Cassel & Gore, 1977; McLanahan, Wedemeyer & Adeberg, 1981; Mitchell, 1969; Walker, MacBride & Vachon, 1977).

In a more restricted sense, a social network may be taken to involve "the set of presently significant others with whom one has social interactions" (Hirsch, 1979, p.264). Since it is probable that significant others are much more involved than casual acquaintances in the presence or absence of loneliness, this latter definition seems more relevant and less cumbersome for the present study.

Investigations into a person's social network may involve many different facets. The characteristics which were examined in this study

were as follows:

Size This simply refers to the number of individuals in the target person's social network (Mitchell & Trickett, 1980; Walker, MacBride & Vachon, 1977). Size of one's social network has been related to mental health; for example, schizophrenics have been found to have smaller networks than nonpsychotic subjects (Sokolovsky, Cohen, Berger & Geiger, 1978). Data from one study has indicated that the healthy person typically has 20 to 30 people in her/his social network, while the neurotic has 10 to 12 people and the psychotic has 4 to 5 (Pattison, DeFrancisco, Wood, Frazier & Crowder, 1975).

Despite the fact that loneliness is not solely dependent on the presence of social isolation, it seems reasonable to think that as a person overcomes her/his loneliness, there is a concomitant rise in the size of the social network. Cutrona (1982) found a low but significant correlation ( $r=.20$ ) between a decrease in loneliness and an increase in the size of the social network. It was hypothesized that a similar effect would be present in this study, with perhaps a stronger correlation, since this study provides more time between test sessions for changes to become influential.

The makeup of the social network seems to be an important variable for many populations. For example, Froland, (Note 5) found that psychiatric patients (inpatients, outpatients and day-treatment patients) have fewer ties with kin than controls. It has also been demonstrated that expatients tend to have less symptomatic distress when their social network has many family members in it (Baker, Note 6). Jones' diary study (1982) suggests

that the proportion of contact with intimates (kin and close friends) is a buffer against loneliness for Tulsa, Oklahoma students.

Cutrona (1982), however, found that current friendships were more highly related to loneliness than were kin relationships for students beginning university. This is consistent with findings that adolescence is a time when friends are especially important (Dickens & Perlman, 1981) and when people may need to break away from family. Given the seemingly discrepant findings from Tulsa and Los Angeles, there does not appear to be firm evidence for making a prediction about the relative importance of kin versus friends. However, it seems likely that students in Tulsa, as compared with those at UCLA, come from more traditional backgrounds, where family ties are highly valued. As well, more of these Tulsa students may commute from their home community to university. Along these dimensions, Manitoba is more like Oklahoma than California.

Density This is the degree to which the members of a social network are acquainted with each other (Boissevain, 1974; Froland, Note 5; Hirsch, 1979, Laumann, 1973; Wellman, Note 7; Wellman, Craven, Whitaker, Stevens, Shorter, DuFort & Bakker, 1973). Density is determined by the ratio of number of connections to the number of possible connections. Data on the normal population have demonstrated that typically about half to two-thirds of the people in a social network have social relationships with each other (Pattison et al., 1975). Wellman (1973) has noted that dense networks are more likely to involve greater feelings of intimacy and emotional involvement, and to be more likely to include close friends. Wellman (Note 7) and Hirsch (1979) corroborated Laumann's

(1973) finding that dense networks give the individual a greater degree of perceived support under most conditions. Intimacy and social support systems are very important in overcoming loneliness. It seems reasonable, then, to hypothesize that a decrease in loneliness is associated with an increase in the overall density of the social network.

Most research to date has examined only the overall density of the network. It seemed that it might be useful to measure the density between kin and friend, and the density of friendships separately, as well as looking at the overall density. This was seen as an exploratory step, however, and no specific hypotheses were made about friend and kin-friend densities.

Multiplexity A relationship is considered multidimensional if a person engages in a number of different activities which are important to that person, with each member of her/his social network. A unidimensional relationship is one in which only one type of activity is engaged in with each member of the social network (Boissevain, 1974; Erikson, Note 8; Froland, Note 5; Hirsch, 1979; Mitchell, 1969; Mitchell & Trickett, 1980). Multidimensional networks have been found to be more satisfying (Hirsch, 1979), and it seems likely that lonely people who overcome their loneliness develop a more multidimensional network than those who remain lonely. This hypothesis would tend to be supported by the finding of Sokolovsky et al. (1978) that schizophrenic patients had half the number of multiplex relationships typical of normal subjects.

Frequency of Interaction This refers to how frequently the index person and each member of her/his social network interact (Boissevain,

1974; Mitchell & Trickett, 1980). Frequency of interaction has been found to be positively correlated with density (Froland, Note 5; Jackson & Fisher, 1977; Laumann, 1973): however, research linking frequency of interaction with loneliness has yielded inconsistent results. There are some indications that lonely college students have less social contact than nonlonely students (Hansson & Jones, 1981; Russell, Peplau & Cutrona, 1980; Wheeler & Reiss, Note 9). Other research has failed to find a relationship between loneliness and overall frequency of contact (Cutrona, 1982; Cutrona & Peplau, Note 10; Jones, 1982; Sisenwein, Note 11). One key to resolving the differences in results is to focus on the types of relationships involved. When only interaction with intimate others is considered, lonely students report lower interaction rates. However, these lonely students have as many, or more contacts with acquaintances as nonlonely people (Jones, 1982; McCormack & Kahn, Note 12).

The present study examines the frequency of contact with intimates, and how this frequency changes as loneliness changes. Furthermore, since it is possible that there is a difference in the relationship between personal (face-to-face) and nonpersonal contact with respect to loneliness, these two forms of contact are examined separately in this study. The hypothesis tested was that a decrease in loneliness is associated with an increase in frequency of contact (personal and/or nonpersonal) with intimates.

Satisfaction Individuals vary in their satisfaction with their social networks. Froland et al. (1979) has demonstrated that individuals

in psychological distress tend to have less satisfying social relationships. Cutrona (1982) points out that loneliness is affected by the qualitative aspects of social relationships, and Perlman, Gerson and Spinner (1978) found that among senior citizens, marital dissatisfaction was associated with greater loneliness. Another study (Shaver et al., Note 4) found that in college students, loneliness is related more to the quality of the social relationship than the quantity. Cutrona (1982) found a high correlation between change in loneliness and change in satisfaction with friends. This she attributed to deepening or enriching existing friendships.

It remains to be established, however, that an increase in overall satisfaction with one's social network is a result of an increase in satisfaction with individual members. In other words the "sum" of the satisfaction with each of the "parts" (individuals in the social network) may not equal the "whole" (overall satisfaction with one's network in general). There are other reasons for an increase in overall satisfaction; for example, satisfaction with individuals may stay the same, and the overall satisfaction may increase because the person sees that other people's social networks are much like her/his own. In comparison with others, that person's social network may not look so bad after all.

It was therefore hypothesized that in accordance with other findings, overall satisfaction should increase as loneliness decreases. Although it was expected that average satisfaction with the individuals in the social network would demonstrate the same type of relationship

with change in loneliness, the two types of satisfaction were analyzed separately to allow for the observation of any discrepancy.

Directionality Directionality is a measure of reciprocity and mutual participation in a relationship (Pilisuk & Parks, 1981). In terms of this study, it is a measure of what proportion of social contacts are initiated by the individual rather than her/his social network. This study examines how directionality changes as loneliness changes. Past research (Horowitz & French, 1979) shows that lonely students suffer from "inhibited sociability". This syndrome includes a number of social skill deficits such as having difficulty making new friends, being hesitant to call others, and the like. Overcoming such problems as, would be necessary in initiating contacts, would appear to help students reduce their loneliness. Thus, it was expected that a change in directionality would be related to a change in loneliness.

#### Coping Strategies

Coping strategies of both widows and students have recently been examined in the literature. For lonely widows, children and friends seemed to be the most widely used supports in overcoming loneliness (Lopata, 1980), although siblings and other relatives were also important, but to a lesser degree (Lopata, 1978, 1979, 1980). To some extent, this was a function of age, since family members tend to be much more supportive of elderly lonely widows than young and middle-aged widows (Heinemann, Note 13). Coping strategies also included making use of the church, travel, voluntary associations, activities outside the home, making efforts to meet new people, and work. Some turned to friendship groups, such as "Parents Without Partners" or widows groups

in the community (Lopata, 1980; Lopata, Heinemann & Baum, 1982). Helping professionals including psychologists as well as ministers, priests, and rabbis were not utilized by the lonely widows in Lopata's study. Unfortunately, no data are available which could lead one to conclude that widows using any particular coping strategy or combination of coping strategies are more successful at overcoming their loneliness than widows using other coping strategies.

In an attempt to examine the issue of successful and nonsuccessful coping strategies, Cutrona (1982) has questioned previously lonely college students with respect to how they overcame their loneliness and those who remained lonely with respect to engaging in activities such as joining clubs, participation in intramural sports, going to parties, striking up conversations with strangers in class, attempts at improving physical appearance or social skills, trying harder to be friendly or trying new ways to meet people.

Students who remained lonely, however, were found to have changed or lowered their initial goals for desired relationships, and tended to try to cope with loneliness by reminding themselves of more positive aspects of their lives, such as work.

In another study based on a large and heterogeneous sample of adults, Rubenstein and Shaver (1982) asked the subjects what they usually did when they felt lonely: Commonly given answers included reading a book, listening to music or calling a friend. Rubenstein and Shaver found that the students' responses separated into four general factors: Sad Passivity, Active Solitude, Spending Money and Social

Contact. Sad Passivity was characteristic of severely lonely people while the other three factors were characteristic of those who are infrequently lonely. Sad Passivity was the factor most highly related to loneliness and was associated with depression, lethargy, self-depreciation, and self-pity. The second factor, Active Solitude portrays a creative and rewarding use of time spent alone and was seen as an alternative to loneliness. This group of coping strategies was typical of those who are infrequently lonely. The third factor, Spending Money, was, not surprisingly, an answer characteristic of those in the higher income brackets. Those who gave Social contact types of answers were those who found themselves in a transient state of loneliness, and so called a friend.

Paloutzian and Ellison (1982) asked college students to rate the effectiveness of specific coping responses. The most effective responses were talking to or spending time with a friend, thinking alone, listening to music, and praying (for the highly religious group).

Both of the latter studies (Paloutzian & Ellison, 1982; Rubenstein & Shaver, 1982), however, seem to be more concerned with an immediate response to feeling lonely rather than a long term plan of action to combat loneliness. Whereas listening to one's favorite rock group may be an effective method of dealing with fleeting moments of loneliness, it is not likely to be effective for any extended period of loneliness. Most people are, in fact, quite successful in overcoming these temporary bouts of loneliness (Rook & Peplau, 1982).

A more pressing concern is how people deal with their loneliness on a more permanent basis, that is, what long-term solutions do they have

for their loneliness. This study is, therefore, concerned with obtaining the same general type of data as the Cutrona (1982) study. There are, however, two important modifications which are aimed at eliciting more differences in the self-reported coping strategies between temporarily lonely people and those who remain lonely.

The first modification to Cutrona's work involves the questionnaire used to elicit self-reports of coping strategies. In Cutrona's study, the researchers devised a list of possible coping strategies, then asked the subjects which strategies they had used. The list of possible coping strategies in the present study was developed from coping strategies advocated by peers of the lonely subjects, that is, other undergraduate university students. This list of possible coping strategies developed by the subjects' peer group has an advantage over Cutrona's scale in that it is likely to have been more relevant to the lonely subjects than a list developed by researchers.

The second modification involves gathering data not specifically asked for in Cutrona's study. She merely gathered data on whether or not the students had used various strategies. She did not ask exactly how often the strategy had been used. It is possible that the frequency of using certain coping strategies is related to decreases in loneliness. For example, the same number of subjects in both groups may have reported going to parties to try to combat loneliness, but those subjects who remained lonely may have gone to only one party, been dissatisfied with the results, and given up going to parties, whereas those who recovered from their loneliness may have been more persistent in their party-going.

The present study, therefore examines not only whether the specific coping strategies were engaged in, but the frequency with which they were used.

Previous studies done on coping strategies of lonely people's coping strategies have involved only "post hoc" questioning, that is, asking people what they had done to try to overcome their loneliness. This study asked subjects what they plan to do to overcome their loneliness, and compared this to what they later reported that they have actually done to overcome their loneliness. This has the added advantage of not only comparing successful and unsuccessful coping strategies, but comparing which group of students was most likely to carry out their coping plans.

Different aspects of coping strategies themselves are also interesting to examine. Some coping strategies may be considered "active", that is, going out to parties, trying to meet new people, whereas "nonactive" coping strategies would include trying to adjust to having fewer friends and becoming more interested in nonsocial activities. Cutrona (1982) found that students who remained lonely tried to cope with their loneliness by reminding themselves of other positive aspects of their lives, and by trying to convince themselves that they really didn't need a lot of friends; however, she found no difference in actively social coping strategies, such as trying to be more outgoing.

Because of the previously noted modifications in the coping strategies questions asked, and the fact that this study is dealing exclusively with lonely subjects, it was expected that differences in coping strategies between still lonely and no-longer-lonely subjects

would emerge. The hypothesis was, therefore, that the more active proposed and actual coping strategies would be associated with more success in overcoming loneliness than the nonactive coping strategies.

#### Personality Factors

Personality factors have been demonstrated to be highly related to loneliness. Cutrona (1982) suggests that attitude and personality are the most important predictors of change in loneliness. Shyness has been found to be related to loneliness (Zimbardo, 1977), as has nonassertiveness (Perlman & Peplau, 1979), and religiosity (Paloutzian & Ellison, 1982).

There is also a firmly established link between loneliness and self-esteem (Gordon, 1976; Jones, 1982; Jones, Freemon & Goswick, 1981; Moore & Sermat, 1974; Paloutzian & Ellison, 1982; Wood, 1978). Cutrona, Russell, and Peplau (1979) found that students with high self-esteem are more likely to overcome their loneliness than those with low self-esteem. It also seems likely that as people overcome their loneliness, their self-esteem improves. It was therefore hypothesized that a decrease in loneliness would be accompanied by an increase in self-esteem.

Loneliness has also been firmly linked to depression (Bradburn, 1969; Bragg, Note 14; Liederman, 1969; Ortega, 1969; Russell, Peplau & Ferguson, 1978). Since depressed people tend to see themselves as inadequate, their experiences as negative, and the future as hopeless (Beck, Rush, Shaw & Emery, 1979). Depression was expected to be associated with pessimism about overcoming loneliness. If lonely people see life as negative and hopeless, it seemed likely that their proposed

coping strategies would reflect this. Depression is usually associated with loss of energy and a general slowing of activity (for example, McMahon, 1976; Ullman & Krasner, 1975). This led to the hypothesis that depressed lonely people were likely to have fewer proposed coping strategies, and that the coping strategies chosen by depressed lonely people would be less active than those chosen by nondepressed lonely people.

### Optimism

Another important variable is degree of confidence in one's ability to successfully alleviate loneliness. Cutrona (1982) has found that those people who have high expectations for future relationships are more likely to overcome their loneliness. It seemed reasonable that this study would provide further evidence for this finding. If, indeed, those students who are optimistic about overcoming their loneliness, are more successful, they should also develop a larger and more satisfying social network.

### Attribution

One cognitive variable associated with loneliness which has been rather extensively studied is attribution of causation of loneliness. Lonely people generally make an effort to understand the cause of their loneliness in order to make sense out of their distress, and attempt to re-establish their desired level of social interaction (Peplau, Russell & Heim, 1979). Weiner's (1974; Weiner, Russell & Leiman, 1978) general framework has been found to be applicable to the study of loneliness (Bragg, Note 14; Michela, Peplau & Weeks, 1982; Peplau & Caldwell, 1978;

Peplau, Russell & Heim, 1980; Rubenstein & Shaver, 1982; Perlman & Peplau, 1979).

Locus of causality refers to whether an individual attributes her/his loneliness to internal causes, such as appearance, intelligence, personality, lack of social skills, or external causes, such as others being unfriendly or being new in town. Stability refers to whether the cause of loneliness is seen as remaining stable over time or changing as time passes. Controllability refers to whether the cause is seen as being under the lonely person's control. Depression seems to be closely linked with internal, stable attributions (Berke & Peplau, Note 15; Michela, Peplau & Weeks, 1982; Peplau et al., 1980). In addition, if loneliness persists over a long period of time, the individual is likely to attribute the cause of the loneliness to internal stable factors (Kelley, 1971; Peplau, Russell & Heim, 1980). Stability of loneliness has also been found to be related to feelings of helplessness (Michela, Peplau & Weeks, 1982; Weiner, Russell & Lerman, 1978). A person who attributes her/his loneliness to internal, stable causes is likely to give up trying to form satisfying relationships (Rubenstein & Shaver, 1982), and is therefore unlikely to try active ways of combatting her/his loneliness. The hypothesis was made, therefore, that subjects with internal, stable attributions would be less likely to choose active social coping strategies and more likely to try passively to accept their loneliness than those subjects with internal, or external, unstable attributions. It was further proposed that those with external, unstable or internal, unstable attributions were likely to be more successful in

overcoming their loneliness than those with internal stable attributions.

### Demographic Characteristics

Of the demographic variables, place of residence has been the primary area of discussion in previous research. There has been contradictory evidence as to its importance in the study of loneliness, with Cutrona (1982) noting no difference in loneliness of students in various places of residence, and Ross' (Note 3) finding that dorm dwellers were less lonely than others. The present research was designed to provide a further examination of this problem.

### Hypotheses

The main points of this chapter can be summarized by reiterating the hypotheses of the study.

1. A decrease in loneliness will be associated with
  - a) low initial depression,
  - b) not having internal, stable attributions,
  - c) optimism for overcoming loneliness, and
  - d) proposing and engaging in active coping strategies; not engaging in nonactive coping strategies.
2. A decrease in loneliness will be associated with an increase in
  - a) size of social network,
  - b) density of social network,
  - c) multiplexity of social network,
  - d) frequency of contact with social network members,
  - e) satisfaction with social network, and
  - f) self-esteem.
3. Optimism will be associated with increases in size, of and

satisfaction with, the social network.

4. Internal, stable attributions will be associated with proposed nonactive coping strategies.
5. Depression will be negatively associated with optimism, and with active proposed and actual coping strategies.

### Method

Lonely subjects were tested at two points in time, three months apart. At the initial testing, subjects were asked to fill out questionnaires concerning demographic data, attributions of causation, personality measures, social network data and coping strategies. The follow-up session repeated all measures except demographic and attributional questionnaires.

### Subjects

Approximately 1200 Introductory Psychology students were screened using the UCLA Loneliness Scale, with two additional questions pertaining to self-perception of loneliness (Appendix A). Subjects with scores in the top 20% were telephoned and asked to participate in the study. A final sample of 162 subjects (72 males and 90 females) participated in the first part of the study. The Loneliness Scale scores of these subjects ranged from 42 to 74, with an average score of 50 and a standard deviation of 6. All selected subjects identified themselves on the questionnaire as being lonely. Of the initial subjects, 140 returned for the follow-up session. Those subjects who did not return had either moved, leaving no forwarding address, dropped out of university, or had already obtained all needed experimental credit.

### Procedure

Subjects were run in groups of approximately 30 students each. During the initial testing session, they were presented with the following questionnaires: demographic characteristics (Appendix B), the CES-D Depression Scale (Appendix C), the Self-Esteem Scale (Appendix D), the Attributions of Loneliness Questionnaire (Appendix E), the social network questionnaire (Appendix F), the coping strategies questionnaire (Appendix G), and an optimism questionnaire (Appendix H).

Experimental credit for the study was withheld until the follow-up session, three months later, to ensure a good return rate. The actual return rate was 88%. These subjects were readministered the UCLA Loneliness Scale (Appendix A), the depression and self-esteem scales, and the social network questions. The coping strategies questionnaire was modified to enquire what the subjects' actual, rather than proposed, coping strategies involved (and, where appropriate, how many times the activity had been engaged in, in the past three months); and the optimism question was modified to involve an enquiry about how successful they felt they had been in overcoming their loneliness.

Subjects were then given their experimental credit, and debriefed as to the goals and method of the study. There was no deception used in this study.

### Questionnaires

#### UCLA Loneliness Scale (Appendix A)

The loneliness scale used in this study was the revised UCLA Loneliness Scale, originally developed by Russell, Peplau and Ferguson

(1979) and revised by Russell, Peplau and Cutrona (1980). This is a 20-item, self-report inventory, which has been used extensively in research into loneliness (for example, Cutrona, 1982; Florentine, Perlman & McIntyre, Note 2; Gerson & Perlman, 1979; Jones, Freemon & Goswick, 1980; Peplau, Russell & Heim, 1980; Perlman & Peplau, 1979). An example of an item from this scale is "I lack companionship". A high score indicates loneliness. The 1980 revision of the scale includes items with both pro and con trait wording. This dealt with the problem of all questions being "loaded" in the same direction, and thus minimizes the likelihood of a response set. It has a correlation with the original scale of .91 (Russell et al., 1980).

The revised scale has a high level of internal consistency, with a Cronbach's coefficient alpha of .94 in one study (Russell et al., 1980) and .89 in another study (Solano, 1980). Test-retest measures carried out over a two-month interval (on the original scale) yielded a correlation of .73 (Russell et al., 1979).

The revised scale correlated significantly with the following scales (Russell et al., 1980): Beck Depression Inventory ( $r=.62$ ), Costello Comrey Anxiety ( $r=.55$ ), as well as with feeling abandoned, depressed, empty, hopeless, isolated, self-enclosed, and not feeling sociable or satisfied. The fact that the score on the loneliness scale is related to the preceding theoretically related concepts, but is not related to such conceptually unrelated affects as feeling creative, embarrassed, sensitive, surprised or thoughtful, provides evidence for construct validity (Russell et al., 1980).

In investigations of criterion validity, Russell et al., (1979).

found a correlation of .79 between scores on the (original) UCLA Loneliness Scale and self-reported loneliness; and Solano (1980) found a correlation of .62 between the revised UCLA Loneliness Scale and a single question about loneliness. As well, people who volunteered for a loneliness clinic/discussion group had significantly higher loneliness scores than a comparison group (Russell et al., 1979).

UCLA Loneliness Scale scores are also related to such measures as amount of time spent alone ( $r=.27$ ), number of times dinner was eaten alone ( $r=.31$ ) and number of close friends ( $r=-.27$ ) (Russell et al., 1980).

As a measure of discriminant validity, a self-labeling loneliness index accounted for 18% of the variance in loneliness scale scores beyond that accounted for by mood and personality measures. Additionally, after statistically controlling for the effects of mood and personality variables, loneliness scores still significantly related to such measures as the amount of time spent alone and number of close friends (Russell et al., 1980).

#### CES-D Depression Scale (Appendix C)

The depression scale used in this study was the CES-D Scale (Radloff, 1977). This is a 20-item scale, developed primarily for a "normal" rather than an inpatient population. A sample item from this scale is "I felt sad". The fact that this scale was designed for research into depression in the general population makes it a more appropriate depression scale for studying college students than a depression scale designed for the diagnosis of more severe clinical depression.

Internal consistency (measured by Cronbach's coefficient alpha) is .85 for normal subjects (Radloff, 1977). Split-halves correlation was

.77, and test-retest correlations were: .51 for two weeks, .67 for four weeks and .59 for six and eight weeks.

Criterion validity measures have indicated that psychiatric patients score significantly higher than normals on this scale. The correlation between CES-D scores and ratings of severity of depression by psychiatric nurses of their patients was .56 (Radloff, 1977).

Construct validity measures were divided into two forms (Radloff, 1977): convergent validity, and principal components analysis. In terms of convergent validity, the CES-D Scale correlated with the following depression measures: Lubin ( $r=.51$ ), Bradburn Negative Affect ( $r=.60$ ), Bradburn Balance ( $r=.61$ ), Cantril Ladder ( $r=.43$ ) and interviewer ratings of depression ( $r=.49$ ). The scale correlated negatively with Bradburn's Positive Affect ( $r=-.21$ ), and Marlow's Social Desirability Scale ( $r=-.18$ ), and correlated positively with Langner's General Psychopathology Scale ( $r=.54$ ). A principal components analysis has identified four main factors: depressed affect, positive affect, somatic and retarded activity, and interpersonal.

#### Self Esteem Scale (Appendix D)

The measure of self-esteem used in this study was the Self-Esteem Scale, developed by Rosenberg (1965). This is a 10-item Likert type scale, allowing one of four responses for each item: strongly agree, agree, disagree or strongly disagree. A sample item from this scale is "I feel that I'm a person of worth, at least on an equal plane with others". The items are alternately worded positively or negatively, to reduce the likelihood of a response set. Test-retest reliability over

a two-week period was .85. The scale also has 92% reproducibility and 72% scalability (both using the Guttman procedure). This means that the scale is unidimensional and cumulative (Rosenberg, 1965).

In terms of validity, the SE scale correlates significantly with independent ratings on the Leary (depression) Scales, and on a self-report depression scale, as well as with a number of psychosomatic symptoms. Those people who scored highly on the SE scale (indicating high self-esteem) were more likely to be elected class president in a high school class, and high self-esteem scorers were more likely to be judged by nurses to be able to criticize themselves (Rosenberg, 1965).

#### Coping Strategies (Appendix G)

To obtain items for this questionnaire, a group of 60 second-year psychology students was asked to list three solutions each for overcoming loneliness. All suitable items were used, that is items which advocated long-term rather than immediate solutions for loneliness. An example of an item not used is "clean your room". Proposed solutions which had several items such as "be more outgoing and aggressive, and keep a positive attitude" were split into separate items on the questionnaire. Finally, answers which were similar in content, such as "try and meet new people in class" and "talk to others in the same class" were combined to form single items.

Items developed in this way, plus items of specific interest to the experimenter, were included in a 22-item scale. An example of an item in this scale is: "try and find a romantic partner".

#### Attribution of Causation Questionnaire (Appendix E)

The Attribution questionnaire used in this study was based on a study by Michela, Peplau and Weeks (1982) which identified 13 causes of loneliness and the internality and stability dimensions of each cause. The scale used in this study includes these 13 identified causes of loneliness. Each of these items was classified by Michela et al. (1982) as tapping internal-stable, internal-unstable, external-stable, or external-unstable attributions for the cause of loneliness.

In this study, subjects rated each questionnaire item on a 5-point continuum of importance, ranging from the cause of loneliness being "not important" to "very important" in their own loneliness.

#### Social Network Questionnaire (Appendix F)

This questionnaire included questions about number of social network members, satisfaction with and direction of each of these relationships, number of activities engaged in with their closest network members (a measure of multiplexity of the network) and the frequency of personal and nonpersonal contact with each close friend. In addition, the questionnaire included a question designed to indicate the density of the social network.

#### Optimism Questionnaire (Appendix H)

Since the information of interest was very specific, that is, the subject's expectation for success in overcoming loneliness, a single question was designed asking the subject to rate their optimism for success in overcoming their loneliness. On follow-up, subjects were asked how successful they felt they had been in overcoming their loneliness.

## Results

Results were analyzed initially by simple correlation; regression analyses were then carried out to determine the best set of predictors of loneliness, and a cross-lagged panel analysis was done to provide some evidence of direction of causality. This chapter includes a description of the loneliness scores, an explanation of how the residual scores were used, and a report of the results of the analyses.

### Loneliness Scores

Of the 140 subjects who complete both questionnaires, 42 increased in loneliness, 9 retained the same score, and 89 decreased in loneliness. The average loneliness score in the initial testing session was 50, and in the follow-up session, the average score was 48 (see Appendix U). The average gain in scores among those who increased in loneliness was 5, and the average decrease in loneliness among those who decreased was 7. The correlation of pre and post loneliness scores was .62. The pre-post correlations of other variables are reported in Appendix I.

Readers familiar with various threats to the validity of research will realize that by initially selecting an extreme group, some regression of scores toward the mean would be expected. The mean loneliness scores did, in fact, drop by two points from a mean of 50 to a mean of 48. Had this been a treatment study, in which one wanted to determine if the treatment helped alleviate loneliness, such regression would be problematic. However, as far as I can determine, regression artifacts do not pose a similar threat in the present study for two reasons. First, nonselected samples of students have shown similar changes in loneliness over time (Cutrona, 1982). It is to be expected

that as students become more familiar with the university and have time to develop social relationships they would become less lonely. Secondly as Cook and Campbell (1979) point out, the seriousness of regression artifacts depends on the reliability of the scale involved. Fortunately, the UCLA Loneliness Scale has high reliability. This high reliability reduces the potential problem that regression artifacts can create.

Another difficulty with using extreme scores is that by limiting the range of possible scores in the sample, the size of the correlations obtained may be artificially lowered. Since this study uses a restricted range of scores, that is, only high scores on the UCLA Loneliness Scale, the correlations obtained may be lower than correlations which might have been obtained had the full range of Loneliness Scores been used. It must be noted, however, that the population of interest is the very lonely, and that using the full range of scores might have provided information less relevant to the population of very lonely subjects. It should also be noted that the effect of using a restricted range of scores is to lower observed correlations, and that any error which occurs because of the use of these scores is on the side of conservatism. For these reasons, the use of extreme scores would appear to be justified.

### Residuals

Since the main thrust of this study was to examine how various variables changed in value as loneliness changed over time, some statistic was necessary to reflect change. Cronbach and Furby (1970)

have amply demonstrated that the use of change-scores or difference scores (that is, simply reflecting the pre-test minus the post-test score) cannot be defended. In Linn and Slinde's (1977) summary of the major disadvantages of using difference scores, the most important defect is that the difference score is likely to be negatively correlated with the pre-test score. This produces the situation in which those people with low pretest scores are more likely to obtain large positive difference scores than those with high pre-test scores. The other potentially relevant disadvantage of using difference scores, according to Linn and Slinde (1977), is the low reliability of the difference scores.

Instead of using difference scores, Cronbach and Furby (1970) and Linn and Slinde (1977), among others (for example, DuBois, 1957; Manning & DuBois, 1962) suggest that residual gain scores may be a more defensible measure of change. A residual score is obtained by subtracting the predicted post-test score from the observed post-test score. The predicted post-test score is obtained by performing a linear regression on the pre-test. This procedure provides a measure of change, the residual score, which is uncorrelated with the pre-test score, thus eliminating the first of the difficulties, previously noted, in using difference scores.

Although the use of residual scores does not eliminate the difficulty of reliability, residual score reliabilities are higher than difference score reliabilities (Linn & Slinde, 1977).

In this study, therefore, residuals were calculated and used in subsequent analyses for each variable with a pre- and post-test score.

The higher the residual score, the smaller the decrease in the subject's score over time. A negative residual indicates a greater decrease in loneliness scores than anticipated.

### Coping Strategies

Factor analyses were performed on the results of the Coping Strategies Questionnaire given in the initial and follow-up sessions. Items were included in the factor on the basis of factor scores. A consideration of unit weighting yielded the same factors. A score of .35 was used as the cutoff for item inclusion in a factor. In cases where an item's factor loading was high (over .35) in one of the analyses but not in the other, the item was retained for further analyses only if it was correlated with the other items, and seemed to "fit" well with the other items. The factor structure from each analysis, and the items which compose the factor are listed in Tables 1 and 2. Orthogonal (varimax) rotation was used.

Table 1  
Coping Factors Developed From Initial Testing Session

Factor	Weight	Eigenvalue	Variance Accounted For	Coefficient Alpha
<u>Active Social</u>		2.28	10.2%	.696
meet new people in class	.441			
go to socials	.706			
go to pubs	.602			
be more outgoing	.491			
find a romantic partner	.569			
<u>Affiliation with Help</u>		1.78	8.1%	.644
join a church group	.546			
read the Bible, pray	.525			
do volunteer work	.445			
talk to prof or counsellor	.665			
<u>Passive (1)</u>		0.67	3.0%	.455
enjoy being on own	.431	*1.70	*7.7%	*.499
be patient	.243			
convince self not lonely	.323			
try to adjust	.514			
<u>Passive (2)</u>		1.03	4.7%	.572
keep a positive attitude	.452			
look on bright side	.470			

\* Values when Passive (1) and Passive (2) are combined.

Table 2

## Coping Factors Developed From Follow-Up Testing Session

Factor	Weight	Eigenvalue	Variance Accounted For	Coefficient Alpha
<u>Active Social</u>		2.27	10.2%	.699
meet new people in class	.407			
go to socials	.589			
go to pubs	.574			
be more outgoing	.563			
find a romantic partner	.623			
<u>Affiliation with Help</u>		1.40	6.4%	.458
join a church group	.488			
read the Bible pray	.276			
do volunteer work	.426			
talk to prof or counsellor	.488			
<u>Passive</u>		1.14	5.2%	.580
enjoy being on own	.370			
be patient	.467			
convince self not lonely	.382			
try to adjust	.307			
keep a positive attitude	.527			
look on bright side	.571			

It will be noted that there are several difficulties with the above data. In the analysis with the initial scores, the more "passive" items separated into two factors: In the analysis of the follow-up scores, these items emerged in one factor. Since all six items fit well in an intuitive sense, and because the fourth factor (in the initial analysis) loaded high on only two items, the six items were combined to produce a "Passive" coping strategy for subsequent analyses. Correlations between items were also acceptable (see Appendix J).

Two other difficulties with the Coping Strategies factor structure involve low variance accounted for by each factor, and, with the exception of "Active Social" strategies, low internal consistencies. Although these difficulties call into question the strength of this factor structure, it was decided to use the structure for two reasons: First, one of the commonly used guidelines for determining the usefulness of a factor is to set a cutoff eigenvalue of 1. In both initial and follow-up data, the eigenvalues of the three factors are all over 1. Second, the alternative to using this factor structure was to superimpose the data into an already existing factor structure. Paloutzian and Ellison (1982) and Rubenstein and Shaver (1982) have each developed coping strategies factors with their own data. These factor structures, however, were developed from short term solutions to loneliness, rather than the long term solutions examined in the present study, and were not considered suitable for this data.

Of the factors developed in this study, two (Active Social and Affiliation with Help) appear to be classifiable as active, that is, they are strategies used by those who are actively seeking to overcome loneliness. The other coping factor, Passive, involves nonactive ways of attempting to deal with loneliness.

#### Results of Loneliness Hypotheses

An hypothesis-wise error rate was set at .01. This alpha level provides an overall error rate which is somewhat higher than convention usually dictates (the actual error-rate for the group of hypotheses collectively, using the Bonferroni method of estimating error rate, is less than or equal to .13). If this study had been designed to authoritatively confirm some theoretical construct, a more stringent alpha level would have been more appropriate. This study, however, was designed to explore and "tease out" various possible relationships and factors involved in overcoming loneliness, and since it was the intention of this study to look at the relationship between changes in loneliness and a number of variables not before examined in this context, a loss of data caused by setting the alpha level too stringently would seem to be a more costly error than too liberally accepting relationships.

The following hypotheses were confirmed by the correlation data: A decrease in loneliness (represented in the analyses by the residual score) was found to be associated with low initial depression, optimism for success in overcoming loneliness, an increase in average and overall satisfaction with the network, and an increase in self-esteem.



Those people who have internal, stable attributions tended to become more lonely over the three month period.

The hypothesized correlations (significant and nonsignificant) are outlined in Tables 3 and 4.

Table 3

## Significant Hypothesized Correlates of Change in Loneliness

Variable	<u>r</u> =	<u>p</u> =
Initial depression	-.240	.002
Optimism	.243	.002
Internal stable attributions	-.277	.001
Change in overall network satisfaction	-.419	.001
Change in average network satisfaction	-.246	.002
Change in self-esteem	-.238	.002

Table 4

## Nonsignificant Hypothesized Correlates of Change in Loneliness

Variable	<u>r</u> =	<u>p</u> =
Change in network size	.065	.224
Change in frequency of personal contact	-.067	.216
Change in network density	.087	.192
Change in network multiplexity	-.066	.222
Actual Affiliation coping	-.095	.133
Proposed Affiliation coping	.170	.023
Proposed Active Social coping	-.014	.433
Actual Active Social coping	.053	.266
Proposed Passive coping	-.084	.162
Actual Passive coping	-.115	.089
Change in frequency of nonpersonal contact	-.159	.030

Other (nonhypothesized) correlates of change in loneliness are listed below in Table 5.

Table 5  
Nonhypothesized Correlates of Change in Loneliness

Variable	<u>r</u> =	<u>p</u> =
Initial self-esteem	.310	.001
Initial directionality	.163	.027
Initial average network satisfaction	.144	.044
Initial overall network satisfaction	.306	.001
External stable attributions	-.215	.005
External unstable attributions	-.235	.003
Internal unstable attributions	-.207	.007
Change in depression	.319	.001
Change in directionality	.141	.048
Change in optimism/success	-.386	.000

A decrease in loneliness is therefore associated with high initial self-esteem and high initial satisfaction (average and overall), initially being aggressive in contacting social network members, and becoming more aggressive in contacting members, not having external stable, external unstable, or internal unstable attributions, decreasing in depression, and being more successful in overcoming loneliness than anticipated.

### Loneliness and Demographic Variables

Although the intention was to analyze the relationship between change in loneliness and place of residence, there were so few subjects who lived in dorms (N=14) that this analysis was not possible.

### Regression

A stepwise multiple regression analysis was carried out with change in loneliness (residual score) as the dependent measure. The criteria used to determine whether or not a variable would be retained in the solution was: significant level of  $F$  to enter a variable was .05, and the significance level of  $F$  to remove a variable from the equation was .10. All hypothesized variables except satisfaction were entered into the regression in the first block, and all other variables were entered in the second block. The type of analysis used was stepwise. Although the satisfaction measures were highly correlated with loneliness, it was decided to omit them from this regression analysis because the definition of loneliness is so closely tied to satisfaction with the network of social relationships. The list of best predictors of change in loneliness (omitting satisfaction) is in Table 6. The regression analysis including satisfaction is reported in Appendix K.

Table 5

## Results of Regression on Change in Loneliness (Without Satisfaction)

Hypothesized Variables -- Step 1

<u>Variable</u>	<u>Beta Weight</u>	<u>Univariate t (p= )</u>	
initial self-esteem	+ .223	+2.36	.022
change in network size	.217	2.36	.021
actual Affiliation Coping	.359	4.26	.001
change in network multiplexity	-.231	-2.49	.016
change in network density	-.397	-3.57	.001

$$\underline{F} = 8.32, \underline{p} = .001, \underline{R} = .628, \underline{R}^2 = .394$$

Nonhypothesized Variables -- Step 2

change in optimism/success	-.386	-4.72	.001
external stable attributions	-.211	-2.49	.015
change in friend density	.271	2.48	.016
initial number of friends			
in social network	.175	2.02	.048

$$\text{Total } \underline{F} = 11.21, \underline{p} = .001, \underline{R} = .792, \underline{R}^2 = .627$$

These nine variables are, therefore, the best predictors of change in loneliness. A decrease in loneliness is best predicted by high self-esteem, a decrease in the size of social network (note that this is opposite to prediction), actual Affiliation coping, an increase in network density, having more success than anticipated in overcoming loneliness, an increase in network multiplexity, not having external stable attributions of causation, an increase in density of friendships, and an increase in the number of friends in the social network.

Data were also analyzed via multiple regression with respect to the five sets into which the data could logically be divided: demographic data, personality variables, attribution of causation of loneliness, social networks, and coping strategies. Each set was analyzed individually (not taking into account any of the other sets). Of these, personality variables ( $F=4.46$ ,  $p=.003$ ,  $R=.664$ ,  $R^2=.415$ ), and social network variables ( $F=2.03$ ,  $p=.02$ ,  $R=.806$ ,  $R^2=.65$ ) were significantly related to changes in loneliness (Appendix L and M). When the satisfaction variables were added to the personality variables, the predictability of change in loneliness did not change substantially ( $F=14.62$ ,  $p=.0000$ ,  $R=.621$ ,  $R^2=.386$ , see Appendix N).

Many of the independent variables in both the personality and the social network sets are highly correlated. This produces multicollinearity in the regression, which is a situation in which high correlates of change in loneliness produce very low beta weights in the regression analysis. An example of the effect of multicollinearity in this study is self-esteem, which correlates highly with change in loneliness ( $r=.310$ ) but has a regression beta weight of only .092 when analyzed with depression because of the high correlation between depression and self-esteem ( $r=.452$ ). A regression analysis of personality variables omitting depression variables (Appendix O) yields a much more realistic picture of the relationship between self-esteem (beta weight in this analysis of .313) and change in loneliness.

Further regression analyses examine the relationship between

change in loneliness and satisfaction with social network (Appendix P) and change in loneliness and the social network variables of the most interest in this study (excluding the satisfaction variables), outlined in Appendix Q.

#### Results of Optimism Hypotheses

The hypotheses relevant to this section are that optimism for success in overcoming loneliness is associated with an increase in the size and satisfaction of the social network. Results indicate that optimism is significantly correlated, as predicted, with both measures of satisfaction (Table 7). An additional set of variables which were correlated with optimism are listed in Appendix R.

Table 7  
Hypothesized Correlates of Optimism

Variable	$r=$	$p=$
Change in average network satisfaction	.253	.001
Change in overall network satisfaction	.414	.001
Change in network size	-.030	.364

#### Results of Attribution Hypothesis

The relevant hypothesis in this section was that internal stable attributions would be related to proposed and actual Passive coping strategies. This hypothesis was not confirmed.

Table 8

## Hypothesized Correlates of Internal Stable Attributions

Variable	<u>r</u> =	<u>p</u> =
Proposed Passive coping	.148	.031
Actual Passive coping	.102	.116

Nonhypothesized correlates of internal stable attributions are in Appendix S.

Results of Depression Hypotheses

Depression was hypothesized to be negatively correlated with optimism and Active Social coping strategies. Results indicate the expected relationship between depression and optimism, but fail to demonstrate a relationship between depression and Active coping (Table 9). Other correlates of depression are listed in Appendix T.

Table 9

## Hypothesized Correlates of Depression

Variable	<u>r</u> =	<u>p</u> =
Optimism	-.456	.462
Proposed Active Social coping	.008	.462
Actual Active Social coping	-.031	.360

Correlates of Sex of Subject

Since it is possible that males and females differ in such aspects as their degree of loneliness, personality and social network

variables, it seems important to examine any of these differences. Table 10 provides the significant (at  $p=.05$ ) correlates of sex of subject.

Table 10  
Correlates of Sex

Variable	$r=$	$p=$
Network size	.132	.047
Frequency of nonpersonal contact	-.147	.032
Interrelationships of kin and friends	-.200	.012
Number of friends in network	.184	.010
Change in network density	-.233	.009

This means that the men had larger networks, and more friends in those networks. Women had a higher frequency of nonpersonal contact with network members. The women's networks had a higher number of kin and friends who knew each other, and women tended to increase their network density over time.

#### Cross Lagged Panel Correlation

A cross-lagged panel correlation (CLPC), a type of path analysis, was performed on the data to provide some evidence for probable direction of causality. A CLPC is a technique used in quasi-experimental designs (Campbell and Stanley, 1963) to aid in ruling out plausible alternative explanations of a causal effect (Kenny, 1979). A CLPC requires correlations between at least two variables measured at two

different points in time. Although the purpose of this study was not to evaluate the status of the causality of loneliness, the design of the study is appropriate for using a CLPC to determine that one direction of causality is more likely than the other.

Before presenting the data and discussing the major points of contention found in the literature about the CLPC technique, a brief review of the technique is in order. In the two-wave, two-variable model, which is the model of consideration in the present study, there are six correlations of interest. Using an example of two variables from the present study, depression and loneliness, the correlations of interest in the CLPC technique are: two synchronous correlations (the correlation between depression at time 1 and loneliness at time 1; and the correlation between depression at time 2 and loneliness at time 2); two autocorrelations (the correlation between loneliness at time 1 and at time 2; and the correlation between depression at time 1 and at time 2); and the cross-lagged correlations (the correlation between depression at time 1 and loneliness at time 2; and the correlation between loneliness at time 1 and depression at time 2). Assuming that certain conditions are met (to be discussed shortly), causal inferences are drawn by comparing the magnitude of the cross-lagged correlations.

In a CLPC analysis, four causal hypotheses may be considered:

- (1) increases in variable A produce increases in variable B;
- (2) increases in B produce decreases in variable A; (3) increases in variable B produce increases in variable A; and (4) increases in

variable A produce decreases in variable B. Cook and Campbell (1979) state that if none of these four hypotheses can be ruled out a priori, cross-lag differences are equivocal and difficult to interpret.

In this data, three variables were sufficiently correlated with the initial and follow-up loneliness scores to make a CLPC analysis practical. These three variables are self-esteem, depression, and satisfaction with the social network.

In regard to the four possible hypotheses, two may be ruled out a priori for each of the three variables in question. An increase in depression producing a decrease in loneliness, or conversely, a decrease in loneliness producing an increase in loneliness would appear to be inconsistent with the extensive data demonstrating that loneliness and depression are strongly positively linked. Similarly, there is also extensive data demonstrating that low self-esteem is strongly linked with a high degree of loneliness. Additionally, on the basis of the conceptual link between satisfaction with social network, and the definition of loneliness, a situation of dissatisfaction producing low loneliness, or of low degrees of loneliness producing dissatisfaction with one's social network, is extremely unlikely. For each of the three variables, then, there are only two plausible hypotheses to be considered, and interpretation of findings may be clearer. These two hypotheses are: Is self-esteem/depression/social network satisfaction a causal factor in loneliness, or is loneliness a causal factor in self-esteem/depression/satisfaction?

There are two major assumptions to be met before a CLPC technique

may be used with confidence (Kenny, 1979). These are stationarity, which according to Kenny (1979) means that the variable's causal structure remains stable over time; and synchronicity, which states that both variables must be measured at the same point in time.

Of these stationarity is the key assumption (Kenny, 1979) and is the point about which there has been much discussion in the literature over the adequacy of the CLPC model in making causal interpretations. While equality of synchronous correlations has been generally held to satisfy the assumption of stationarity, Cook and Campbell (1979) point out that stable synchronous correlations are not sufficient to test the assumption if there are only two waves of measurement, as there are in the present study.

Kenny (1979), however, points out that stationarity is more plausible in cases where the lag between measurements is short. Additionally, although use of CLPC at times of rapid developmental growth is likely inappropriate (Kenny, 1979), it seems reasonable to assume that in young adults, loneliness would have the same causal structure at one point in time as it would have in the same young adults three months later.

A potential difficulty in satisfying the assumption of synchronicity, is that while the questionnaires on loneliness, self-esteem, depression and satisfaction were all given at the same points in time, they involve some retrospection, that is, subjects were asked to recall feelings and experiences. This, however, may not be a big problem in this data, since any retrospection done is only for the

recent past (i.e., the past week or so), and so while the measures may not refer to exactly the same point in time, they are close to the same time. Therefore, although there are difficulties with the use of CLPC in general and in this data, there seems to be sufficient reason for using it. Therefore, although there are difficulties with the use of CLPC, there seems to be sufficient reason for using it in an examination of the present data, since this data is considered exploratory and preliminary to a true experimental design.

The results of the CLPC are set out in Table 11. The results indicate that self-esteem, depression, and social network satisfaction are significantly more likely to be causal factors in loneliness than vice versa.

#### Summary of Results

Of the variables hypothesized to be related to changes in loneliness five out of ten were found to be correlated in the expected direction, and three more variables were found to be predictors of change in loneliness. Change in loneliness was correlated with depression, internal stable attributions, change in satisfaction, change in self-esteem, and optimism. Although coping strategies and changes in density and multiplexity were uncorrelated with change in loneliness, they were found to be predictors. Change in size of the social network was also found to be a good predictor of change in loneliness, however, the relationship was opposite to that predicted, that is, a decrease in the size of the social network predicted a decrease in loneliness.

Table 11

## Results of Cross-lagged Panel Correlations

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Time 1		Time 2
Self-esteem-----	.80-----	Self-esteem
-.31	-.23	-.43
	-.42	
Loneliness-----	.62-----	Loneliness
Z=2.54, p .005		

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Depression-----	.49-----	Depression
.41	.44	.26
		.49
Loneliness-----	.62-----	Loneliness
Z=2.1, p .015		

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Satisfaction-----	.54-----	Satisfaction
-.24	-.42	-.19
		-.52
Loneliness-----	.62-----	Loneliness
Z=-2.27, p .005		

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Optimism was found to be related to satisfaction, as hypothesized, but was unrelated to size of social network. Internal stable attributions were unrelated to proposed and actual Passive coping; the hypothesis that depression is negatively related to optimism was supported, but the hypothesis that depression is related to type of coping strategy was not.

A cross-lagged panel correlation provided evidence that self-esteem, depression, and satisfaction with network are causal factors in loneliness.

#### Discussion

Overall, the results of this study are quite encouraging. Of the ten hypothesized predictors of change in loneliness, eight were correlated with this variable or were useful in the regression analysis. As indicated by the multiple  $R$ , collectively the predictors accounted for a large portion (62%) of the variance in the change in students' loneliness. Five classes of variables (social networks, coping strategies, personality, optimism, and attributions) were identified as potentially playing a role in the time course of loneliness.

This discussion will first reflect on the contribution each kind of factor makes to changes in loneliness. Reasons for the failure of specific predictions will be offered, as well as comments on nonanticipated findings. The overall pattern of results will then be compared with previous findings, especially those obtained by Cutrona (1982). Finally, the practical implications of this research for helping people alleviate loneliness will be articulated.

Loneliness and Social Network As expected, changes in social network variables were found to be related to changes in loneliness. The strongest single predictor of a decrease in loneliness was an increase in satisfaction with one's social network. Similarly, an increase in the average satisfaction with individual members of the social network was associated with a decline in loneliness. However, this correlation was not as strong as the first. This suggests that it is the overall assessment of one's network, not the assessment of individual relationships, that is most important to loneliness.

The relationship between change in loneliness and change in frequency of contact with social network members approached significant ( $r = -.159$ ,  $p = .03$ ) for nonpersonal contact, but was very small between change in loneliness and frequency of personal contact ( $r = -.06$ ,  $p = .227$ ). Although strictly speaking, since neither measure reached significance with change in loneliness, discussion of differences between the relationships of these two frequency of contact measures and change in loneliness is unwarranted. Researchers do speak of nonsignificant trends in data, however, and although such discussions must be looked upon with scepticism, in studies such as this, where the goal is to explore the concept of loneliness and how it changes, such discussions of "trends" are often useful in pointing out new directions for future research. The trend evident in this data seems to suggest that those who decrease in loneliness increase telephone, letter, etc., contact with intimates, but do not increase face-to-face contact. The lack of association between personal contact and loneliness may reflect the

specific measures used in this study. In answering these questions, the subjects may have been thinking of face-to-face contact with acquaintances (not in the intimate social network) as well as with those people to whom they felt particularly close. As the Tulsa research (Jones, 1982) suggests, it may primarily be intimate contacts that buffer one against loneliness. It may be that phone contacts are primarily with close friends and kin with whom the subject feels close. From the Tulsa study, one would expect a change in such relationships to affect loneliness. Not only is this type of contact more important, but increases in phone contact may signify that existing friendships are becoming deeper and more intimate.

Nonface-to-face contacts can also be used to promote relationships with intimates who are not in the city. Communication over significant distances is especially apt to be between people with close emotional ties. Again, one would expect increasing such contacts to have a beneficial effect. The trend evident in the present data needs to be examined more thoroughly in future research.

Although changes in network size, density and multiplexity were not significantly correlated with change in loneliness, they were involved in the regression analysis of changes. This means that taken individually, they are not related to change in loneliness, but they are related to change in loneliness when in combination with other variables, and when in combination with these variables, they increase the predictability of change in loneliness.

#### Loneliness and Attribution

The hypothesis that those with internal stable attributions do not

decrease in loneliness was supported by the data. The same relationship, however, held for the other three types of attributions (internal unstable, external stable, and external unstable attributions of causation). In fact, in this study, it appears that subjects who felt strongly that their loneliness was due to internal or external or stable or unstable causes tended not to recover from their loneliness.

There seem to be two issues here: 1) Why are the attributions correlated with one another? and 2) Why do attributors remain lonely? To answer the first question, these results partially reflect the fact that there was no forced choice on the questionnaire between internal and external, and between stable and unstable sources of loneliness. In this study, there was a correlation of .51 between internal and external, and .64 between stable and unstable attributions of causation. One possible explanation for these paradoxical, positive correlations can be found in the attribution literature. There is evidence that people simply give more causal reasons for extreme events (Kelley, 1971; Saulnier & Perlman, 1981). Perhaps the people who assign considerable importance to any given cause of loneliness consider their situation extreme and also perceive all other causes as important, too. There are, in fact, high correlations between initial loneliness scores and all attributions measured, that is, internal unstable ( $r=.21$ ,  $p=.004$ ), internal stable ( $r=.37$ ,  $p=.001$ ), external unstable ( $r=.20$ ,  $p=.001$ ) and external stable ( $r=.30$ ,  $p=.001$ ). A new and apparently better attribution questionnaire has recently been published (Russell, 1982), which appears to do away with the problem of high

correlations between seemingly opposite attributions noted in this study, and should be considered in future research.

This leaves the question: Why to students perceiving multiple causes of their loneliness remain lonely? Perhaps it is because these students are, in fact, in the midst of a more extreme dilemma. Perhaps their perceptions contain a kernel of truth; namely, that there are many reasons producing their loneliness. If so, it is not surprising that they have more difficulty with their experience and remain lonely.

#### Loneliness and Coping Strategies

Although the correlations were nonsignificant, affiliation with Help coping was found to be a predictor of overcoming loneliness. The other two coping strategies, Active Social and Passive coping, were not related to changes in loneliness.

Affiliation with Help strategies, in combination with self-esteem, and network size, density and multiplexity, seems to be a predictor of change in loneliness. The items in this strategy include a church group; reading the Bible, praying; talking with a professor or counsellor; and doing volunteer work. An analysis of each item's relationship with change in loneliness revealed a correlation of .164 ( $p=.027$ ) between change in loneliness and talking to a prof or counsellor. Although Paloutzian and Ellison (1982) found that those with religious commitment were less lonely than others, neither of the religious coping strategies in this study was significantly correlated with loneliness.

The lack of relationship between Active Social coping strategies and changes in loneliness confirms Cutrona's (1982) findings. It appears that making an effort to meet new people and to make more friends is simply not an effective way of dealing with loneliness. There is an apparent paradox here: Social network changes are related to changes in loneliness, but trying to make new friends is not. It may be that, although these efforts are made, they are not made skillfully enough to be an effective way of dealing with loneliness. Efforts to be sociable, therefore, which are directed at finding new friends are not successful in alleviating loneliness. As the subjects increased the rate of contact they made with others, rather than waiting for friends and relatives to call them, they began overcoming their loneliness. Improving existing relationships, then, rather than finding new ones, may be the key to overcoming loneliness.

#### Loneliness and Personality Variables, Optimism

Change in loneliness was significantly related with initial depression, and initial self-esteem, as well as the changes over time in these two factors. Furthermore, students who were optimistic that they would overcome loneliness were in fact more apt to do so. Thus, those students who initially lacked self-esteem, were depressed, and who lacked optimism tended to be unsuccessful in overcoming loneliness. Those who were initially more self-assured, more optimistic, and less depressed were successful, and, furthermore, as loneliness decreased, self-esteem rose and depression declined. It is difficult to determine whether a decrease in loneliness causes increased self-esteem and less

depressed affect, or whether the converse is true. There is evidence in both directions in the case of self-esteem (Peplau, Miceli & Morasch, 1982).

As Cutrona (1982) found, optimism for success in overcoming loneliness is an important determinant for actual success. This study, in fact, indicates that not only does optimism lead to success in overcoming loneliness, but that being even more successful in overcoming loneliness than anticipated was also strongly related to actually overcoming loneliness, that is, people who were successful, perceived themselves as being even more successful than they had anticipated.

#### Comparison with Cutrona's (1982) Results

The results of the present study appear quite similar to the results of Cutrona's study, and are shown in Table 8.

Table 8

#### Comparisons with Cutrona's Results

Cutrona	Carroll
1. Increased satisfaction- important predictor	1. Same
2. Active, social coping (looking for new friends) -ineffective strategy	2. Same
3. Cognitive/attitude factors- important predictor	3. Similar, but measured via personality dimensions, optimism
4. Coping strategies- not important	4. Some types of strategies predict change in loneliness

Thus, increased satisfaction was found in both studies to be important in predicting decreased loneliness. Coping strategies aimed at meeting people at parties, etc. were found in both studies to be ineffective. Although Cutrona discussed 'cognitive/attitude variables, and the present study discussed 'personality' factors, a close examination indicates that the actual variables studied are similar. Cutrona discussed 'expectations for future relationships', the present study discusses 'optimism for success in overcoming loneliness', two very similar concepts. 'Satisfaction with one's personality' is, in Cutrona's study, a cognitive variable, however, it is conceptually very similar to self-esteem. Finally, although Cutrona found no differences in coping strategies, the present study found that one coping strategy, Affiliation with Help, was related to changes in loneliness.

#### Theoretical Implications

This study underscores the importance of examining social networks when looking at loneliness. Social networks, account for 65% of the variance of change in loneliness. This study also confirms the importance of examining personality variables, since self-esteem and depression measures alone account for 42% of the variance of change in loneliness. Thus, this study supports the view that both personality and situational factors are involved.

The study provides no conclusive evidence for any one theory of loneliness, however, as Perlman and Peplau (1982) point out, the various 'theories' of loneliness are more correctly referred to as

speculations, and at this early stage in the field's development, this type of research is useful in validating the construct of loneliness and in describing and exploring the concept.

### Practical Implications

An important aspect to the study of loneliness, particularly since it is such a universal phenomenon, relates to helping people overcome loneliness, either with the help of a therapist, or in a self-help context.

Therapy There are few therapy programs designed specifically for working with lonely clients. In this clinical work, Young (1982) has observed a set of developmental stages. These are:

1. overcoming anxiety and sadness over time spent alone,
2. engaging in activities with a few casual friends,
3. engaging in mutual self-disclosure with a trustworthy friend,
4. meeting a potentially intimate, appropriate romantic partner,
5. developing intimacy through disclosure and sexual contact, and
6. making an emotional commitment to an appropriate partner.

Young conceives of therapy as identifying the level of a particular client, then in doing away with the "cognitive, behavioral, and emotional blocks that prevent the client from mastering the next step in the hierarchy" (p.391). This hierarchy is not seen as invariant, nor is commitment to a romantic partner always seen as a desirable end point.

Rook and Peplau (1982) also advocate behavioral/cognitive strategies. They feel that work with the lonely client should focus on problems surrounding initiating, maintaining, and ending relationships. To this

end, they discuss social skills training, cognitive-behavior therapy to help clients recognize and correct self-defeating thought processes, and shyness groups to help clients initiate relationships. They advocate couples counselling, and attention to social network deficits for help in maintaining relationships, and they discuss programs for helping people deal with relationships which end because of divorce or bereavement. Two such programs have been developed by Weiss (1976 a & b), and involve groups for the separated and for the bereaved.

Results from the present study have implications for Young's (1982) and Rook and Peplau's (1982) conceptions of what is needed in the therapy of lonely people. Dealing with low self-esteem and depression would seem to be important aspects to treatment. As Rook and Peplau indicate, cognitive-behavior therapy may be an effective way of dealing with these problems. Depending on the severity of the problem, groups such as Rook and Peplau suggest may be useful. In the case of a severe depression, even if there were accompanying loneliness, the depression would, in most cases, be the target for therapy, rather than the loneliness. Another major focus of loneliness therapy would be dealing with the social network of the individual. Even though Young's major goal seems to be to help the client develop an intimate relationship with a partner, the development of friendships is equally, or perhaps more important in alleviating loneliness (Rook & Peplau, 1982). To this end, making new friends does not seem to be as important as developing the friendships which already exist (and developing better

relationships with kin). Satisfaction with the overall social network increases with satisfaction with individual members of the social network, and both lead to decreases in loneliness. To improve the social network, it is important for lonely people to begin to initiate more contact with their friends, rather than wait for their friends to contact them. Assertiveness training might be useful in this endeavor. Efforts should also be made to encourage lonely people to do a wider variety of things with their friends, and to increase the interrelationships between social network members, perhaps by arranging activities for groups of friends to engage in. To help individuals increase the intimacy of existing relationships, and to help build communication skills and empathy, social skills training is likely to be quite useful. Some researchers have found social skills training to be effective in helping people develop better relationships (Curran, 1977; Glass, Gottman & Shmurak, 1976; Gottman, Gonson & Schuler, 1976; Keller & Carlson, 1974; Martinson & Zerface, 1970; Oden & Asher, 1977).

On the basis of the results of this study, little can be said about how attributions affect changes in loneliness, however, other cognitive aspects are important. Pessimism and passivity should be discouraged, and efforts should be made to encourage optimism. Although accepting loneliness and remaining positive and cheerful does not lead to greater loneliness, these attitudes alone do not lead to a decrease in loneliness.

#### Self-Help Strategies

Little work beyond studying coping strategies has been done with respect to self-help strategies, and this literature points to few

helpful suggestions. Many of the same points made in the previous section, however, apply to self-help. Again, developing more satisfying relationships with existing friends and relatives rather than making attempts to meet new people appears to be an effective strategy. Making specific attempts to develop a denser, more multiplex, more satisfying social network; becoming more outgoing in contacting friends; and remaining optimistic; are all important aspects in overcoming loneliness.

In terms of coping strategies, the nonactive strategies do not seem to be effective; nor does trying to meet new people through social activities.

In terms of developing both therapeutic and self-help strategies for overcoming loneliness, perhaps it is now time to examine in detail exactly which steps are appropriate for which kinds of people. Small homogeneous groups may provide information about the effectiveness of specific social network and coping strategies which may be masked by using large heterogeneous lonely populations. Finally, although therapeutic strategies have received some research, it may be more important to examine self-help strategies, since only small numbers of lonely people actually seek therapy.

### Conclusions

Personality variables (self-esteem and depression), optimism for success, social network variables (density, multiplexity, satisfaction) and coping strategies (Affiliation with Help) have been demonstrated to be important in overcoming loneliness. Overcoming loneliness, therefore,

seems to require a multifaceted approach. Cognitive/emotive as well as social factors must be modified to provide a successful outcome in any endeavor to overcome loneliness.

The repeated testing of the students in this sample is encouraging in that it suggests many lonely people, by themselves, can at least partially overcome their feelings of isolation and discomfort. The results of this study are also encouraging in that they suggest leads as to which strategies may be more and less effective for overcoming loneliness. As the body of knowledge on this topic grows, we should begin to ask: Which strategies work best for which subgroups of lonely individuals? Therapists should be encouraged to develop treatment packages reflecting what is known about the phenomenon. Additionally, this knowledge would be translated into simple, practical suggestions that could be helpful for lonely laypersons.

Eventually, further research will be needed to test the effectiveness of these interventions. Thus, the cycle of knowledge leading to practice, leading to knowledge is a continuous one. Yet through this marriage of research and therapy, both parties benefit. If the present dissertation has served as a first date for a continued relationship, it has succeeded.

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Appendix A  
UCLA LONELINESS SCALE

Directions:

For the following questions you are to circle the choice that best illustrates how often each of the statements would be descriptive of you.

O represents "I often feel this way"

S represents "I sometimes feel this way"

R represents "I rarely feel this way"

N represents "I never feel this way"

- |  |         |
|--|---------|
| 1. I am unhappy doing so many things alone.                        | O S R N |
| 2. I have nobody to talk to.                                       | O S R N |
| 3. I cannot tolerate being so alone.                               | O S R N |
| 4. I lack companionship.   | O S R N |
| 5. I feel as if nobody really understands me.                      | O S R N |
| 6. I find myself waiting for people to call or write.              | O S R N |
| 7. There is no one I can turn to.                                  | O S R N |
| 8. I am no longer close to anyone.                                 | O S R N |
| 9. My interests and ideas are not shared by those around me.       | O S R N |
| 10. I feel left out.   | O S R N |
| 11. I feel completely alone.                                       | O S R N |
| 12. I am unable to reach out and communicate with those around me. | O S R N |
| 13. My social relationships are superficial.                       | O S R N |

- |   |         |
|---|---------|
| 14. I feel starved for company.             | O S R N |
| 15. No one really knows me well.            | O S R N |
| 16. I feel isolated from others.            | O S R N |
| 17. I am unhappy being so withdrawn.        | O S R N |
| 18. It is difficult for me to make friends. | O S R N |
| 19. I feel shut out and excluded by others. | O S R N |
| 20. People are around me but not with me.   | O S R N |

## Appendix B

## DEMOGRAPHIC CHARACTERISTICS

1. Age: \_\_\_ years
2. Gender: \_\_\_ female \_\_\_ male
3. Year in university: \_\_\_\_\_
4. Your ethnic/racial background: (You may mark more than one)
 

___ Asian	___ American	___ Canadian
___ Black	___ Caucasian	___ Native Indian
___ East Indian	___ Other (please specify _____)	
5. Where do you currently live?
 

___ University Residence
___ Parent's home
___ With other relatives
___ Apartment or house (not with relatives)
___ Other (please specify _____)
6. Do you live:
 

___ alone
___ with relatives
___ with one other person (not a relative)
___ with two or more people (not relatives)
___ other (please specify _____)
7. Are you:
 

___ single	___ divorced	___ engaged
___ married	___ separated	___ going steady
8. How long have you lived in Winnipeg? \_\_\_\_\_

## Appendix C

## DEPRESSION SCALE

Directions: Below is a list of the ways you might have felt or behaved. Please indicate how often you have felt this way during the past week.

1. rarely or none of the time (less than 1 day)
2. some or a little of the time (1-2 days)
3. occasionally or a moderate amount of time (3-4 days)
4. most or all of the time (5-7 days)

- 
- \_\_\_ I was bothered by things that usually don't bother me.
- \_\_\_ I did not feel like eating; my appetite was poor.
- \_\_\_ I felt that I could not shake off the blues even with help from my family or friends.
- \_\_\_ I felt that I was just as good as other people.
- \_\_\_ I had trouble keeping my mind on what I was doing.
- \_\_\_ I felt depressed.
- \_\_\_ I felt that everything I did was an effort.
- \_\_\_ I felt hopeful about the future.
- \_\_\_ I thought my life had been a failure.
- \_\_\_ I felt fearful
- \_\_\_ My sleep was restless.
- \_\_\_ I was happy.
- \_\_\_ I talked less than usual.
- \_\_\_ I felt lonely.

\_\_\_ People were unfriendly.

\_\_\_ I enjoyed life.

\_\_\_ I had crying spells.

\_\_\_ I felt sad.

\_\_\_ I felt that people dislike me.

\_\_\_ I could not get "going".

Appendix D  
SELF-ESTEEM SCALE

Directions: Please indicate your agreement or disagreement with the following statements.

1. strongly agree
2. agree
3. disagree
4. strongly disagree

-----  
 I feel that I'm a person of worth, at least on an equal plane with others.

I feel that I have a number of good qualities.

All in all, I am inclined to feel that I am a failure.

I am able to do things as well as most other people.

I feel I do not have much to be proud of.

I take a positive attitude toward myself.

On the whole, I am satisfied with myself.

I wish I could have more respect for myself.

I certainly feel useless at times.

At times I think I am no good at all.

## Appendix E

## ATTRIBUTION QUESTIONNAIRE

How much has each of the following factors contributed to your being lonely?

		not important			very important	
1. Not enough opportunities to meet people *(EU)	1	2	3	4	5	
2. My being too shy. *(IU)	1	2	3	4	5	
3. My belief that there's little chance of finding someone. *(EU)	1	2	3	4	5	
4. My personality. *(IS)	1	2	3	4	5	
5. My lack of luck in meeting people. *(EU)	1	2	3	4	5	
6. My fear of rejection. *(IS)	1	2	3	4	5	
7. My always being in impersonal situations with too many people.	1	2	3	4	5	
8. Other people don't try to make friends. *(ES)	1	2	3	4	5	
9. Not knowing what to do to start a relationship. *(IU)	1	2	3	4	5	
10. My not trying hard enough to start a relationship. *(IU)	1	2	3	4	5	
11. My physical appearance. *(IS)	1	2	3	4	5	
12. Other people are afraid to make friends. *(ES)	1	2	3	4	5	
13. Other people have their own groups and aren't interested in meeting me. *(ES)	1	2	3	4	5	
14. Have your recent experiences with loneliness been primarily due to something about you, or are they due to something about the situation you find yourself in?						
something about me	1	2	3	4	5	something about the situation

15. Have your recent loneliness experiences been caused by things that change readily or by things that are relatively unchanging?

things that change    1    2    3    4    5    things that are unchanging

\* IU Internal Unstable attribution

IS Internal Stable attribution

EU External Unstable attribution

ES External Stable attribution

## Appendix F

## SOCIAL NETWORK QUESTIONNAIRE

- A. Please list below by initials all people who are personally important to you and those people you regard as friends. For the purposes of this questionnaire, a 'friend' is someone you like, someone with whom you enjoy doing things, and/or someone with whom you feel comfortable discussing personal matters. Also include relatives you feel close to, and who are important to you. You will also be asked to rate each of these people on the following:

Satisfaction - Please rate your satisfaction with the relationship you have with this person on a scale of 1 to 6 with  
1 being not at all satisfied  
6 being completely satisfied

Directionality - Please rate the directionality on a scale of 1 to 5 with:

1 meaning that you initiate all or almost all contact with this person

3 meaning that you initiate as much contact with this person as (s)he does with you

5 meaning that this person initiates all or almost all contact with you.

	initials	satisfaction	directionality
1.	_____	_____	_____
2.	_____	_____	_____
3.	_____	_____	_____
4.	_____	_____	_____

(and so on to 25)



## Appendix F - Continued

1. Please check off the activities you usually engage in with this person when you are together (you may check off as many as you wish).

going for coffee

going to the pub or a bar

going to sports events

going shopping

eating meals together

engage in sports (for example, handball, playing tennis, etc.)

go to movies

go to plays

go to concerts

go to socials or parties

go to the same classes

study together

employed at the same place

engage in hobbies together

go to church

travel, take vacations together

other (please list)

2. How many times in a 2-week period do you typically have personal (face-to-face) contact with this person?

every day

4-7 times

less than once

8-10 times

1-3 times

## Appendix F - Continued

3. How many times in a 2-week period do you typically have other kinds of contact with this person, with letters, telephone calls, etc?

\_\_\_ every day

\_\_\_ 4-7 times

\_\_\_ less than once

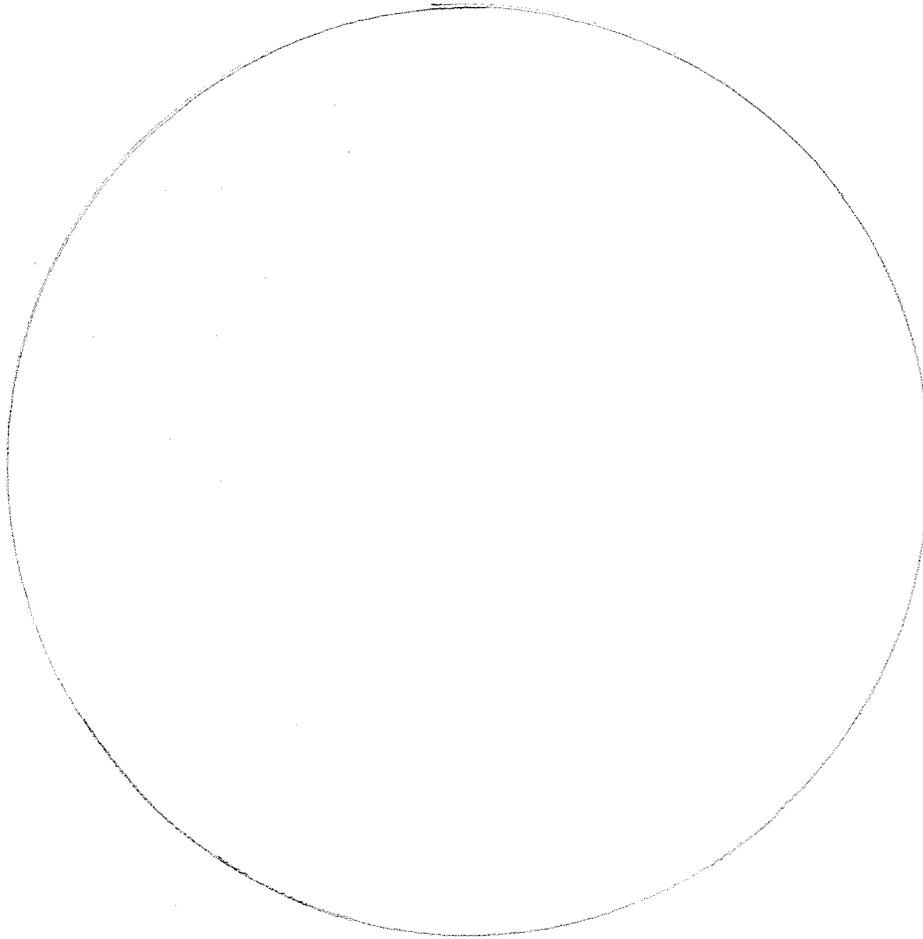
\_\_\_ 8-10 times

\_\_\_ 1-3 times

Please arrange all people listed in question A on the lines around this circle.

KIN

FRIENDS



Draw lines connecting all those people who know each other, that is, draw connecting lines between those friends who know each other; between those relatives who know each other; and between the relatives and friends who know each other.

## Appendix G

## COPING STRATEGIES QUESTIONNAIRE

Please check off the activities or strategies you intend to use in overcoming any feelings of loneliness you may have.

- try to meet new people in class
- join a club or fraternity
- get involved in athletic activities
- find hobbies or interests you can engage in by yourself
- go to socials
- go to the pub
- join a church group
- try to understand yourself and others better by taking psychology
- try to be more outgoing and aggressive in finding friends
- keep a positive attitude -- things are bound to get better
- move into residence, or room and board, or an apartment with others
- read the Bible, pray
- try to look on the bright side of things
- try to enjoy being on your own
- be patient and wait -- loneliness is bound to pass
- do volunteer work
- try to keep in touch with old friends
- write or phone home, and/or go home on the weekends
- try to find a romantic partner
- talk to a prof or counsellor
- try to convince yourself that you aren't really lonely
- try to adjust to not having as many friends as you would like
- other (please list)

On followup instructions read:

Please check off the activities or strategies you have used in the past three months to overcome feelings of loneliness. Subjects were also asked to indicate how often they had used a particular coping strategy.

## Appendix H

## OPTIMISM/SUCCESS QUESTION

How successful do you feel you will be in overcoming your feelings of loneliness?

not at all successful	1	2	3	4	5	6	completely successful
--------------------------	---	---	---	---	---	---	--------------------------

On followup, subjects were asked:

How successful do you feel you have been in overcoming your feelings of loneliness?

not at all successful	1	2	3	4	5	6	completely successful
--------------------------	---	---	---	---	---	---	--------------------------

Appendix I  
PRE-POST CORRELATIONS OF VARIABLES

Variable	<u>r</u> =	<u>p</u> =
Network size	.709	.001
Network direction	.300	.001
Overall satisfaction with network	.466	.001
Multiplexity	.707	.001
Frequency of personal contact	.634	.001
Frequency of nonpersonal contact	.484	.001
Network density	.579	.001
Active Social coping	.572	.001
Affiliation coping	.523	.001
Passive coping	.367	.001
Self-esteem	.800	.001
Depression	.490	.001

## Appendix J

## CORRELATION MATRIX OF PASSIVE 1 AND PASSIVE 2

---

Item	Correlation(Probability Level)	
	Positive Attitude	See Bright Side
Enjoy being on own	.122 (.017)	.241 (.001)
Be patient and wait	.098 (.045)	.189 (.001)
Convince self not lonely	.133 (.011)	.102 (.039)
Try to adjust	.013 (.408)	.089 (.062)

---

## Appendix K

## CHANGE IN LONELINESS REGRESSION (WITH SATISFACTION)

Hypothesized Variables -- Step 1

<u>Variable</u>	<u>Beta Weight</u>	<u>Univariate t</u>	<u>Significance</u>
Change in overall satisfaction	-.437	-5.43	.000
Initial self-esteem	-.264	-3.21	.002
Change in network size	.253	3.20	.002
Change in self-esteem	.210	2.69	.009
Initial overall satisfaction	.318	3.70	.001
Change in total density	-.223	-2.73	.008
Change in Affiliation coping	.229	2.94	.005

$\underline{F}=12.86$ ,  $\underline{p}=.000$ ,  $\underline{R}=.792$ ,  $\underline{R}^2=.628$

Nonhypothesized Variables -- Step 2

Change in frequency of telephone contact	-.140	-1.76	.083
Length of time in Winnipeg	.185	2.39	.019
Change in optimism/success	-.174	-2.01	.046

Total  $\underline{F}=12.52$ ,  $\underline{p}=.000$ ,  $\underline{R}=.824$ ,  $\underline{R}^2=.680$

## Appendix L

## CHANGE IN LONELINESS/PERSONALITY VARIABLES REGRESSION

<u>Variable</u>	<u>Beta Weight</u>	<u>Univariate t</u>	<u>(p= )</u>
change in depression	.294	2.37	.020
change in self-esteem	-.068	- .57	.572
initial depression	-.218	-1.42	.160
initial self-esteem	.092	.58	.559

$\underline{F}=.446$ ,  $\underline{p}=.003$ ,  $\underline{R}=.664$ ,  $\underline{R}^2=.415$

## Appendix M

REGRESSION ANALYSIS OF CHANGE IN LONELINESS AND THE SET OF SOCIAL  
NETWORK VARIABLES.

Variable	Beta Weight	Significance of t
change in kin-friend density	.064	.819
initial kin-friend density	-.155	.576
initial personal contact	.198	.179
number of disliked people	.187	.194
initial multiplexity	.057	.682
initial number of close friends	.171	.267
change in number of close friends	.127	.725
change in friend density	.255	.253
change in personal contact	-.050	.950
initial directionality	.172	.171
change in multiplexity	-.171	.793
initial friend density	-.127	.570
initial overall satisfaction	.329	.048
change in size	.765	.170
change in overall satisfaction	.450	.002
initial number of friends	.268	.364
initial number of kin	-.003	.983
number of intimates in Winnipeg	-.054	.740
initial nonpersonal contact	.165	.789
initial average satisfaction	-.015	.929
change in number of intimates in Winnipeg	-.068	.677
change in density	-.525	.201
initial network size	-.753	.222
initial density	.335	.413

$F=2.03$ ,  $p=.02$ ,  $R=.806$ ,  $R^2=.65$

## Appendix N

## CHANGE IN LONELINESS/PERSONALITY AND SATISFACTION REGRESSION

Variable	Beta	<u>t</u>	<u>p</u>
Change in satisfaction	-.461	-5.62	.001
Self-esteem	.222	2.59	.011
Initial satisfaction	.239	2.79	.006
Change in self-esteem	-.169	-2.06	.042

F=14.62, p=.0001, R=.621, R<sup>2</sup>=.386

## Appendix 0

CHANGE IN LONELINESS/SELF-ESTEEM AND RESIDUAL SELF-ESTEEM  
REGRESSION

Variable	<u>Beta</u>	<u>t</u>	<u>p</u>
Initial self-esteem	.313	2.72	.008
Residual self-esteem	-.194	-1.71	.092

$F=7.41$ ,  $p=.008$ ,  $R=.313$ ,  $R^2=.098$

\*Residual self-esteem doesn't add to the variance accounted for by initial self-esteem.

## Appendix P

CHANGE IN LONELINESS/NETWORK SATISFACTION, RESIDUAL SATISFACTION  
REGRESSION

Variable	Beta	<u>t</u>	<u>p</u>
Residual satisfaction	-.466	-4.52	.001
Initial satisfaction	.300	2.91	.005

F=13.7, p=.001, R=.539, R<sup>2</sup>=.291

## Appendix Q

## CHANGE IN LONELINESS/HIGHLY CORRELATED NETWORK VARIABLES REGRESSION

Variable	Beta	<u>t</u> =	<u>p</u> =
Change in network size	.190	2.00	.04

F=4.02, p=.04, R=.198, R<sup>2</sup>=.039

Variables which were entered into the regression but which did not add significantly to the variance accounted for by change in size were:

Frequency of personal contact

Frequency of nonpersonal contact

Initial size of network

Network Density

Change in network density

Change in density of friends in the network

## Appendix R

## NONHYPOTHESIZED SIGNIFICANT CORRELATES OF OPTIMISM

<u>Variable</u>	<u>Correlation</u>	<u>Significance</u>
initial loneliness	-.317	.000
initial self-esteem	.501	.000
initial depression	-.456	.000
initial directionality	-.176	.013
initial frequency of nonpersonal contact	.147	.033
change in self-esteem	-.170	.023
change in average satisfaction	-.188	.014
change in overall satisfaction	-.169	.025
actual Positive Outlook	-.173	.022

High initial optimism, therefore is correlated with low loneliness, high self-esteem, low depression, being aggressive in making contact with friends, high average and overall satisfaction, a large amount of telephone contact with social network, a lowering of loneliness over time, an increase in self-esteem, an increase in rated and overall satisfaction with social network, and using more Positive Outlook coping strategies than anticipated.

## Appendix S

## CORRELATES OF INTERNAL STABLE ATTRIBUTIONS

<u>Variable</u>	<u>Correlation</u>	<u>Significance</u>
initial loneliness	.367	.000
initial self-esteem	-.456	.000
initial depression	.371	.000
initial average satisfaction	-.170	.015
initial overall satisfaction	-.308	.000
optimism	-.402	.000
initial number of friends	-.153	.026
change in loneliness	-.277	.000
change in depression	-.148	.041
change in self-esteem	.268	.001
change in average satisfaction	.227	.003
change in overall satisfaction	.152	.039
change in number of close friends	.143	.047
change in frequency of personal contact	.198	.101
change in frequency of nonpersonal contact	.163	.028
change in optimism/success	.169	.024

This means that internal stable attributions are correlated with initial loneliness, low initial self-esteem, initial high depression, initial low satisfaction with social network, low optimism, fewer friends in the initial social network, an increase in loneliness and depression, a decrease in self-esteem and satisfaction, a decrease in the number of close friends, a decrease in contact with social network, and less success in overcoming loneliness than expected.

## Appendix T

## NONHYPOTHESIZED CORRELATES OF DEPRESSION

<u>Variable</u>	<u>Correlation</u>	<u>Significance</u>
initial loneliness	.406	.000
initial self-esteem	-.541	.000
initial network size	-.232	.002
initial average satisfaction	-.168	.016
initial overall satisfaction	-.303	.000
initial network density	.149	.050
initial number of friends	-.261	.000
change in number of close friends	.195	.011
change in kin-friend density	-.158	.050
actual Positive Outlook	-.169	.023

This means that depression is associated with greater loneliness, less initial self-esteem, a smaller initial social network, initially low satisfaction, an initially dense network, low optimism, fewer friends in the initial social network, an increase in loneliness, a decrease in the number of close friends, an increase in the number of kin and friends who know each other and less tendency to engage in Positive Outlook coping strategies.

## Appendix U

## MEANS AND STANDARD DEVIATIONS OF INITIAL AND FOLLOWUP SCORES

	<u>Initial Scores</u>		<u>Followup Scores</u>	
	Mean	S.D.	Mean	S.D.
loneliness	50	5.9	48	9
age	20	4.8		
self-esteem	21	4.9	20	5
depression	40	10.1	38	12
size of social network	13	5.2	14	6
average satisfaction with network	3.9	.7	4.1	.7
overall satisfaction with network	3.5	1.2	3.9	1
number of intimates in Winnipeg	4.1	1.8	4.3	1.7
average number of activities/week	5.4	1.8	5.8	1.8
average personal contacts/week	5.7	3.1	5.8	3.1
average nonpersonal contacts/week	3	2.3	3.3	2.2
total density	47	24	47	21
friend density	45	29	44	27
kin-friend density	37	28	38	26
optimism	4.2	1.1	4.2	1.1
number of friends	9	5	10	5
number of kin in network	5	5	5	3
Active Social coping strategies	3	1.7	2.8	1.6
Affiliation coping strategies	.6	.9	.5	.8
Passive Acceptance coping strategies	1.7	1.2	1.7	1.2
Positive Outlook coping strategies	1.6	.7	1.5	.7

## Appendix V

## FREQUENCIES OF CATEGORICAL VARIABLES

Variable	Category	Frequency
sex	female	90
	male	72
-----		
where subject lives	residence	14
	parents' home	104
	other relatives	10
	apartment or house (not with relatives)	34
-----		
with whom subject lives	alone	16
	with relatives	127
	1 other person (not a relative)	10
	2 or more others (not relatives)	9
-----		
marital status	single	132
	married	8
	divorced	3
	separated	2
	engaged	1
	going 'steady'	16
-----		

## Appendix V - Continued

Variable	Category	Frequency
length of time in Winnipeg	1-6 months	33
	6-12 months	4
	12-24 months	6
	longer	117
	not living in Winnipeg	1
-----		
initial directionality	1-subjects initiate all contacts	3
	2	22
	3-equal initiation	119
	4	15
	5-others initiate all contact	2
-----		
followup directionality	1	0
	2	20
	3	110
	4	9
	5	1
-----		
initial number of close friends in Winnipeg	3	1
	4	2
	5	5
	6	154
-----		

## Appendix V - Continued

Variable	Category	Frequency
followup number of close friends in Winnipeg	3	2
	4	0
	5	4
	6	134
-----		
number of disliked people in network	0	119
	1	18
	2	14
	3	1
	4	4
	5 or more	6
-----		