ANOREXIA NERVOSA AND SOCIAL NETWORK

By

M. WESLEY BUCH

B.A., University of British Columbia, 1976

A THESIS SUBMITTED IN PARTIAL FULFILLMENT OF
THE REQUIREMENTS FOR THE DEGREE OF
MASTER OF ARTS

in

THE FACULTY OF GRADUATE STUDIES
(Department of Counselling Psychology)

We accept this thesis as conforming to the
required standard

THE UNIVERSITY OF BRITISH COLUMBIA
July 1988

© M. Wesley Buch, 1988
In presenting this thesis in partial fulfilment of the requirements for an advanced degree at the University of British Columbia, I agree that the Library shall make it freely available for reference and study. I further agree that permission for extensive copying of this thesis for scholarly purposes may be granted by the head of my department or by his or her representatives. It is understood that copying or publication of this thesis for financial gain shall not be allowed without my written permission.

Department of Counselling Psychology

The University of British Columbia
1956 Main Mall
Vancouver, Canada
V6T 1Y3

Date September 8, 1988
ABSTRACT

Aspects of the social networks of anorexic (N=34) and non-anorexic (N=35) women were examined according to hypotheses derived from social network theory and research and from the literature pertaining to anorexia nervosa. The nature of the social network was discussed from the perspective of Pattison's (1977a) psychodynamic psychosocial systems theory. Subjects were compared on selected social network variables using the Pattison Psychosocial Inventory (PPI). The California Psychological Inventory (CPI) and the Family Environment Scale (FES) were used to investigate the contribution of certain personality and environmental variables to social network variation. Statistical analyses of the difference between means were tested using the Hotelling's $T^2$ procedure followed by univariate t-tests. Analyses of proportions were performed using z-tests. The Bonferroni inequality was employed in order to reduce the probability of Type I error when determining the statistical significance of the univariate t-tests and z-tests.

The null hypothesis was accepted for the majority of the results. Only one social network variable, total network size, significantly differentiated anorexic and control subjects, although several other variables were approaching statistical significance. Various contrasting explanations of the results were discussed. For example, it is possible that anorexia nervosa is not a homogeneous or singular nosological entity and does not inevitably result in predictable and largely invariant
social impairment. It was proposed that recent typologies of anorexia nervosa may yield significant between-group variation in social network variables. Furthermore, social networks may vary with the degree of severity and/or chronicity of the anorexic condition.

The correlational analyses produced several statistically significant results. Regarding environmental (FES) variables, both cohesion and independence were positively correlated with support from family network members. Contrary to hypotheses, however, interpersonal effectiveness (CPI) achieved only weak and non-significant correlations with social network size and support.
# TABLE OF CONTENTS

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>ABSTRACT</td>
<td>ii</td>
</tr>
<tr>
<td>LIST OF TABLES</td>
<td>vii</td>
</tr>
<tr>
<td>LIST OF FIGURES</td>
<td>viii</td>
</tr>
<tr>
<td>ACKNOWLEDGEMENTS</td>
<td>ix</td>
</tr>
<tr>
<td>CHAPTER 1 – INTRODUCTION</td>
<td>1</td>
</tr>
<tr>
<td>Definitions</td>
<td>2</td>
</tr>
<tr>
<td>Etiology</td>
<td>3</td>
</tr>
<tr>
<td>A psychodynamic psychosocial systems perspective</td>
<td>4</td>
</tr>
<tr>
<td>NATURE OF THE PROBLEM</td>
<td>6</td>
</tr>
<tr>
<td>Early impressionistic research</td>
<td>6</td>
</tr>
<tr>
<td>Recent empirical research</td>
<td>8</td>
</tr>
<tr>
<td>A limitation of current empirical research</td>
<td>11</td>
</tr>
<tr>
<td>Social network analysis</td>
<td>12</td>
</tr>
<tr>
<td>CHAPTER 2 – REVIEW OF THE LITERATURE</td>
<td>14</td>
</tr>
<tr>
<td>The social context and psychiatric distress</td>
<td>15</td>
</tr>
<tr>
<td>The social network paradigm</td>
<td>16</td>
</tr>
<tr>
<td>Social network as social context</td>
<td>18</td>
</tr>
<tr>
<td>Social network: objective and subjective perspectives</td>
<td>18</td>
</tr>
<tr>
<td>The personal social network</td>
<td>20</td>
</tr>
<tr>
<td>The personal social network as zones of intimacy</td>
<td>21</td>
</tr>
<tr>
<td>The intimate psychosocial network</td>
<td>22</td>
</tr>
<tr>
<td>Characteristics of the psychosocial network</td>
<td>24</td>
</tr>
</tbody>
</table>
Social networks: personal and environmental determinants ........................................... 31
Normative social networks .......................................................................................... 35
Social networks and mental health ............................................................................. 38
Social networks and psychiatric distress ................................................................... 40
Studies of psychiatric populations .............................................................................. 41
Comparative studies of non-psychotic (neurotic) psychiatric populations and their social networks ............................................................. 44
Comparative studies of anorexic women and their social networks ......................... 53
Recapitulation of the problem .................................................................................. 58
Hypotheses and a summary of their theoretical rationale ........................................... 59

CHAPTER 3 - METHODOLOGY .................................................................................. 68
Purpose of the Study ................................................................................................. 68
Sample ..................................................................................................................... 68
Data Collection Procedure ....................................................................................... 70
Instrumentation .......................................................................................................... 70
The Pattison Psychosocial Inventory ........................................................................ 70
The California Psychological Inventory .................................................................... 74
The Family Environment Scale ................................................................................ 77
Method of Analysis .................................................................................................. 78

CHAPTER 4 - RESULTS .............................................................................................. 80
Demographic Data Analysis ..................................................................................... 80
Results of Primary Data Analysis by Hypothesis ...................................................... 82
Summary of Results .................................................................................................. 98
CHAPTER 5 — DISCUSSION

Evaluation of Results of Demographic Analyses

Evaluation of Results of Primary Data Analyses

Limitations of the Study

Implications for Social Network, Theory, Therapy, and Research

Implications for Anorexia Research

Conclusion

FOOTNOTES

BIBLIOGRAPHY
# LIST OF TABLES

Table 1. Types of Social Networks .................................. 19
Table 2. Comparisons of the Social Network Size of Anorexic and Control Subjects .......... 83
Table 3. Comparisons of Identification of Specific Network Members by Anorexic and Control Subjects .......... 84
Table 4. Comparisons of Frequency of Contact in the Social Networks of Anorexic and Control Subjects .......... 85
Table 5. Comparisons of High Contact Frequency Relations in the Social Networks of Anorexic and Control Subjects .......... 87
Table 6. Comparisons of Ambivalent or Negative Relations in the Social Networks of Anorexic and Control Subjects .......... 89
Table 7. Comparisons of the Interactional and Functional Ratings of Parents in the Social Networks of Anorexic and Control Subjects .......... 90
Table 8. Comparisons of the High Frequency of Support Relations among the Social Networks of Anorexic and Control Subjects .......... 93
Table 9. Comparisons of the High Frequency of Reciprocal Support Relations among the Social Networks of Anorexic and Control Subjects .......... 94
Table 10. Cross-correlations between 13 Social Network Variables and 3 Trait Variables (Anorexic Subjects Only) .......... 97
Table 11. Comparisons of the Social Networks of Abstaining and Bulimic Anorexic Subjects .......... 110
LIST OF FIGURES

Figure 1. Zones of Subjective Social Network ............ 21
ACKNOWLEDGEMENTS

In a thesis about social networks, it is particularly fitting that I express my deep appreciation to the members of my own social network who have been so helpful over the course of this study. These people are as follows.

PAULA BUCH - my wife and closest companion: Thank you for 'putting me through school' and for your willingness to proofread and critique the several drafts of this thesis. Thank you most of all for your gentle patience, understanding, and flexibility, especially during those times when I was most obsessed with my research.

REV. MARK & HILDA BUCH - my parents: Thank you for your encouragement and supportiveness from the very beginning of this research project.

DR. JOHN FRIESEN - the chairman of my thesis committee: Thank you for your direction at each stage of my research, and most of all for 'sowing seeds' in my life that have captured my imagination.

DR. LORETTE WOOLSEY - a member of my thesis committee: Thank you for your willingness to participate as a committee member during a season when you were particularly pressed for time.

DR. RALPH HAKSTIAN - consulting statistician: Thank you for the patient explanations and humour that did much to relieve my initial 'stats-phobia.'

JAMIE & NANCY RICHARDSON - my friends: Thank you for your emotional and practical support, and those marvelous distractions, particularly our sailing trips together.

PADDY DUCKLOW - my therapy supervisor and friend: Thank you for being the first to see potential in me as a therapist and researcher, and for helping to develop that potential.

THE CONGREGATION OF RICHMOND CHRISTIAN FELLOWSHIP - Thank you for the gift of a paid month-long sabbatical for research purposes.
A Canadian pediatrician says anorexia nervosa is reaching epidemic levels among Canadian teenagers and it is starting to affect adolescents as young as twelve. Dr. Sujatha Lena says that the incidence of anorexia nervosa among teenage girls in this country has doubled in the last ten years and now affects one in a hundred (News Item, Sept. 10, 1986, Radio Station CJOR)

There is mounting evidence that the incidence and prevalence of anorexia nervosa is increasing (Bemis, 1978; Leichner, 1985; Leichner et al., 1984; Mitchell & Eckert, 1987; Russell, 1985b; Szmukler et al, 1986). For example, Herzog & Copeland (1985) report that the incidence of anorexia nervosa has doubled over the past two decades. Piktel (1986) suggests that the prevalence of severe cases of anorexia nervosa may be as high as 1/200 among school girls, and 1/100 among girls over 16 years of age. There is some evidence of a trend towards earlier onset of anorexia nervosa (eg., Lena et al, 1985; Irwin, 1984), and Russell (1985a) has recently discussed premenarchal anorexia nervosa and its sequelae. Feldman et al (1988), in a recent review of children's attitudes toward thinness and fatness, found that girls acquire prevailing cultural values of beauty and thinness considerably before puberty; indeed, "even nonobese girls as young as 5 or 6 years of age may be concerned about their body image and have
readily expressed their fears of gaining weight" (pp. 190-191)!

Unfortunately, in spite of the growing awareness of anorexia nervosa among mental health professionals and the general public, the anorexic syndrome continues to be lethal. For example, several studies by Hsu and his associates (1979, 1980) show that the mortality rate for anorexia nervosa is between 14% and 21%. Herzog & Copeland (1985) claim that morbidity and mortality rates in anorexia nervosa are among the highest recorded for psychiatric disorders, and point to life-threatening medical complications related to starvation. It is hardly surprising therefore that anorexia nervosa has been a major public health concern and the subject of extensive research during the past decade.

**Definitions.** Anorexia nervosa has been conceptualized as a discrete syndrome (eg., Bruch, 1973; Crisp, 1970, 1977; Garfinkel & Garner, 1982), a continuum of behaviors (eg., Nylander, 1971; Vandereycken & Meermann, 1984), a spectrum of eating disorders (Andersen, 1983), and a variant of other psychiatric disorders, such as mood disorders (Cantwell et al, 1977), and obsessive-compulsive disorder (Rothenberg, 1986). Efforts continue among researchers to precisely define anorexia nervosa with substantial reliability and validity. One important development in this endeavour has been the publication of the DSM III (1980). The diagnostic criteria for anorexia nervosa proposed by the DSM III, and used in this study, are as follows:
A. Intense fear of becoming obese, which does not diminish as weight loss progresses.

B. Disturbance of body image, e.g., claiming to "feel fat" even when emaciated.

C. Weight loss of at least 25% of original body weight or, if under 18 years of age, weight loss from original body weight plus projected weight gain expected from growth charts may be combined to make the 25%.

D. Refusal to maintain body weight over a minimal weight for age and height.

E. No known physical illness that would account for the weight loss (p. 69).

Criticisms of the DSM III diagnostic criteria for anorexia nervosa have been reviewed elsewhere (Powers & Fernandez, 1984). The DSM III has been recently revised (DSM III-R, 1987), although the only significant change to the diagnostic criteria for anorexia nervosa is the addition of primary or secondary amenorrhea.

**Etiology.** Anorexia nervosa has been studied from various biological, psychological and sociocultural perspectives, and a variety of etiological factors have been proposed, such as genetic predisposition, onset of pubertal hormonal activity, vulnerable personality, family organization and interactional patterns, major life change, upper middle class status, and societal pressure for extreme thinness (Andersen, 1985). Given the number and diversity of these proposals, it is hardly surprising that some researchers have espoused a multidimensional approach to the etiology and treatment of the
anorexic syndrome (e.g., Bemis, 1978; Garfinkel & Garner, 1982; Katz, 1985; Piazza et al, 1980; Vandereycken & Meermann, 1984). A multidimensional approach affirms a recognition of considerable currency among researchers since the very beginning of medical interest in anorexia nervosa: the expression of the anorexic syndrome has its roots, in part, in the social milieu of the individual (Grigg, 1986; Norris & Jones, 1979; Sheppy, 1984). What is clearly needed, however, is an over-arching theory that links social and individual dimensions of anorexia nervosa and posits mechanisms whereby social variables can be translated into the specific features of the anorexic syndrome.

A psychodynamic psychosocial systems perspective. Of particular interest to this study is the psychodynamic psychosocial systems perspective espoused by Pattison and his colleagues in their effort to empirically define the personal psychosocial network (discussed in Chapter 2). Pattison (1977a) views human behaviour as the product of an interaction between individual psychology and the social context, and hence uses the term psychosocial to label the system of behaviour. He has attempted to empirically define the social context in terms of those people who are related to the individual on the basis of both interaction and valued importance. Such people comprise the intimate psychosocial network, the psychodynamic social system that represents the primary social matrix of the individual and the primary social unit for social behaviour. Pattison further
suggests that the psychosocial network, consisting of five to six people in each subgroup of family, relatives, friends, neighbors, and work-social contacts, is the functional kinship group of the individual, the modern replacement of the blood-kin group and a concept that has implications for who to treat in therapy.

Psychodynamic psychosocial systems theory has several important features. First, it is rooted in a venerable theoretical tradition (psychodynamic psychology) that has accumulated a substantial literature concerning anorexia nervosa. Second, it affirms the individual as a social actor, a theoretical issue that continues to be debated in the literature of family systems theory (Nichols, 1987; Norris & Jones, 1979). Third, it implies that interactional patterns play a co-determining role in the etiology and maintenance of eating disorders, as does family systems theory, but also offers a variety of mechanisms (intrapsychic) whereby these interactional patterns are translated into the specific features of the anorexic syndrome, such as altered self-perceptions, desire for thinness, and amenorrhea. Recent object relations formulations of anorexia nervosa are an especially noteworthy source in this regard (eg., Bruch, 1973, 1977; Masterson, 1977; Ross, 1977; Selvini-Palazzoli, 1974; Sours, 1974, 1980).
The early literature concerning anorexia nervosa has yielded such a consistent profile of the social context of the anorexic patient as to become stereotypic. However, this profile is largely based upon clinical-impressionistic data, and, as is often the case in the progression of science in any knowledge frontier, has been challenged by recent empirical studies particularly from family interactional research.

**Early impressionistic research.** The early literature concerning anorexia nervosa provides a general profile of the immediate social milieu of the anorexic patient derived largely from psychodynamic and family therapy research. This research is largely limited to clinical impressions of the anorexic and her family.

Psychodynamic research commonly depicts the family relationships of the anorexic patient as comprised of an over-controlling, intrusive, and domineering mother, and a passive, ineffectual father (for a review, see Bemis, 1978; Garfinkel & Garner, 1982). The family is usually described as overly close and overly involved in one another's lives, with the anorexic showing a dependent and immature attachment to her parents which is thought to interfere with the development of adolescent identity and autonomy (eg., Kalucy et al, 1977; Mintz, 1980; Norris & Jones, 1979). A similar family profile has emerged from early family systems research. For example, Minuchin et al
(1978) suggest that families with a child who has psychosomatic symptomatology show a family organization pattern based upon four characteristics: enmeshment, rigidity, over-protectiveness, and lack of conflict resolution. The tendency toward unusually close intrafamilial dependency has also been found in a number of demographic studies of anorexic populations (Kog, Pierloot, & Vandereycken, 1983).

Furthermore, the anorexic is typically described as being socially isolated (e.g., Crisp, 1980; Dally & Gomez, 1979; Garfinkel & Garner, 1982; Jones, 1981; Neuman & Halvorson, 1983), often having only one short-term friend at a time (Bruch, 1977). For example, Garfinkel & Garner (1982) suggest that most anorexic girls lose interest in their friends early in their dieting activities with the following results:

By the time the weight loss has progressed to the point of medical intervention, the anorexic may be totally isolated. This isolation results in loneliness and a sense of social inadequacy (p. 8).

This profile of peer relations has been found to be especially characteristic of restricting anorexics; thus in their retrospective study of 193 bulimic and restricting anorexic patients, Garfinkel & Garner (1982) found that less than one-fifth of the restricting anorexics were involved in social relationships and found them satisfying. With time, social skill deficits may become profound, resulting in a substantial lag in social development (Andersen, 1985). Finally, Garfinkel & Garner (1982) suggest that anorexic patients lose all sexual interest
and avoid encounters with the opposite sex. If sexual experiences do occur, they are usually not enjoyed.

The profile of the anorexic's immediate social milieu emerging from this early impressionistic research may be briefly characterized as constricted, socially isolated, and dominated by nuclear family relationships that are exclusive, enmeshed and covertly conflicted. This profile, however, may be criticized as a stereotyped over-generalization based upon clinical-impressionistic data evoked in a psychotherapeutic context. Such a profile has a tendency to become procrustean (Garfinkel & Garner, 1982), even though it may well be an artifact of a limited or flawed methodology (e.g., Bemis, 1978; Kog, Pierloot & Vandereycken, 1983). For example, common criticisms of this early impressionistic research include the infrequent use of validated measures, the virtual absence of control groups, and the assumption of causality in the absence of direct empirical support (Strober, 1986). Nevertheless, this social profile bears a striking resemblance to the constricted, family-dominant social network found repeatedly over the past two decades in cross-sectional studies of various psychiatric populations (reviewed in Chapter 2).

**Recent empirical research.** The social profile generated by early impressionistic research has been challenged by a growing body of family interactional studies (for reviews, see Bemis, 1978; Grigg, 1986; Jacob, 1975; Kog & Vandereycken, 1985; Shepp,
These studies have employed a more rigorous methodology (e.g., control groups, observational measures, self-report measures with better psychometric qualities), and their results often point to a striking variability among the families of anorexics (Grigg, 1986; Harding & Lachenmeyer, 1986; Humphrey, 1986; Humphrey et al., 1986; Kog et al., 1985; Yager, 1982). For example, Kog et al (1985), in a pilot study of ten families with an anorexia/bulimia nervosa patient, employed a series of standardized interaction tasks in an attempt to verify Minuchin's psychosomatic family model (1975, 1978). They summarized the results of their study as follows:

The preliminary results appear to support the hypothesis that Minuchin's rather static family typology should be replaced by a more dimensional and dynamic approach to family functioning (Kog et al, 1985, 525-538).

Grigg (1986) recently found three distinctly separate family transactional patterns related exclusively to the anorexic syndrome! Humphrey et al. (1986) found four types of parent-daughter interactions that successfully discriminated between sixteen families with a bulimic-anorexic daughter and twenty-four control families. This study is especially noteworthy in that it employed observational data. Furthermore, Humphrey (1986) has also found family interactions that appear to discriminate among bulimic-anorexics, classical abstaining anorexics and women without an eating disorder. Harding & Lachenmeyer (1986), however, failed to find significant differences on any of the family variables central to Minuchin's
family systems theory of anorexia nervosa (e.g., overprotection, enmeshment, and rigidity) in their study of thirty female anorexics and thirty female college student controls. Such empirical studies underline Yager's (1982) caution against developing stereotypes of the characteristics of anorexic families.

Several recent empirical studies have challenged the common clinical report of over-involvement in the families of anorexic and anorexic-bulimic patients (Berkowitz, 1983; Harding & Lachenmeyer, 1986; Kagan & Squires, 1985; Sheppy, 1984). These studies found that an unusual degree of cohesion (or enmeshment) did not successfully discriminate between such families. Such findings are quite consistent with other empirical research (e.g., Strober, 1981; Strober et al., 1981; Garner et al., 1983), but are contrary to predictions based on early impressionistic research (e.g., Bruch, 1973; Selvini-Palazzoli, 1974; Minuchin et al., 1978).

Finally, two empirical studies have recently challenged clinical reports of social isolation and maladjustment in anorexic patients. Herzog et al. (1985), in an investigation of social maladjustment among female medical students, found that students with a previous history of anorexia nervosa (as defined by the DSM III) fell within the norm on social adjustment scales measuring performance in school, social and leisure activities, family relationships, and economic independence. Sheppy (1984), using an ecological research strategy and a matched control
group, did not find any statistically significant difference in the size or quality of the social networks of anorexic females and their families.

Taken together, these examples of recent empirical research suggest that the social correlates of anorexia nervosa are diverse and complex rather than invariant. This research supports Garfinkel & Garner's (1982) prediction that a variety of familial interrelationships, not a single family constellation, will be associated with anorexia nervosa, and dampens enthusiasm for anorexogenic social factors of any kind.

**A limitation of current empirical research.** Recent empirical research has provided a profile of the social context of anorexic patients that is almost exclusively confined to a description of their family environment and family relationships, despite recommendations in the literature for a broader ecological focus (eg., Bronfenbrenner, 1977, 1979; Conger, 1981; Jackson, 1967; Powell, 1979; Sheppy, 1984; Wilkinson & O'Connor, 1982). Little research has been done to empirically verify etiological hypotheses that implicate a broader social milieu than the family in the development and maintenance of anorexia nervosa. One possible reason for this narrow locus of research activity may be the greater theoretical salience of intrapsychic and familial dynamics among current research paradigms. For example, the psychodynamic and family systems paradigms both tend to give their greatest theoretical and clinical attention to the
family relationships of the anorexic, though for very different reasons. Another possibility may be the lack of a theory-driven empirical methodology that can adequately measure a social field which is larger than the family and of theoretical significance to the development and maintenance of individual psychopathology.

**Social network analysis.** This research strategy (reviewed in Chapter 2) shows considerable promise in clarifying the structure, quality of interaction, and function of a broader cross-section of the anorexic's social context than has been attempted by recent empirical family research. Furthermore, social network analysis holds great promise for clinical integration and innovation in the treatment of anorexia nervosa. However, social network research of anorexic populations is still in its infancy: only one study could be found by the author (Sheppy, 1984). Another study (Berkowitz, 1983) investigated the anorexic's perception of her family as a source of social support, but was not a social network analysis. Together, these two studies suggest that there are no statistically significant differences in the social networks of anorexic and non-anorexic families with regard to network size, perceived family support and reciprocity of overall network support, a finding that contradicts a prevailing social network profile found in cross-sectional studies of non-psychotic psychiatric populations (reviewed in Chapter 2). Sheppy (1984) comments that her results are surprising in view of her literature review, and after
offering several explanations for the failure of her network data to attain significance she invites a more detailed analysis of this data. Her invitation prompted this study.

The present study does not attempt to find an anorexogenic social network. Such an attempt would likely prove as elusive as the search for an anorexogenic family interactional pattern or parent-child relationship. What is attempted by this study is an exploration of social network correlates of anorexia nervosa anticipated by early impressionistic research concerning the social context of the anorexic patient and repeatedly found in social network analyses of non-psychotic psychiatric populations. The contribution of certain personality and family variables to social network variation will also be explored. The results of this study may well be suggestive of a co-determining role of certain social network correlates in the development and/or maintenance of anorexia nervosa, although a more definitive etiological position in this regard would await prospective studies. However, the author recommends the position of Hurd et al (1981b) who encourage a view of social networks as neither the source of all patient problems nor the source of their resolution, but rather as a dynamic feature of the patient's life which should not be overlooked in treatment interventions.
CHAPTER 2
REVIEW OF THE LITERATURE

Social factors are an important consideration to many theories of the etiology, maintenance, and resolution of anorexia nervosa. For example, social factors related to the structure and function of the anorexic's social relationships are of special interest to family systems and social network theories (Miller, 1984; Rosman et al, 1977), whereas social factors related to cultural norms concerning body weight and shape are of special interest to sociocultural theories (Andersen, 1985; Garfinkel & Garner, 1982; Schwartz et al, 1985). What these theories share in common, however, is an appreciation for the social context of anorexia nervosa.

In the literature review that follows, the concept of social context is explored from a social network perspective. Of particular interest is the seminal work of Pattison and his colleagues concerning the psychosocial network and its morphology among various psychiatric populations. Based upon a review of the social network and social support literature, and the literature already reviewed (Chapter 1) pertaining to the social context of anorexia nervosa, hypotheses are advanced concerning specific structural, interactional and functional aspects of the psychosocial networks of anorexic women, and the correlation of their networks with specific personality and environmental variables.
The social context and psychiatric distress. The twentieth century has witnessed a growing recognition that psychiatric distress, in part, has its roots in the social milieu of the individual. On the one hand, there is a large literature from psychiatric epidemiology that links the significance of the social milieu to the maintenance of individual well-being and adaptive social functioning; on the other hand, it is evident from the clinical literature that there has been a gradual expansion of treatment focus from the individual to the larger and more complex social systems within which the individual is embedded (Hurd et al, 1980; for a review of the clinical literature in this regard, see Pattison, 1973, 1976). These efforts, though commendable, share a common problem, however.

Psychiatric epidemiology has failed to provide an adequate, empirical methodology with which to assess the social context of the individual, whereas treatment innovations have evolved in an ad hoc fashion without well defined linkages to scientific theory or experimental research (Hurd et al, 1980). Pattison (1981) summarizes this state of affairs as a "curious combination of both basic social science research and intriguing clinical innovation" (p. 242). These two streams of development have largely followed independent pathways, with little interaction between the two. For example, Erickson (1975) notes that even though Bott's (1971) study is often cited in the clinical literature, references to her central hypothesis relating network connectedness and conjugal relationships are rare. Clearly what
is needed is a theory or metatheory that would serve as a heuristic for a careful integration of the conceptual and theoretical bits and pieces found throughout the pertinent research and clinical literatures. A major contribution in this regard has come from the application of systems theory (Bertalanffy, 1968) to human social systems, particularly the family system (Hoffman, 1981). Especially noteworthy has been the recent effort by L'Abate (1985) to collate research from a variety of social science disciplines pertinent to the relationship of the individual to the family. Erickson (1984), however, has criticized the concept of a cybernetic network and its inherent systemic epistemology as contributing to the disappearance of the subject as a social actor, an issue that has been recently addressed by Nichols (1987).

Another contribution has come from the social network literature. Of central interest to this study is the seminal work of Pattison and his colleagues (Pattison, 1976, 1977a; Pattison, 1980) in defining and measuring the intimate psychosocial network, a mid-range concept, grounded in an interdisciplinary theory base and an empirical methodology, that links macrosocial and individual processes within a psychodynamic framework.

**The social network paradigm.** The social network paradigm emerged from social anthropology as a construct for the analysis of social relationships. Barnes (1954) was apparently the first
to use the concept as a mode of analysis in a study of a small community in Norway. Bott (1971) developed the idea in her seminal work, *Family and social network*, and subsequently, there have been significant advances in the theory, method and research connected with network analysis (e.g., Anderson & Carlos, 1976; Berkowitz, 1982; Burt, 1980; 1981, 1982; Burt & Minor, 1982; Dunn, 1983; Fischer, 1982; Granovetter, 1973, 1983; Holland & Leinhardt, 1979; Leinhardt, 1977; Mardsen & Lin, 1982; Price, 1981; Rogers & Kincaid, 1981; Shulman, 19876; Wellman, 1981, 1983). The historical development of the social network paradigm has not been limited to one discipline, however. Indeed, it has become a concept of considerable currency among social science researchers and clinicians, and its historical development may be traced through developments in several disciplines that have only recently begun to coalesce. These disciplines have been discussed elsewhere in relationship to social network theory and practice by Pattison and his associates as follows: social anthropology (Pattison, 1977a), family sociology (Pattison et al, 1975; Pattison, 1977), family therapy (Pattison et al, 1975; Pattison, 1976, 1977a, 1977b), community mental health (Pattison, 1973, 1977b), community psychiatry (Pattison, 1977a, 1977b; Llamas, 1981; for a social network approach to the stress-illness relationship, see Pattison et al, 1979), psychiatric epidemiology (Llamas et al, 1981), group psychotherapy (Pattison, 1970), and social psychology (Pattison, 1976; Polister & Pattison, 1979, 1980).
Social network as social context. The concept of social network suggests that people do not exist in vague and amorphous relation to their social context. Based on the work of social anthropologists and sociologists from Europe and America (eg., Barnes, 1972; Boissevain, 1974; Boissevain & Mitchell, 1973; McCallister & Fischer, 1978; Mitchell, 1969, 1974; Whitten & Wolfe, 1969), the social network concept has provided a way for social scientists to define more precisely the social context of the individual. Llamas et al (1981) explains:

By identifying the actual set of links within which a person may be embedded and by delineating their interconnections, or relationships, a level of abstraction is achieved which goes beyond traditional categorical and person/group dichotomies to encompass an analysis of the structural and interactional characteristics of the social milieu. The importance of this approach is that it has allowed for the examination of relationships among a specific number of people in a variety of normative contexts along more than one dimension...In short, it provides an operational definition of a functional social system of relationships (p. 182).

Social network: objective and subjective perspectives. Social networks have been studied from two perspectives: objective and subjective. From an objective perspective, a social network may be viewed as an inter-connected chain or system arbitrarily defined by the specific criterion that motivates the analysis (Pattison, 1977b). Any given person may be part of many interlocking social networks, depending on the criterion used. For example, there are several sets that can act as criteria, such as personal, categorical, action, role-system
and field sets (see Table 1).

**TABLE 1**

**TYPES OF SOCIAL NETWORKS***

<table>
<thead>
<tr>
<th>Limited Network (set)</th>
<th>Unlimited Network</th>
</tr>
</thead>
<tbody>
<tr>
<td>Any extract of the total network based on some criterion applicable throughout the whole network.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Personal Set</th>
<th>Categorical Set</th>
<th>Action Set</th>
<th>Role-System Set</th>
<th>Field Set</th>
</tr>
</thead>
<tbody>
<tr>
<td>Set limited to links involving persons of a certain type or category</td>
<td>Set limited to links</td>
<td>Set limited to links involved in an organized role system or group</td>
<td>Set limited to links with a certain content (economic, political, etc.)</td>
<td>The social network conceived without application of limiting criteria</td>
</tr>
</tbody>
</table>

* Adapted from Whitten & Wolfe (1969) by Pattison (1977b).

Of particular interest to this study is the personal set which defines an extract of the total network limited to the links of one person, or the personal (egocentric) social network (to be discussed below). Depending on the criterion or set used, therefore, a web of social relations may be identified, such as family, work, friendship, rumour, information, recreation, assistance, or worship networks (Hurd et al, 1981). The notion of set as a criterion for the delineation of specific types of social networks has important treatment implications in that it clarifies the question of where to begin in constructing a social
system for intervention (Pattison, 1977a). Conversely, from a subjective perspective a social network may be defined in terms of the social units (individuals or groups) with whom an individual or group has contact (Llamas et al, 1981). This is the phenomenologic world of relationships defined by the individual or group, the former referred to as the personal or egocentric network, and the latter as the sociocentric network.

The personal social network. Erickson (1975) defines a personal social network as "a flexibly bounded grouping of individuals comprising at least a focal person, everyone the focal person knows or interacts with, the set of relationships between those individuals and the focal person, and the set of relationships that exists independently of the focal person" (p. 492).

There is little information concerning the extent of the personal social networks of individuals. Llamas et al (1981) report anthropological data suggesting that a person may have over 1500 people with whom he or she has personal interactions; however, such a person is not uniformly related to this population, since it may be arranged into zones of intimacy, importance, and interaction (See Figure 1).
The personal social network as zones of intimacy.

Boissevain (1974) suggests that persons are arranged in a roughly geometric space of varying psychosocial distance from ego, resulting in five zones of relationships. Pattison & Pattison (1981) summarizes these zones as follows:

1. **The personal zone**: persons with whom one lives and has high investment.

2. **The intimate zone**: persons of high psychosocial importance with whom one interacts frequently.

3. **The effective zone**: people with whom one interacts but who are less important; or important people with less interaction.
4. The *nominal zone*: people known, but of lesser importance and interaction.

5. The *extended zone*: people known about or linked through significant others (pp. 135-136).

**The intimate psychosocial network.** Pattison and his associates have confined their work to a subset of the personal social network, the *intimate psychosocial network* (also called the psychosocial kinship network, or simply, the psychosocial network), which encompasses the first two zones of intimacy discussed above. Pattison uses the term "psychosocial" because the relations of this network are defined in terms of psychological meaning to ego, and there is an observable social interaction that can be measured between ego and important others (Pattison & Pattison, 1981). The rationale for this narrow focus derives from both the theoretical and clinical significance of the psychosocial network.

With regard to **theoretical significance**, Pattison (1981) contends that the psychosocial network "represents a fundamental social unit of existence" (p. 136). Noting the historical importance of kinship systems as a major determinant of affective and instrumental relationships, he argues that the nuclear family may not be the basic social system in modern society, but rather an extended psychosocial kinship system, comprised of nuclear family, some blood relatives, relatives by marriage, friends, neighbors, and close associates from church, work, or recreational activities (Pattison et al, 1975). It is this
collage of relationships, then, that comprises the functional primary psychosocial group of the individual. Llamas et al (1981) highlights the potentially supportive aspects of this psychosocial network, suggesting that it is here "where individuals exist in highly interdependent relationships, that the necessary "psychosocial supplies" sustaining a person's day-to-day existence are seen as residing" (p. 184). As such, the psychosocial network may provide the foundational structure for individual growth and adaptation, and thus is ultimately related to the physical and psychological well-being of persons (Llamas et al, 1981).

The clinical significance of the psychosocial network has been summarized by Pattison et al (1975) as follows:

(1) the psychosocial system does exist;
(2) it exerts both positive and negative sanctions and supports on the nuclear family and the individual;
(3) it is a fundamental social matrix that may prove to be either pathological or helpful and therapeutic (p. 1248).

The clinical implication here is that treatment focus must expand from the individual or family to the larger context of the psychosocial network.

In summary, Pattison is interested in a subset of the personal social network, the psychosocial network, which he contends is the primary social matrix of the individual. Pattison approaches his study of this network with a psychodynamic orientation, that is, he is interested in the way this matrix is related to the individual in terms of interaction and valued importance; hence, he views the relationships in this
matrix as being determined by social and psychological variables, or the social psychology of interpersonal relationships.

**Characteristics of the psychosocial network.** As a concept, social network pertains to the linkage between people in relation to a specific interactional function (Hurd et al, 1981b). For example, there may be single instrumental links to others (gas station attendant), single affective links to others (a tennis partner), multiple instrumental links to others (a coworker who also provides car repair services after work hours), multiple affective links to others (a tennis partner who is also best friend), and mixed affective-instrumental links to other (a clergyman who is also a friend). Social network analysis may therefore be viewed as a description of the structural, interactional, and functional characteristics of the social links of a specific social organization (see Fischer et al, 1977; Granovetter, 1973; Heller & Swindle, 1983; Israel, 1982; Laumann, 1973; Mitchell, 1969; Wellman, 1979; Wood, 1984), in this study, the psychosocial network (see Hurd et al, 1980, 1981b). The social network and social support literatures suggest that these characteristics vary with age, gender, race, and social class (Antonucci & Depner, 1982; Griffith, 1985; Pattison, 1977a; Schulz & Rau, 1985; Stokes & Levin, 1986; Warheit et al, 1982).

Hurd et al (1980) defines the structural characteristics of a social network as "the relationship or patterning of the links
in the network with respect to one another" (p. 6). Structural characteristics may include the following variables.

1. **Size** (range): the number of people in a network. There has been a "bigger is better" mentality in the social network literature regarding size. Whereas it may be true that larger networks have greater potential for giving support, larger networks may also bring increased demands and increased potential for unpleasant interactions (Stokes, 1983). Politser (1980) suggests a curvilinear relation between the size of a network and its ability to satisfy one's needs. Indeed, there is research evidence for a threshold effect concerning size: Brown et al (1975) found that women with a close, confiding relationship were almost 10 times less likely to become depressed after a severely stressful life event than women without such a confidant. Conversely, if, as Pearlin (1985) argues, support is drawn from different network sources for different problems, a larger social network with considerable variation in its composition is preferable.

2. **Composition** (content): the number and kind of relations contained within the network. This variable has been further characterized as either **single-plex** (a link defined by only one type of relation) or **multiplex** (a link which consists of multiple types of relations) (Hurd et al, 1981a). Vaux & Harrison (1985) have demonstrated that composition is related to satisfaction with network support.

3. **Density**: the extent to which network members contact each other independently of the focal person, and is computed as the proportion of people who could know one another (links that could exist) to the people who actually do know one another (links that do exist) (Mitchell, 1969; see also Freeman, 1977, 1979, concerning centrality). Hammer et al (1978) reports that the interconnectedness of close relationships in a network is a direct function of the mean duration of the tie. Hurd et al (1981b) points to the significance of density to collective network behaviour. For example, a weakly interconnected network would have difficulty functioning collectively to mobilize support resources during crisis; however, a potential liability of this kind of network may be the greater pressure to conform behaviorally to network norms. Stokes (1983) has reviewed studies which indicate a complex relationship between density and satisfaction with network support. Hirsch (1979, 1980) suggests
that dense networks provide more, but less satisfying, support.

4. **Degree of connection**: the average number of relationships that each member has with other network members.

5. **Flow**: the pattern of serial or parallel activations of links (Hurd et al, 1981b).

6. **Geographic proximity (dispersion)**: the extent to which network members live near the focal person.

7. **Homogeneity**: the degree to which network members have similar social attributes, such as education level, income level, and religious affiliation.

Hurd et al (1980) suggest that structural network characteristics may be conceived as "statements about the theoretical possibility of a person to transact within a network" (p. 6). Furthermore, Granovetter (1973, 1983) has discussed the significant influence that even **distant** network members may have on each other. Indeed, Hurd et al (1981b) has elaborated on the clinical implications of the possibility that network members may influence and be influenced by other members in the absence of any direct link. Finally, differences in network structure are associated with variations in network function, such as individual social support experiences (Cutrona, 1986b; Ell, 1984).

The **interactional characteristics** of social networks refer to the nature of the links, and may be viewed as indicators of the possible importance of those links (Hurd et al, 1980). Interactional characteristics may include the following.
1. **Directedness**: the nature of the reciprocity in a relationship, that is, the extent to which affective and instrumental help is given and received from network members.

2. **Durability**: the degree of stability of a person's links with network members, as indicated by the length of time network members have been known and the extent to which network relationships are changing. Social networks, including the psychosocial network, are not static but dynamic, shifting and changing over time as in a kaleidoscope due to disruptive life events, such as geographical moves, major life cycle transitions (Hays & Oxley, 1986; Saulnier, 1982), divorce (Milardo, 1987), and death (Walker et al, 1977), or changing attitudes toward network members. Boissevain & Mitchell (1973) report that in a five year period, 50 percent of the people in the intimate psychosocial network changed. Pattison (1977a) therefore suggests that network analysis is "not a search for a fixed social unit, but rather the definition of a functional social system of relationships" (p. 226). Also, as mentioned above, durability has implications for the connectedness of network links.

3. **Intensity**: the degree of emotional closeness between the focal person and network members. Granovetter (1973) has referred to intensity as the "strength of ties," and defined it as a "combination of the amount of time, the emotional intensity, the intimacy, and the reciprocal services which characterize the tie" (p. 1361).

4. **Frequency**: the amount of contact between the focal person and networks.

Research of the **functional characteristics** of social networks has tended to focus on their supportive functions (eg., instrumental, affective). This emphasis is likely related to the meteoric rise of interest in the concept of social support as a mediating variable in the stressful life events and illness relationship. Social network researchers have responded to this development in two important ways.
First, there are a number of researchers who have stated specifically that network analysis should either be the central focus of the concept of social support or serve as a substitute concept (Hall & Wellman, 1985; Hammer, 1981; Israel, 1982; Mueller, 1980; Wellman, 1981; Wellman & Hiscott, 1985). In support of this contention, Israel (1982) marshals the following advantages of network analysis:

(1) a neutral approach that leaves the role of social support (the extent and conditions under which ties are supportive) open for investigation;

(2) the examination of numerous network characteristics, in addition to support, and their relationship to health status;

(3) the investigation of the context of interpersonal ties, that is, the different types of support that might be provided by different types of relationships;

(4) the examination of interpersonal relationships other than those that occur in groups (i.e., work, church) or specific social categories (i.e., kin);

(5) the study of how overall network structure and component linkages affect the flow of social support;

(6) linking the investigation of social ties to the study of the broader environmental determinants of well-being; and

(7) the delineation of network characteristics important for interventions aimed at enhancing health status (p. 66).

Brugha (1984), however, has challenged the idea of using social network variables as measures of social support. He contends that such an approach to the analysis of social support is based on an underlying assumption that social support is positively related to the number, the diversity, and the quality of a person's social relationships with others, an assumption that
obscures the contribution of personality characteristics and social context to the quantity and quality of social support.

Second, several researchers have questioned whether social networks are necessarily supportive at all (Hammer, 1981b; Hurd et al, 1981b; Wellman, 1981). For example, Fischer (1982) points to "the double-edged nature of personal relations" (p. 137), an idea that has an important implication for this investigation of psychosocial networks; that is, the psychosocial network only theoretically and potentially comprises the existing viable social support system of the focal person. Hurd et al (1981b) explains:

...we must stress that a social network is not necessarily a social support system. We consider such an assumption to be a major conceptual flaw in most clinical reports about social network intervention. Social networks are just that. They may be supportive, destructive, insignificant, or merely innocuous. Or more precisely, social networks may be comprised of social inter-actions most of which are supportive, or mostly destructive, or an admixture of a range from beneficent to noxious interactions (p. 248).

Hammer (1981b) points to such aspects of social networks as restraint, opposition, demandingness, mere presence, and range of access.

Research concerning the negative effects of social networks is comparatively recent (e.g., Coyne & DeLongis, 1986; Fiore et al, 1983; Kessler et al, 1985; Leffler et al, 1986; Pagel et al, 1987; Riley & Eckenrode, 1986; Rook, 1984; Sandler & Barrera, 1984). This research has implications for the social networks of anorexics, in that, an obsession with food and slimness accompanied by a fight to resist demands to eat, as well as
concomitant dysphoria is likely to produce ambivalent or even hostile network interactions.

The functional characteristics of social networks include the following (Berkman, 1984; Israel, 1982).

1. **Affective support**: the provision of moral support, caring, and love.

2. **Instrumental support**: the provision of tangible aid and services, such as financial help, or help with child care.

3. **Cognitive support**: access to diverse information, new knowledge, advice, and feedback.

4. **Reciprocity**: the quality and intensity of obligation incurred or acquired in giving or receiving of instrumental or affective exchange (Hurd et al, 1981b).

5. **Maintenance of social identity**: validation of a shared world view.

6. **Social outreach**: access to social contacts and social roles.

7. **Stress mediation**: the stress generating, stress maintaining, stress reducing or buffering functions of social networks.

Social networks: personal and environmental determinants.

The personal and environmental determinants of social networks, especially network supportiveness, have been discussed elsewhere (e.g., Argyle, 1980; Brugha, 1984; Bruhn & Philips, 1987; Cauce, 1986; Dunkel-Schetter et al, 1987; Flaherty & Richman, 1986; Heller & Swindle, 1983; Henderson, 1982; Lazarus & Folkman, 1984; Mitchell, 1982; Mitchell & Trickett, 1980; Moos, 1976; Nadler, 1986; Parkes, 1986; Sarason et al, 1985, 1986; Starker, 1986; Tietjen, 1985). For example, Henderson & Byrne (1977) suggest that affiliative and attachment needs are likely to vary between individuals and situations. Furthermore, the idea that the individual is not a passive agent within a web of network ties was highlighted by Hirsch (1981) when he proposed that varying network patterns may reflect differences in individuals' choices about how to structure their social worlds. Heller & Swindle (1983) have provided a timely reminder that social support networks do not simply affect individuals unidirectionally, but that persons play an active role in determining their network friends and associates, and the amount and type of network support they receive:

The individual is an active "transacting" agent in the development and use of a network...The assets and skills necessary to enter many networks are perhaps as important in understanding the "potency" of that network as are the network's activities and functions (p. 91).

Finally, correlational studies, such as this one, that hypothesize a statistically significant correlation between social network and some independent variable (e.g., anorexia
nervosa) are subject to a serious uncontrolled rival hypothesis, that is, the independent or interactional effects of personality and environmental variables. For example, Heller (1979) has suggested that competent persons are more likely to have well developed social networks as a direct result of their more general social competence.

Research interest in this area among social network researchers has been sparse and recent, however. For example, Starker (1986), on the basis of his literature review, concluded,

The literature glaringly fails to address the issue of individual differences in needs for support—personality variables, coping skills, and social competence are rarely considered (p. 487).

Mitchell (1982) noted that,

While the effects of social network patterns are being documented, very little is known about their determinants" (p. 388).

Perhaps this state of affairs is attributable to the paramount concern, reflected in the social network literature as a whole, to empirically establish social network correlates of various forms of psychological distress in general and psychiatric populations as an initial research agenda. Nevertheless, there has been an awareness of the need to examine the individual and environmental processes that shape and are shaped by social network patterns. For example, Tolsdorf (1976) introduced the concept of network orientation, a set of beliefs, attitudes, and expectations concerning the potential usefulness of network members in helping the focal person cope with a life problem. A negative network orientation, characteristic of psychiatric
patients, involves "a set of expectations or beliefs that it is inadvisable, impossible, useless, or potentially dangerous to draw on network resources" (p. 413). The individual with a negative network orientation may therefore suffer, not from a lack of support resources, but from an unwillingness to maintain, nurture, and utilize the network resources available (Colletta, 1987; Vaux et al, 1986).

Of special interest to this study is the discovery by Hurd et al (1981a) of three model patterns of social network participation on the basis of factor analyses of social network data gathered from a general population: nuclear family dominant, extended kin dominant, and balanced. He defines these network participation styles as reflecting a subject's preference for certain types of relationships and modes of interaction, specifically, socially ascribed (ie, role-bounded), involuntary relationships (nuclear family dominant), non-ascribed (ie, non-role bounded), voluntary relationships (extended kin dominant), or as a mixture of both types of relationship (balanced). Two underlying theses here are that social network activity is an operational component of an individual's behavioral repertoire and a purposeful activity. Hurd et al (1981a) suggest that network participation style may have important implications for a subject's perception of support exchange, frequency of interaction and the overall number of alters reported. For example, if it is assumed that people share an equal opportunity to establish social relationships, the
smaller sizes of nuclear family dominant networks may be a consequence of a disinterest in relationships which lack the preferred degree of social ascription or role-boundedness desired by the subject (Hurd et al, 1981a).

Also of special interest to this study is the comparative research of Mitchell (1982) in examining individual and environmental variables that are related to the social network characteristics of psychiatric clients. Mitchell obtained a sample of 35 psychiatric outpatients, the majority of whom had a diagnosis of schizophrenia, and 35 family members of these individuals. In his study, he examined the extent to which individual differences in interpersonal problem-solving style and family differences in family climate and family social resources were associated with the social network dimensions of size and support of his psychiatric subjects. Results indicated that these individual and environmental variables were significant correlates of social network dimensions: for example, interpersonal problem-solving style was positively related to network size; the level of independence in family climate was positively related to the overall amount of support clients reported receiving, especially from their peers; and family cohesion was positively related to support from family members, but negatively related to the number of intimate relationships cited by the respondent (ie, the more cohesive the family, the fewer intimate relationships cited). Mitchell concluded that further research was needed to "examine the individual and
environmental processes that shape and are shaped by social network patterns" (p. 387).

**Normative social networks.** Mueller (1980) suggests that primary or immediate social networks (in this study, psychosocial networks) appear to have a fairly consistent pattern of structural characteristics in the general population, although precision is hampered by diverse methodologies. For example, Jones & Fischer (1978) found a core network of about 17 people in a sample of community residents, whereas Boussevain (1974) found an average of 30 people in the intimate social network. Hammer et al (1978) compared their data of urban, suburban, and rural networks in metropolitan New York, Vermont, and London with social network data gathered by other researchers from Britain on both working class and middle class individuals, from Malta, and Africa, and found surprising consistency in network structure, despite cultural variations and differences in the techniques of eliciting network data. Specifically, an immediate social network typically consisted of approximately 6 to 10 intimately known members, most of whom knew each other, and perhaps an additional 30 network members who were also seen regularly by the focal individual, for a total of about 40 network members. Of this set of 40 network members, 20 percent of the possible connections tended actually to occur, but with a distinct structural form, that is, 5 or 6 clusters of 6 or 7 highly connected individuals in each, with a lower degree of connection
across clusters (see also Hammer, 1980). Pattison et al (1975), using the Pattison Psychosocial Inventory, collected network data from a normative urban population of 200 subjects, and found a "normal" psychosocial network to be comprised of 22-25 people considered important to the respondent, with 5 or 6 belonging to each of the following clusters: nuclear family, other relatives, friends and neighbors, and social and work associates. About half to two-thirds of these people had social relationships with each other (a social connectedness-unconnectedness ratio of 60:40). Nuclear family and friends were the most valued network members, being most often sought for affective and instrumental assistance; however, significant relationships existed in multiple areas of life interaction, and the social matrix was semiopen to other people. Hurd et al (1980), using the same instrument as Pattison et al (1975) above, collected network data drawn from a convenience sample of 93 "normal" individuals living in Southern California, Chicago, and semi-rural upstate New York areas. The structural analysis revealed the existence of three distinct types of social network patterns that were identified by the ratio of nuclear family to extended family: nuclear family dominant, extended family dominant and balanced. Each of these three subpopulations varied significantly both in network size and composition. Nuclear family dominant networks were significantly smaller overall (18 network members), and were comprised of primarily nuclear family members (7 members), friends (5 members) and co-workers (4 members). Extended family
dominant networks had an average of 24 network members, primarily composed of extended family (9 members), friends (6 members), and coworkers (5 members). Balanced networks had an average of 22 network members, with 5 or 6 members in each of four network sectors: nuclear family, extended family, friends, and coworkers.

Pattison et al (1979) found the following interactional and functional characteristics of normal psychosocial networks:

1. there are frequent contacts with most of the network members, marked by positive and intense emotional investment;
2. there is a reciprocal exchange of emotional and instrumental support;
3. the network is relatively conflict-free and tends to be stress-reducing, as opposed to stress-inducing or stress-maintaining; and
4. the network provides a relatively consistent set of norms and social expectations for the management of intercurrent stress.

In their interactional analysis, Hurd et al (1980) found that respondents had contact with over 50% of all their network members within one month; however, the contact patterns of nuclear family dominant networks were unique, revealing a preference for high contact frequency relations within nuclear family and friendship clusters, and an abandonment of low contact relations from other network sectors. All respondents indicated that they provided more support than they received, and that the amount of support exchanged was greatest in the nuclear family and friends sectors. Hurd et al (1980) view the nuclear family dominant network as being particularly vulnerable, however, due to a network participation style that fosters almost exclusive
reliance on a single sector, the nuclear family cluster, embedded in a comparatively smaller set of network relations for provisions of support:

Because the loss of a member, especially someone seen frequently, is critical to amount of psycho-social supplies available, these network types are theoretically more at risk than the other subtypes. This would appear particularly to be the case if a change or disruption impacted the family. Because these network types do not rely on their extended kin and because there is evidence of disruption or disparity in their relationships with friends these network types appear as being the most vulnerable in circumstances of stressful life events (p. 31).

Social networks and mental health. The social sciences have had a longstanding interest in the relationship between mental health and various elements of social structure. The psychosocial network may be viewed as a mediating social structure between global structural factors, such as modernization, urbanization and social class, and individual mental health. Following Kadushin (1983), the social network (including the psychosocial network) is presumed to affect mental health in at least the following three ways: (1) it can create situations that are more or less stressful; (2) it can mandate practices that immunize the individual against or sensitize him to stressors in the environment; and (3) it can produce structures that alleviate or exacerbate existing psychiatric disorders.
The research investigating the relationship between social networks and mental health may be assigned to four general areas (Marsella & Snyder, 1981).


Social networks and psychiatric distress. The following is a brief review of studies investigating the relationship between social network characteristics and psychiatric distress in psychiatric populations. In addition, detailed attention will be given to several comparative studies of non-psychotic psychiatric populations, since it is into this general psychiatric category that anorexic patients may be assigned.

Although studies of social support and the stress-distress relationship have been included where appropriate, most studies from this enormous literature have used categorical measures indicative of social support, such as social integration, marriage, presence of a confidant, rather than direct measures of the structural and interactional characteristics of social networks per se, and therefore are not directly relevant to this study.

It is noted here that the social network and social support literatures report gender (Griffith, 1985; Leavy, 1983; Phillips, 1981) and ethnic (Griffith, 1985; Warheit et al, 1982) differences in studies of social network variables and indices of psychological well-being or psychiatric distress.

There are several etiological models of the relationship of social network variables to psychiatric distress, and these often include references to stress or stressful life events (eg., Dohrenwend & Dohrenwend, 1981; Fiore et al, 1983; Gottlieb, 1983; Hall & Wellman, 1985; Hammer, 1983; Heller & Swindle, 1983; Israel, 1982; Kleiner, 1984; Kleiner & Parker, 1976; Richman &
Flaherty, 1985). Cohen et al (1986) suggest that social network researchers have generally espoused one of two hypotheses which are thought to explain the effects of social networks on psychopathological symptoms: one hypothesis proposes that social networks have a direct effect on the level of psychological symptoms, whereas the other posits a buffering explanation in which social networks exert their greatest effect on symptoms as the level of stressors increases. According to Cohen et al, then, social network researchers have generally belonged to one of two camps: those whose analyses imply that social networks exert only a direct effect on symptomatology, and those who assert that social networks exert an indirect, buffering effect as well.

Studies of psychiatric populations. There are several reviews of studies which investigate social network variables and psychiatric distress (D'Augelli, 1983; Ell, 1984; Greenblatt et al, 1982; Hurd et al, 1980; Leavy, 1983; Mueller, 1980). These reviews have encompassed some 15 comparative studies of either mixed psychiatric populations (Cohen & Sokolovsky, 1978; Froland et al, 1979; Henderson et al, 1978a, 1978b; Pattison et al, 1979; Perrucci & Targ, 1982; Post, 1962; Ratcliffe & Azim, 1975; Silberfeld, 1978;), or specific clinical populations, primarily schizophrenics (Clark & Cullen, 1974; Garrison, 1978; Pattison & Pattison, 1981; Sokolovsky et al, 1978; Tolsdorf, 1976; Turner, 1979), and have typically found distortions in network structure
and interaction patterns, deficits in network support, and disruptions in network relationships as significantly associated with psychiatric disorder (Mueller, 1980). **Structurally**, people with psychiatric disorders typically have personal networks that are smaller in total size, smaller by network cluster (i.e., family, relatives, friends, coworkers), and comprised of fewer intimate relations than non-psychiatrically ill persons; indeed, the smaller the size, the greater appears to be the degree of psychiatric impairment. In some cases, network clusters appear to be less interconnected, although results with regard to network density and interconnectedness are unclear. There is also some evidence of a skewedness with respect to the network composition of psychiatric patients. For example, the proportion of network members that are kin tends to be higher for psychotics (especially schizophrenics), and characterized by a high degree of density, whereas the non-kin portion of the psychotics' networks may be less dense or interconnected. In some cases, there is also some evidence of a higher proportion of network members who themselves manifest psychiatric symptomatology. With regard to quality of interaction, there is generally less supportive interaction (e.g., less affective exchange), and there is data to suggest that the less the support, the more severe the psychopathology (Hurd et al, 1980). Interactions with network members tend to be predominantly one-way (dependent), especially for psychotic populations, rather than reciprocal. Blackman & Goldstein (1967), in a study of reciprocity networks and
psychiatric symptoms, found a significant relationship between
network reciprocity and psychological symptomatology: the less
participation in a mutual obligation network, the more manifest
symptomatology of the respondent, as perceived by other network
members (Hurd et al, 1980). These general findings have been
replicated in other cultural settings (Famuyiwa, 1984;

The analysis thus far has been of a global nature, and the
studies reviewed have been marked by severe limitations, not
least of which is the correlational nature of the data; as a
consequence, it is impossible to clarify the issue of whether
these differences emerged after the onset of a disorder (and
hence may have developed as a result of the disorder) or existed
prior to onset (and perhaps played an etiological role in onset).
Furthermore, the nature of the network variables, the means to
measure them, and the diagnostic criteria vary widely. Finally,
the network variables are not specifically linked to a specific
stage in the natural course of a disorder, nor to graded levels
of symptom severity. As the psychiatric population of interest
to this study is a non-psychotic one, those studies investigating
the network variables of non-psychotic or neurotic populations
will be reviewed in greater detail.
Comparative studies of non-psychotic (neurotic) psychiatric populations and their social networks. Although the following comparative studies have shared the common purpose of analyzing the social network characteristics of non-psychotic, psychiatric populations, they have accomplished this purpose using different methods of assessment. Nevertheless, they have all focussed, more or less, on some permutation of the psychosocial network, comprised of nuclear family, extended family, friends, neighbors, and close associates from work, church, recreation and the like, and variously referred to in these studies as the "effective network," the "primary group," the "psychosocial support network," and the "core network" (Llamas et al, 1981).

1. Pattison et al (1975, 1979). The work of Pattison and his colleagues is of special relevance to this study because they have published data concerning the psychosocial network of general and psychiatric populations using the instrument employed in this study, the Pattison Psychosocial Inventory. These researchers examined the psychosocial networks of a normative urban sample of 200 subjects and smaller samples of neurotic and psychotic subjects. The psychosocial networks of neurotic subjects, as compared to controls, were smaller in size (typically 15 network members), often including significant people who were dead or lived far away, with fewer relatives, friends, and co-workers, and a higher reliance on involuntary ties in the nuclear family. These networks had a lower density
or interconnectedness ratio (30:70), approximately half that of the control group, and thus had no reliable set of social norms and expectations either to guide behaviour or to correct distorted behavioral responses. Furthermore, ratings on the interactional variables were much lower in comparison to the normative sample. For example, there was less frequency of contact, and more frequency of negative and weak emotional interactions. Relationships were characterized by asymmetrical reciprocity, thereby creating a sense of burden and obligation toward the neurotic respondent. Pattison et al (1979) summarized their findings of the psychosocial network of the neurotic subject as follows:

In metaphoric terms, the neurotic subject is at the hub of a wagon wheel, with individual relationship spokes sticking out and with a broken rim that fails to connect the spokes...Simply put, the neurotic interacts with a limited set of sparsely connected individuals and receives little corrective group feedback. The social network of persons with neurotic behaviors, consequently, is likely both to induce stress and to maintain or augment stress. Thus it is more likely to catalyze the transformation of stress into anxiety and then into neurotic-symptom behaviors (p. 66).

2. Ratcliffe & Azim (1975). These researchers compared the social networks of psychiatric patients from two hospitals with a control sample drawn from households in the same community. Two paired samples were drawn from the subject pool in order to control for marital status, age and sex. Subjects were asked to list significant others who were depended upon to meet certain interpersonal needs (eg., spending free time with, talking with
when troubled, seeking advice from) and rate their degree of satisfaction with these significant network members. Results indicated that both married and single patients, when compared to the control group, were significantly less satisfied with their personal network relations, and reported fewer network members who could be depended upon. Network composition reflected a predominance of involuntary relations with kin and professional helpers, and a lack of voluntary friendship relations. Similarly, married patients, when compared with the married control group, reported a lower reliance on their spouses. Ratcliffe & Azim, in explaining these results, suggested that a history of symptomatic behaviour results in a disruption of relationships with significant network relations, leading to less reliance on relatives and friends and more reliance on professionals.

3. Henderson et al (1978b). The "primary group" (or psychosocial network) of 50 non-psychotic psychiatric patients was compared with that of 50 matched controls. Although both groups spent approximately the same amount of time with their respective network members and did not differ significantly in the number of kin available or present in the community, the psychiatric group cited significantly fewer good friends and attachment figures, reported fewer social contacts with people outside the household during the previous week, and spent more time in negative, unpleasant conversation and less time in
affectively neutral conversation with people, compared to the control group. Furthermore, only 36% of the psychiatric group, as compared to 94% of the control group, considered that the support they obtained from attachment figures or persons to whom they felt affectionally close was sufficient. In summary, Henderson and his colleagues (1978b) found that the primary group of non-psychotic psychiatric subjects was deficient in both size and affective quality, and did not appear to meet the subject's requirements for social interaction.

This study was replicated by Brugha et al (1982) in Dublin where the same design, sampling procedures and instruments were used. Remarkably similar network deficiencies were found in the non-psychotic psychiatric group; however, it was also found that significant deficiencies in the numbers of social contacts and in the amount of social interaction outside the household were not reported by patients with more severe non-psychotic depressive disorders. Brugha et al therefore concluded that the findings of Henderson et al (1978b) could only be clearly confirmed in patients with minor or neurotic forms of depression but not in the more severe retarded depressives. Brugha et al (1982, 1984) also reported that depressed outpatients had deficiencies in their personal networks which appeared to be long-standing, considerably antedating their symptoms.
4. **Silberfeld (1978).** This researcher compared the social networks of a convenience sample of 50 female psychiatric outpatients of mixed diagnosis with those of a matched control group of 50 female general practice patients, using as his network measure a survey method for reconstructing an economy of time spent in interpersonal relationships. Silberfeld found that psychiatric patients, when compared to general patients, were impoverished in their social networks with respect to network size and duration of time spent with network members, regardless of the type of relationship. Psychiatric patients reported less frequency of contact and less time spent with relatives, spouse or children in contrast to the control group; and there were proportionately fewer of their "close" relationships of this type. Conversely, psychiatric patients had a greater proportion of all their relationships invested with friends, and these friends comprised a greater proportion of their intimate relations in contrast to general practice patients. Interestingly, both groups had the same proportion of all relationships considered to be "close;" however, psychiatric patients spent less time per visit, and less total time with these intimate relationships. The data therefore suggests that psychiatric patients have less total social support available to them, as compared to general practice patients, and show a preference for friends over nuclear and extended family relations.
5. **Froland et al (1979).** These researchers examined the social networks of three mental health treatment groups (ie., patients from a state hospital, n=30; a day treatment program, n=20; an outpatient clinic, n=27) and a general population control group (n=30). Froland et al described the average social network profile of clients from the three treatment groups, relative to the control group, as follows: smaller in size having fewer ties with kin; fewer different sources of friends and fewer long-term friends; less interaction with family, friends, and relatives; and greater degrees of change, instability and loss, resulting in greater disruption in the availability of support. These networks were also characterized as having less mutuality in helping exchanges, and less satisfying relationships. On the basis of network characteristics, 79.2% of the mental health clients were able to be correctly classified as to the type of treatment program they were participants in. This finding suggests that social networks vary with the severity of psychiatric impairment. Froland et al accounted for the poor adjustment of the mental health clients in network terms as a "disaffection from family (parents, spouse, sibling, etc.), experience of instability in relationships, and inability to obtain help or assistance without engendering feelings of burden in the network" (p. 86).
6. **Famuyiwa & Olatokunbo (1984).** These researchers investigated the social networks of 153 Nigerian psychiatric patients (schizophrenia or primary affective disorder, n=85; anxiety neurosis, n=68) and 72 "apparently normal individuals." Patients were interviewed with a semi-structured schedule designed to assess the following social network variables: size, focal density (an estimate of numerical strength of network ties, calculated as the quotient of the number of actual ties to the network size), intensity of tie, emotional support, material aid, and access to social contacts. With respect to the overall social network, the only significant difference in the networks of neurotic patients as compared with the control group was in emotional support; that is, neurotic patients reported that they received less positive emotional support during periods of crisis than the control group. When social network characteristics were analyzed by sector, there were no significant differences in social network variables within the family sector; however, within the co-worker sector, neurotic patients had significantly lower mean scores than controls for focal density, intensity of tie and emotional support. In explaining this result, Famuyiwa et al suggested that "the work place, being a representative microcosm of the general community as a whole might reflect society's intolerance of neurotic behaviour" (p. 236). The results of this study will not be given as much weight in the formation of hypotheses (below) since the sample was drawn from a different ethnic population, society and country than the studies
just reviewed. It is interesting, however, that Nigerian psychiatric patients had social networks with deficiencies not unlike those reported for patients in the industrialised societies.

**Summary.** These comparative, cross-sectional studies indicate a positive association between social network deficiencies and non-psychotic psychiatric morbidity, thereby enhancing the credibility of hypotheses implicating social network variables as causal or protective (buffering) agents in the development of psychiatric symptomatology. **Structural analysis** typically revealed a smaller, more sparsely connected network. There was disagreement, however, concerning the composition of the network, some researchers finding a family dominated network, and others finding a higher composition of friends. Froland et al (1979) reported fewer different sources of friends and fewer long-term friends. **Interactional analysis** typically revealed less frequency of contact with network members, with less amount of time spent during each contact. Several researchers reported a greater frequency of negative, affectively unpleasant, or weak emotional interaction, and greater asymmetrical reciprocity. Froland et al (1979) reported a greater degree of change, instability and loss, resulting in disruption to the availability of network support. **Functional analysis** revealed that the networks of psychiatric patients were deficient in positive emotional support during time of crisis
Discrepancies between these studies may be attributable to differences in measures of social network and psychiatric symptomatology, and the varying nature of the kind, severity and chronicity of psychiatric distress. Furthermore, Henderson (1984) suggests several reasons why one cannot be satisfied with hypotheses based upon such cross-sectional data. Psychiatric subjects may perceive their social relationships as deficient because of their affective state; or their symptoms and behaviour may have had a repelling effect on those around them, driving away the very network relationships and support they need. Alternatively, an underlying third variable, such as a personality trait, may have led both to the development of psychiatric symptomatology and to an impaired ability to form or maintain mutually satisfying personal relationships. Clearly what is needed is prospective longitudinal studies. For example, Henderson (1981) followed up his cross-sectional study reported above (Henderson et al, 1978b) with a longitudinal study that found, quite contrary to expectations and hypotheses, that not one of the social network indices had any significant predictive effect for the subsequent onset of symptoms in persons exposed to low levels of adversity. However, for those having high adversity, the adequacy of network support indices alone had substantial predictive power, although Henderson et al (1981) provided evidence that this association was more likely to be a function of personality than of actual conditions in the social
environment (e.g., neuroticism alone explained 69% of the variance in symptom measures, averaged over four waves of interviewing).

Henderson summarized his research as follows:

In the Canberra work, the conclusion we have arrived at is that the actual availability of social relationships probably has little to do with the causes of neurosis. The perceived adequacy with which others meet the individual's requirements, especially under adversity, seems much more important. What we do not know is how much that lies in the actual performance of others and how much is the product of some intra-personal attribute (Henderson et al., 1981, p. 197).

Here, then, is a striking example of how hypotheses based upon cross-sectional data concerning social networks and psychiatric symptomatology can be so convincingly overturned by prospective data. With this consideration in mind, the focus of attention narrows to the social network correlates of that portion of the non-psychotic psychiatric population of central interest to this study, women with a diagnosis of anorexia nervosa.

**Comparative studies of anorexic women and their social networks.** There are only two studies available in the literature that directly assess the social network or social support of anorexic women. These studies are expected to yield social network patterns similar to those of the more general non-psychotic population just reviewed.

1. **Berkowitz (1983).** Berkowitz obtained a convenience sample of 16 anorexic and 16 bulimic non-hospitalized female subjects and their families, and compared them with 16 non-eating
disordered female subjects and their families in order to identify individual and family variables which might discriminate between them. Of special interest to this study is the level of perceived emotional support, as measured by the Perceived Social Support inventory (Procidano & Heller, 1983), that anorexic and non-anorexic women report receiving from their families. The Perceived Social Support inventory was designed to measure the extent to which an individual perceives that his or her needs for support (primarily emotional support) are fulfilled by family members or friends (Heller & Swindle, 1983), although Berkowitz measured only family support. It is duly noted here that the Perceived Social Support inventory is not a measure of social network; however, it does reliably measure the level of perceived network supportiveness in the content areas of family and friends, and is therefore relevant to this study. Results of the multivariate analysis revealed that social support from family, as perceived by anorexic and non-anorexic subjects, failed to discriminate between anorexic and non-anorexic groups, that is, both anorexic and non-anorexic women in the study perceived their families as a source of emotional support. However, family members of anorexic subjects did not perceive the family as a source of emotional support, whereas family members of non-anorexic subjects did; that is, social support, as perceived by family members, successfully discriminated between the families of anorexic and non-anorexic subjects.
2. Sheppy (1984). Sheppy examined a variety of individual, parent, family, and community variables in a comparative study of 30 female anorexics and their parents and 34 matched control subjects and their parents. Her community variables were indices of social network, as measured by the Pattison Psychosocial Inventory (the instrument used in this study, and explained in Chapter 3). Sheppy hypothesized that anorexic subjects and their families would have social networks that were smaller and characterized by a less satisfying quality of interaction than those of the control subjects and their parents on the basis of the following information gleaned from her literature review: anorexic women withdraw and isolate themselves from their friends, especially heterosexual friends; frequent geographic moves, reported to be a precipitating event in anorexia, are likely to decrease network size and quality; and certain personality factors, such as introversion, in combination with the enmeshed quality of anorexic families are likely to inhibit the development of social relationships outside the family. Sheppy pooled the social network data of the anorexic daughters and their parents into a global size score and a global quality score, and did likewise for the control daughters and their parents. The size score was the average of all the people considered to be of current importance, whether liked or not, identified by the subject and her parents. The quality score was a measure of perceived reciprocity, and was calculated by obtaining a difference of the means between the reciprocating
variables (i.e., kind of feelings and thoughts, and degree of emotional and instrumental support) for each person named, and then averaging these differences for individual subject scores. Contrary to expectations, neither the results of the multivariate analysis (Hotelling's $T^2$, $F(2,61)=2.76$, $p>.05$) nor the subsequent discriminant analysis ($X^2=5.21$, $p>.05$) showed a statistically significant difference in psychosocial network size or quality (perceived reciprocity) between anorexics and their parents and control subjects and their parents. However, a stepwise discriminant analysis of 14 personality, interactional, family climate and social network variables revealed that two variables discriminated to the greatest degree between the anorexic and control groups: the daughters' Affiliation mean score and the mothers' Psychopathic Deviate mean score. These two variables could correctly classify 87.5% of the subjects. Conversely, the discriminant function was not increased at all with the addition of the social network variables. These results, according to Sheppy, "present a strong argument that the personality traits, clinical characteristics and self-concept qualities of the anorexics themselves are the most powerful discriminators" (1984, p. 115), a conclusion that is reminiscent of Henderson's unexpected discovery of the greater predictive power of individual difference variables (in his case, neuroticism) over that of social network variables (Henderson et al., 1981). In explaining her surprising results, Sheppy pointed to certain atypical features of the control group which possibly reflected
the referral source of her subjects or the method of obtaining the data, the type of instrumentation employed and/or its administration, and finally the global nature of her social network analysis. She suggested that "a detailed analysis could be most revealing" (p. 115), a suggestion that prompted the present study.

**Summary.** The studies of Berkowitz (1983) and Sheppy (1984) yielded results in contradiction to the emerging profile of the social network of the non-psychotic psychiatric patient. Contrary to hypotheses and expectations, Sheppy did not find that the social networks of her anorexic subjects and their parents were either significantly smaller in size or deficient in quality when compared with the social networks of her control subjects and their parents. However, the specific nature of the anorexic social network was obscured in Sheppy's study by the pooling of social network data from anorexic subjects and their parents. A more detailed analysis of the social network data from her anorexic subjects alone may reveal significant differences in network size and quality.

Although Berkowitz did not use a social network measure or analysis, her results do give a reliable indication of network support within the family cluster. In her study, Berkowitz also found surprising results: anorexic and control subjects did not significantly differ in their perception of family as a source of social support. This finding is all the more surprising since
the anorexic subjects scored significantly higher than non-anorexic subjects on a self-rated depression scale, and it has been suggested that depressed mood may interfere with the ability to perceive social support (Procidano & Heller, 1979).

**Recapitulation of the problem.** The immediate social milieu of the anorexic patient has been described in the early psychodynamic and family therapy literature with such consistency as to become stereotypic. It is curious, however, that this social profile bears striking resemblance to the constricted, family-dominant social network found repeatedly in cross-sectional studies of non-psychotic psychiatric populations, and yet is strongly challenged by recent family interactional studies of such populations. Furthermore, the current empirical research concerning anorexia nervosa has been limited to a description of the family environment and family relationships associated with anorexia nervosa despite recommendations in the literature for a broader ecological focus. Such research is unable to empirically verify etiological hypotheses from the social network literature related to the co-determining role of certain social network patterns in the development and maintenance of non-psychotic psychiatric disorders. Only one social network analysis of an anorexic population could be found in the literature (Sheppy, 1984). This study, contrary to expectations and hypotheses, did not find any statistically significant differences in the size or reciprocity of anorexic
and non-anorexic psychosocial networks, and thus strengthens the case of recent family interactional research. However, Sheppy (1984) employed a global analysis of her data, and recommended that a more detailed analysis may reveal significant differences in specific network variables. Such is the mandate of this study.

Hypotheses and a summary of their theoretical rationale.

The following hypotheses will be tested in this study.

1. There is a statistically significant difference between the social networks of anorexic and control subjects.

Hypotheses related to the structural aspects of perceived size and composition of social networks.

1.1. The size of the social networks of anorexic subjects are significantly smaller than those of the control subjects.

A truncated social network is consistently reported in studies of non-psychotic psychiatric patients (as discussed above), and in clinical reports of the anorexic and her family (discussed in Chapter 1). Furthermore, elevated depression scores commonly reported among anorexic women (eg., Berkowitz, 1983; Hatsukami et al, 1984; Herzog, 1984; Katz, 1987; Swift et al, 1986; Yellowlees, 1985) suggest that anorexic women engage in withdrawal behaviors that are not conducive to network development and maintenance.

1.2. There are significantly fewer friends in the social networks of anorexic subjects than in the social networks of control subjects.
1.3. There are significantly fewer heterosexual friends or boyfriends in the social networks of anorexic subjects than in the social networks of control subjects.

The tendency of the anorexic to withdraw from friends, and to avoid heterosexual friends is commonly reported in the literature (as discussed in Chapter 1; eg., Crisp et al, 1980; Bruch, 1978; Selvini, 1978; Yellowlees, 1985). Indeed, the presence of sexual conflicts in women with eating disorders has been well documented (eg., Beumont et al, 1981; Leon et al, 1985), especially among clinicians with a psychodynamic orientation (eg., Sloan & Leichner, 1986). This hypothesis is an attempt to empirically confirm these clinical observations.

1.4. A significantly greater proportion of the total social network of anorexic subjects, as compared to control subjects, is composed of nuclear family members.

Studies of non-psychotic psychiatric populations (discussed above) yield contradictory findings with regard to this hypothesis. For example, Pattison et al (1975, 1979), Ratcliffe & Azim (1975), and Henderson et al (1978b) report a greater proportion of family members or involuntary relationships and fewer friends were characteristic of the social networks of their psychiatric sample, whereas Silberfeld (1978) reports that the social networks of his sample showed a higher proportion of friends, or voluntary relationships.

Theoretical support for this hypothesis comes from family systems theory which points to the enmeshed quality of anorexic families (eg., Minuchin et al, 1978; Selvini, 1978), a quality
that is unlikely to foster the development of social relationships outside the family. Furthermore, Sheppy (1984) describes the anorexic as withdrawing from network friends, and the anorexic's family as isolated and solely dependent on one another for support due to the need to maintain a perfect family image to the community, frequent network disruptions as a result of geographic moves, an emphasis on network loyalty, and the enmeshed quality of family relationships. Jones (1981) reports that anorexics have an absence of close friendships, and that when a peer relationship is developed, it is usually with only one person at a time and even then is short-lived. Jones suggests that this impoverishment in peer relations has etiological significance in the development of anorexia nervosa. Andersen (1985) paints a similar portrait:

Socially, most patients exhibit immature interaction patterns, becoming even more dependent and childlike in relationship to their parents. Dating activities stop if they were present, and good friends are abandoned. As the years go on, deficits in social skills become profound, and patients may be years behind their peers socially (p. 49).

This portrait of the anorexic and her family is commonly reported in the early impressionistic research of anorexia nervosa (discussed in Chapter 1), and corresponds to the nuclear family dominant network pattern discovered by Hurd et al (1980) in their study of normative social networks. These researchers found three distinct types of social network patterns that were identified by the ratio of nuclear family to extended family. The nuclear family dominant network pattern could be identified
by a 2:1 ratio of nuclear family to extended family. Furthermore, each of the three subpopulations varied significantly both in network size and composition. For example, the nuclear family dominant networks were significantly smaller overall (18 network members), and were comprised of primarily nuclear family members (7 members), friends (5 members) and co-workers (4 members). Hurd et al (1980) hypothesized that the nuclear family dominant network would be the most vulnerable of the three network patterns since it appeared to foster an almost exclusive reliance on a single network sector, the nuclear family cluster, embedded in a comparatively smaller set of network relations for provisions of support. Finding a nuclear family dominant network pattern among the anorexic subjects, but not the control subjects, of this study would lend support to Hurd's hypothesis.

Hypotheses related to the interactional aspects of social networks.

1.5. There is significantly less frequency of contact with all network sectors other than nuclear family in the social networks of anorexic subjects than in the social networks of control subjects.

1.6. A significantly greater proportion of the total number of high contact frequency relations (ie, network members contacted at least once a week) is found among the family members of the social networks of anorexic as compared to control subjects, whereas a significantly smaller proportion of the total number of high contact frequency relations is found among relatives, friends, managers (boss), and other members of the social networks of anorexic as compared to control subjects.

These hypotheses build on the theoretical foundation of
hypotheses 1.1 and 1.2. They assume that anorexic subjects have a nuclear family dominant network, and seeks to replicate the finding by Hurd et al (1980) that a nuclear family dominant network is characterized by a preference for high contact frequency relations within nuclear family and friendship clusters, and an abandonment of low contact relations from other network sectors.

1.7. **Anorexic subjects have a significantly higher proportion of network relations with whom they feel ambivalent or negative about than control subjects.**

Studies of non-psychotic psychiatric populations reveal social networks characterized by a higher number of weak, negative, affectively unpleasant interactions than is the case for control samples (Henderson et al, 1978b; Pattison et al, 1975, 1979). A connection between weak or affectively unpleasant network interactions and ambivalent or negative feelings and thoughts is assumed here, such that if the anorexic subjects of this study show a significantly greater degree of ambivalence or negative feelings and thoughts towards their network members overall, then support is inferred for the studies of non-psychotic psychiatric populations that show social networks characterized by a higher number of weak or negative interactions than is the case for normative populations.

1.8. **Anorexic subjects have a significantly higher degree of ambivalence or negative feelings and thoughts toward their parents than control subjects.**

Clinical reports, particularly from the psychodynamic literature, suggest that anorexic daughters have a powerful
ambivalence particularly toward their "scolding and overbearing mother" (Bemis, 1978). Furthermore, reports from the family systems literature suggest a covert power struggle surrounding food between anorexic daughters and their parents (Miller, 1984).

Hypothesis related to the functional aspects of social networks.

1.9. There is a significantly greater proportion of emotional and instrumental support exchanged within the nuclear family cluster and significantly less within the other clusters of the social networks of anorexic subjects in comparison to control subjects.

This hypothesis again builds on the theoretical foundation of hypotheses 1.1 and 1.2, and logically follows hypothesis 1.4; that is, if anorexic subjects have constricted social networks that are comprised primarily of nuclear family members and characterized by a preference for high contact frequency relations within the nuclear family and friendship clusters, then it is reasonable to hypothesize that the primary sources of support reported by anorexics will come from the nuclear family and friendship clusters. Furthermore, Pattison et al (1975, 1979) found that the social networks of neurotic subjects were characterized by a higher degree of dependence upon family network members for social support than was the case for control subjects.

Hypotheses related to social network correlates of personality factors.

2. The social networks of anorexic subjects vary with personality traits.
2.1. There will be a positive correlation between interpersonal effectiveness scores, as measured by the California Psychological Inventory (CPI), and social network size and support (emotional, instrumental).

Heller & Swindle (1983) have suggested that social competence contributes to the individual's abilities and predilections to link to others and elicit support from them. There has been a remarkable consistency in clinical and empirical reports of personality correlates of anorexia nervosa, such as introversion, social insecurity and interpersonal avoidance (eg., Scott & Baroffio, 1986; Smart et al., 1976; Strober, 1980; Strober, 1981; Strober, 1986). Such personality traits suggest that the anorexic is not effective in interpersonal relationships. The degree of interpersonal effectiveness among anorexic women may, in turn, be reasonably expected to contribute to social network variation.

CPI data has been obtained elsewhere for the sample of this study (Sheppy, 1984). Of particular interest is the cluster of scales originally organized by Gough (1968) and interpreted by him as referring to interpersonal effectiveness, style, and adequacy; these scales are Dominance (Do), Capacity for Status (Cs), Sociability (Sy), Social Presence (Sp), Self-acceptance (Sa), and Well-being (Wb). However, Gough organized this cluster of scales on the basis of conceptual similarity rather than statistically derived parallels. Megargee (1972) has shown an empirical relationship among these scales, with the exception of Well-being, on the basis of a factor analysis.
It is proposed here that anorexic subjects who show an elevation in the interpersonal effectiveness cluster of CPI scales (based on their pooled, mean scores in Do, Cs, Sy, Sp, & Sa) will perceive that they have a significantly larger and more supportive social network than anorexic subjects who score low in this cluster of scales.

**Hypotheses related to the social network correlates of environmental variables.**

3. The social networks of anorexic subjects vary with environmental characteristics.

3.1. There will be a negative correlation between the family climate variable of cohesion, as measured by the Family Environment Scale (FES), and social network size as perceived by anorexic subjects.

3.2. There will be a positive correlation between the family climate variable of independence, as measured by the Family Environment Scale (FES), and social network size as perceived by anorexic subjects.

3.3. There will be a positive correlation between the family climate variables of cohesion and independence, as measured by the Family Environment Scale (FES), and social network support (emotional and instrumental) received from all sources as perceived by anorexic subjects.

3.4. There will be a positive correlation between the family climate variable of cohesion, as measured by the Family Environment Scale (FES), and social network support (emotional and instrumental) from family as perceived by anorexic subjects, but a negative correlation between cohesion and social network support from sources outside the family.

3.5. There will be a negative correlation between the family climate variable of independence, as measured by the Family Environment Scale (FES), and social network support (emotional and instrumental) from family as perceived by anorexic subjects, but a positive correlation between independence and social network support from sources outside the family.
Mitchell (1982), in his comparative study of psychiatric outpatients, found that higher levels of cohesion (as measured by the FES) were associated with fewer network members, contrary to expectations. With regard to the average degree of support received from all network members, both cohesion (r = .29, p < .05) and independence (r = .32, p < .05) were significantly associated with increased levels of network support. The greater the emphasis on cohesion and independence with the family, the greater the respondent's perception of network support. With regard to the average degree of support received from the friends cluster, independence (r = .43, p < .01) was significantly associated with increased levels of support. The greater the emphasis on independence within the family, the greater the perceived level of network support from friends.

A replication of Mitchell's (1982) results is proposed here, using FES data obtained elsewhere for the subjects of this study (Sheppy, 1984); that is, anorexic subjects who score high in family cohesion and independence, as measured by the FES, will have significantly fewer network members and report significantly increased levels of overall network support and support from friends in comparison to anorexic subjects who score low in family cohesion and independence.
CHAPTER 3

METHODOLOGY

PURPOSE OF THE STUDY

The present cross-sectional study employed a causal-comparative design and self-report data in order to explore social network correlates of anorexia nervosa. These correlates are of significance to psychodynamic psychosocial systems theory and of relevance to a curious contradiction in the literature; that is, the largely invariant social profile of the anorexic commonly reported in early impressionistic research and repeatedly found in social network analyses of psychiatric populations, and the variable social profile found in more recent empirical studies. In view of these contradictory views of the social milieu of the anorexic, the present study was designed to empirically examine the nature of the social profiles of anorexic and non-anorexic women using an ecological focus that extends beyond the nuclear family to encompass the broader personal social network.

Another purpose of the study was to investigate the contribution of certain personality and environmental variables to social network variation.

SAMPLE

A subsample of 69 young women were drawn from a larger sample collected for another study (Sheppy, 1984). Of these, 34
had received a psychiatric diagnosis of anorexia nervosa, and 35 served as matched control subjects. The two groups of subjects were matched for age, sex and socioeconomic status as determined by Blishen's Socioeconomic Index (1976).

The anorexic subjects were consecutive referrals from other medical practitioners to a psychiatrist. This volunteer sample included both abstaining and previously abstaining but now bulimic anorexics (N=11), ranging in age from 15 to 23 years ($\bar{X}=18.3$, $SD=2.29$), who satisfied the DSM III criteria for anorexia nervosa. Although there were five anorexic women whose weight loss ranged from 15% to 23% standard body weight, their diagnosis was made by a psychiatrist on the basis of the other criteria specified in the DSM III. The mean age of onset of anorexia nervosa was 16.2 years ($SD=1.91$) and the mean duration of the illness was 23.5 months ($SD=16.05$). Two of the anorexic subjects had never menstruated, whereas all others had suffered from amenorrhea for a period of 3 to 60 months ($\bar{X}=13.4$, $SD=12.45$).

The control subjects were obtained from family practice units and other community agencies, and were receiving medical care for nonpsychiatric conditions. It was hoped that by obtaining a sample of subjects who were all receiving medical attention, illness factors such as stress reactions to illness would be controlled for. The weight of the control subjects ranged from 43 kilograms to 68 kilograms.
DATA COLLECTION PROCEDURE

The data were gathered over an 18 month period. All subjects were contacted by a researcher, and received a battery of questionnaires which included the instruments of relevance to this study, the California Psychological Inventory, the Family Environment Scale, and the Pattison Psychosocial Inventory. During a brief interview, demographic information was obtained, research procedures were explained and questionnaire instructions were given. The questionnaires were left to be completed at leisure.

INSTRUMENTATION

The Pattison Psychosocial Inventory (PPI). The PPI is a self-report questionnaire that was developed in order to empirically determine the psychodynamic social support system that theoretically comprises the primary social matrix of the individual. Hurd et al (1981c) has defined this social support system as,

a subset of relations from the global social network limited by the symmetric or asymmetric provision of support, affective and/or instrumental, which is focussed around a particular individual (p. 2).

This instrument assesses the number of people, relationships, and interactions with family, social, and community members of the subject's psychosocial network. Both normal and psychiatric populations have been studied (e.g., Hurd et al., 1980; Pattison, 1977a). Indeed, Hurd et al (1981c) report that over five hundred individuals from within eleven different populations defined by
their psychiatric status have been studied. The PPI measures the following social network variables:

1. **Size** refers to the number of social network members, and is determined by the number of people listed.

2. **Content** refers to relationship categories, and is determined by the type of relationship listed. Several orienting categories are suggested by the PPI: family, relatives, friends, co-workers, and others.

3. **Durability** refers to the number of years network members have been known.

4. **Frequency of contact** refers to the amount of interaction there is with social network members, whether face-to-face, by phone, or by letter.

5. **Kind and Strength of Feelings and Thoughts** refers to the degree and direction (whether positive or negative) of emotional intensity, and is rated according to a 5-point scale as follows: 5=mostly very strong, positive feelings and thoughts; 4=mostly moderate, positive feelings and thoughts; 3=about equally mixed positive and negative; 2=mostly moderate, negative feelings and thoughts; 1=mostly very strong, negative feelings and thoughts.

6. **Instrumental Help** refers to the frequency of concrete, practical assistance, and is rated on a 5-point scale as follows: 5=very frequently; 4=often; 3=on some occasions; 2=rarely; 1=not at all.

7. **Emotional Support** is understood as self-evident, and is rated on a 5-point scale as follows: 5=very frequently; 4=often; 3=on some occasions; 2=rarely; 1=not at all.

8. **Symmetrical Reciprocity** refers to the extent to which social network members are perceived to return emotional intensity, instrumental help, and emotional support.

The PPI is based on the work of Adams (1967), and incorporates variables that are indicative of significant interpersonal relationships. These variables are summarized as follows by Pattison (1977a):
1. The relationship has a relatively high degree of interaction, whether face-to-face, by telephone, or by letter. In other words, a person invests in those with whom he has contact.

2. The relationship has a strong emotional intensity. The degree of investment in others is reflected in the intensity of feeling toward the other.

3. The emotion is generally positive. Negative relationships are maintained only when other variables force the maintenance of the relationship, such as a boss or spouse.

4. The relationship has an instrumental base. That is, not only is the other person held in positive emotional regard, but he can be counted on to provide concrete assistance.

5. The relationship is symmetrically reciprocal. That is, the other person returns the strong positive feeling, and may count on you for instrumental assistance. There is an affective and instrumental *quid pro quo* (p. 1249).

The PPI is divided into two parts. The first part asks subjects to list "all persons who are important in your life at this moment, whether you like them or not." It is left to the discretion of the subject as to what "important" means. The assumption here is that this instruction serves as a cue which will elicit those people with whom the subject engages in supportive interactions and will most likely call upon during times of distress (Hurd et al, 1981c). Also, Hurd et al (1981c) argue that by not placing a *priori* restrictions on the number of network members to be listed the PPI captures potential support providers even if they are inactive. Furthermore, persons both liked and disliked are included in order to avoid biased reporting (Hurd et al., 1981c). For all network members, the subjects report the age, sex, and length of time known. Subjects
are then asked to rate their network members according to four variables, using five-point Likert scales. Three of these variables are interactional in nature (Kind and Strength of Feelings and Thoughts, Instrumental Help, and Emotional Support), and have corresponding questionnaire items which measure both the subject's perceptions of network members and how the subject feels that network members perceive him or her in return. The fourth variable is Frequency of Contact.

There is, unfortunately, little information published concerning the psychometric properties of the PPI, a deficiency also noted by Wood (1984) in her excellent review of social support and social network instruments. However, the test-retest reliability of the PPI has been investigated by Hurd and his colleagues (1981c). Three tests of reliability were undertaken by these researchers using a sample of seven psychiatric patients and eight controls matched for sex. Test 1 used a simple matching coefficient to examine the consistency with which the PPI recovers the same social network members on subsequent interviews. Positive correlations were found for the psychiatric group after an average of 51 days \((r=.70)\), and for the control group after an average of 12 days \((r=.77)\), and 32 days \((r=.68)\). Test 2 used a Pearson product-moment correlation coefficient to examine the stability of the size of the social network. Again, strong correlations were found for the psychiatric group after an average of 51 days \((r=.968)\), and for the control group, after an average of 12 days \((r=.987)\) and 32 days \((r=.985)\). Test 3 used a
simple percentage to examine the consistency of repeated subpopulation assignments. For the psychiatric group, subjects repeated their assignment of social network members to the same relationship categories consistently 86% of the time after an average of 51 days; and for the control group, subjects repeated their subpopulation assignments consistently 91% of the time after an average of 12 days, and 89% of the time after an average of 32 days. Hurd and his colleagues conclude that the longitudinal stability of both the size correlations and the subpopulation assignments are impressive. Furthermore, they suggest that the correlations regarding the recovery of the same social network members on subsequent interviews are generally high and decline over time as predicted. It is the opinion of the present author, however, that the reliability of the PPI should only be regarded as tentative and promising, since sample sizes were small (for psychiatric group, N=7; for controls, N=11) and no tests of statistical significance were reported.

Studies of the validity of the PPI are still forthcoming.

**The California Psychological Inventory (CPI).** The CPI was developed by Harrison Gough (1975) to assess positive and enduring interpersonal personality characteristics within a normal population. The present CPI is a self-administered, paper and pencil test for use with individuals between the ages of 12 and 70 who have a reading ability at the fourth-grade level or higher. In view of the youthfulness of the sample of the present study, it is noteworthy that the CPI was mainly constructed for
use with young adults. Testing time, including the reading of instructions, ordinarily ranges from 45 minutes to an hour. The CPI consists of 468 true-false statements that are converted into standard scores (T-scores) and plotted on 18 scales. These scales were standardized on an original normative sample of 6000 males and 7000 females. The sample, though somewhat biased in the direction of white subjects, has a fairly wide range in age, socioeconomic status, and geographic area (Megargee, 1972).

The purpose of each of the 18 scales is "to predict what an individual will do in a specified context, and/or to identify individuals who will be described in a certain way" (Gough, 1968, p. 54). The scales are "addressed to personality characteristics important for social living and social interaction" and the concepts selected "are hypothesized to be relevant to the prediction and understanding of interpersonal behaviour in any setting, culture, or circumstance" (Gough, 1975, p. 5). Of particular interest to the present study is the first five scales which comprise one of five factors statistically derived from Megargee's (1972) factor analysis of the CPI. This cluster of scales indicates a person's level of social poise and interpersonal effectiveness. The individual scales are as follows.

1. Dominance measures areas of leadership ability, such as verbal fluency, persuasiveness, and the extent to which a person is likely to take charge of a situation.
2. **Capacity for Status** measures specific trait variables that are thought to eventually lead to a position of status such as perseverance, self-direction, ambition, and self-confidence. This item also reflects an absence of fears or anxieties, a high degree of social conscience, interest in belonging to various groups, and an interest in literary and aesthetic activities.

3. **Sociability** was intended to measure the extent to which a person participates in social activities, but more recently has been generalized to differentiate between a person who is outgoing, extroverted, and sociable from someone who is more introverted, withdrawn, and prone to avoiding social visibility.

4. **Social Presence** measures the extent to which a person is self-confident and assertive.

5. **Self-acceptance** is intended to identify individuals who display a comfortable and secure self-worth, and a capacity for independent thinking and action.

In general, the reliability and validity of the CPI is satisfactory, comparing favorably with other personality inventories. Hase & Goldberg (1967) found short-term test-retest reliability coefficients ranging between .71 and .90, with an average of .83. Although long-term (retest after one year) reliability coefficients were somewhat lower, ranging from .60 to .70, they still suggested a level of moderate stability. Measures of internal consistency indicate considerable variability among the test items, but Megargee (1972) reports that the average correlation for all 18 scales is .63; consequently, the scale constructions are adequate overall. Correlations between scales are relatively high, however, and therefore suggest a certain degree of redundancy among the 18 scales.
Work on the predictive and concurrent validity of the CPI has been emphasized at the expense of discriminant validity (Gough, 1975). This is in keeping with Gough's primary aim of developing an instrument that predicts socially relevant interpersonal behaviours and orientations.

The Family Environment Scale (FES). The FES was developed by Rudolf Moos to assess the social climate of the family (Moos, 1974; Moos & Moos, 1981). The FES is a 90-item, self-report instrument that focuses on the interpersonal relationships among family members (relationship dimensions), the directions of personal growth emphasized in the family (growth dimensions), and the family's organizational and system-maintenance characteristics (maintenance dimensions). The FES has ten subscales that have been standardized on a large sample of normal and distressed families (Moos & Moos, 1981). Two of these subscales are of particular interest to the present study.

1. Cohesion measures the extent to which family members are concerned and committed to the family, and the degree to which family members are helpful and supportive of each other.

2. Independence measures the degree to which family members are encouraged to be assertive, self-sufficient, to make their own decisions, and to think things out for themselves.

The subscales of the FES have moderate to high internal consistencies (ranging from .61 to .78) and satisfactory test-retest reliability (ranging from .68 to .86). Over 50 studies have attested to the construct validity of the FES (Moos, Clayton, & Max, 1979; Moos & Moos, 1981).
METHOD OF ANALYSIS

In analyzing the PPI data, proportions and means were calculated according to the dictates of specific hypotheses. Sometimes an analysis focused on a particular cluster of network members, such as family, friends, or high frequency of support relations, and at other times on particular network members, such as mother, boyfriend, or boss. Furthermore, for some analyses a score for each subject was computed as the average rating across all network persons or a cluster of network persons on a single network variable. For example, in making frequency of contact comparisons (Hypothesis 1.5; Table 5) a score for each subject was obtained by calculating the mean rating across all network members, nuclear family members only, and non-family members only on the frequency of contact scale.

Once these measures were computed, independent t-tests and z-tests were performed in order to determine whether differences between anorexic and control group means (t) and proportions (z) were statistically significant. A z-test for independent proportions was calculated as follows (Glass & Hopkins, 1984, 288):

\[
z = \frac{p_{11} - p_{12}}{\sqrt{\hat{\pi}_1(1 - \hat{\pi}_1)\left(\frac{1}{n_1} + \frac{1}{n_2}\right)}}
\]

where
- \(p_{11}\) = proportion of anorexic subjects
- \(p_{12}\) = proportion of control subjects
- \(n_{1}\) = number of anorexic subjects
- \(n_{2}\) = number of control subjects
- \(\hat{\pi}_1 = \frac{n_{1}(p_{11}) + n_{2}(p_{12})}{n_{1} + n_{2}}\)
The Bonferroni inequality was used to establish significance levels that led to an overall Type I error rate of .05.

Three Hotelling's $T^2$ analyses were conducted on four sets of dependent variables. The first set concerned the social network size of three relationship categories; the second involved the frequency of contact ratings in three relationship categories; the third concerned seven interactional and functional rating variables with respect to mothers, and the fourth involved the same seven rating variables with respect to fathers. Significant $T^2$ results were followed up by univariate t-tests. Again, the Bonferroni inequality was used to control Type I error.

In order to assess the contribution of personality and environmental characteristics of anorexic women to variations in their social networks, a series of correlations were performed using the Pearson product-moment correlation coefficient.
CHAPTER 4

RESULTS

The results of the analyses are discussed as follows: first, a review of demographic data analyses, and then the results of the primary data analyses by hypothesis.

DEMOGRAPHIC DATA ANALYSIS

The demographic data have been discussed by Sheppy (1984) elsewhere, and therefore only a brief review of her findings will be undertaken here.

Hotelling's $T^2$ analysis of socioeconomic status, number of stressors and illnesses, number of family members who dieted and the duration of residence revealed no statistically significant differences between the anorexic and control groups. The nonsignificant finding regarding socioeconomic status indicated that the matching procedures for the anorexic and control families on this variable were satisfactory. 70% of the anorexic families attained a socioeconomic level represented by business, managerial, and professional personnel according to Blishen's Socioeconomic Index (Blishen, 1967; Blishen & McRoberts, 1976).

A Hotelling's $T^2$ analysis of age, height and education also revealed no statistically significant differences between the anorexic and control groups ($F(3,60)=0.25$, $p>.05$), another indication that the matching procedures were adequate. Likewise, the anorexic and control groups were found to be similar
regarding family size, the number of brothers and sisters in each family, and the duration of family residence.

Two analyses were conducted to determine if the control group was representative of the general population. A Hotelling's $T^2$ analysis of CPI scores found an overall statistically significant difference between control group and population means ($F(18,16)=4.39$, $p<.005$), although all mean scores fell within one standard deviation of the mean. Likewise, a Hotelling's $T^2$ analysis of FES scores found an overall statistically significant difference between control group and population scores ($F(10,24)=3.80$, $p<.01$); in fact, univariate t-tests of the FES variables related to this study (Cohesion and Independence) revealed that control group means were significantly higher ($p<.05$) than population means. The significant differences found by these analyses indicate that the control subjects of this study are not representative of the general population. Sheppy (1984) suggests that these differences may be accounted for in part by the referral sources of the control subjects. Since the control subjects were receiving medical services from family practice units or other community agencies for nonpsychiatric conditions, their differences with CPI and FES population samples may be attributable to individual and family climate changes in the face of stressful circumstances due to illness or other life stressors.

Finally, a Hotelling's $T^2$ analysis of CPI scores yielded no
significant differences between anorexic abstainer and anorexic bulimic subjects (F=0.79, p>.05). On the basis of this analysis, these two groups were considered homogeneous and their scores combined for subsequent analyses.

RESULTS OF PRIMARY DATA ANALYSES BY HYPOTHESIS

Hypothesis 1. There is a statistically significant difference between the social networks of anorexic and control subjects.

This general hypothesis was investigated by means of nine sub-hypotheses that addressed more specific social network differences between anorexic and control subjects.

Hypotheses related to the structural aspects of perceived size and composition of social networks.

Hypothesis 1.1. The size of the social networks of anorexic subjects are significantly smaller than those of the control subjects.

Hypothesis 1.2. There are significantly fewer friends in the social networks of anorexic subjects than in the social networks of control subjects.

Hypothesis 1.3. There are significantly fewer heterosexual friends or boyfriends in the social networks of anorexic subjects than in the social networks of control subjects.

In order to test these hypotheses, a data matrix was constructed that consisted of the social network size scores for each anorexic and control subject according to the following relationship categories: total size, total friends, and opposite sex friends. Based upon this data matrix, means and standard deviations were calculated, univariate t-tests were performed,
and a Hotelling's $T^2$ analysis was conducted. The results of these computations are summarized in Table 2 as follows.

<table>
<thead>
<tr>
<th>NETWORK CATEGORY</th>
<th>ANOREXICS (N=34)</th>
<th>CONTROLS (N=35)</th>
<th>t</th>
<th>2-tail</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>$\bar{x}$</td>
<td></td>
<td>SD</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total Size</td>
<td>11.65</td>
<td>16.03</td>
<td>4.54</td>
<td>7.54</td>
<td>2.91</td>
</tr>
<tr>
<td>Total Friends</td>
<td>5.15</td>
<td>7.57</td>
<td>3.85</td>
<td>4.70</td>
<td>2.34</td>
</tr>
<tr>
<td>Opposite-sex</td>
<td>1.85</td>
<td>2.54</td>
<td>1.67</td>
<td>2.17</td>
<td>1.47</td>
</tr>
</tbody>
</table>

* Result achieved the required level of significance for an overall Type 1 error rate of .05 for the entire table. For Hotelling's $T^2$ analysis, $F(3,65) = 3.0313$, $p<.05$.

The Hotelling's $T^2$ analysis found an overall statistically significant difference between anorexic and control subjects with regard to social network size ($F(3,65) = 3.0313$, $p<.05$). Subsequent univariate t-tests revealed that only the total size of the social networks of anorexic subjects was found to significantly differ ($p<.05$) from the social networks of control subjects, and therefore only Hypothesis 1.1. was accepted.
Hypothesis 1.4. A significantly greater proportion of the total social network of anorexic subjects, as compared to control subjects, is composed of nuclear family members.

Proportions were calculated for each relationship category, and z-tests were performed in order to establish the statistical significance of any proportional differences found. The results of these computations are summarized in Table 3 as follows.

**TABLE 3**

**COMPARISONS OF IDENTIFICATION OF SPECIFIC NETWORK MEMBERS BY ANOREXIC (N=34) AND CONTROL (N=35) SUBJECTS**

<table>
<thead>
<tr>
<th>NETWORK CATEGORY</th>
<th>ANOREXICS (N=34)</th>
<th>CONTROLS (N=35)</th>
<th>z</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Family Members</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Father</td>
<td>.09</td>
<td>.06</td>
<td>0.47</td>
<td>0.319</td>
</tr>
<tr>
<td>Mother</td>
<td>.09</td>
<td>.06</td>
<td>0.47</td>
<td>0.319</td>
</tr>
<tr>
<td>Siblings</td>
<td>.12</td>
<td>.15</td>
<td>-0.36</td>
<td>0.641</td>
</tr>
<tr>
<td>Brothers</td>
<td>.06</td>
<td>.07</td>
<td>-0.17</td>
<td>0.568</td>
</tr>
<tr>
<td>Sisters</td>
<td>.06</td>
<td>.07</td>
<td>-0.17</td>
<td>0.568</td>
</tr>
<tr>
<td>Relatives</td>
<td>.19</td>
<td>.19</td>
<td>0.00</td>
<td>0.500</td>
</tr>
<tr>
<td>Friends</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Opposite-sex</td>
<td>.16</td>
<td>.16</td>
<td>0.00</td>
<td>0.500</td>
</tr>
<tr>
<td>Same-sex</td>
<td>.28</td>
<td>.31</td>
<td>-0.27</td>
<td>0.606</td>
</tr>
<tr>
<td>Boss/Supervisor</td>
<td>.01</td>
<td>.03</td>
<td>-0.59</td>
<td>0.722</td>
</tr>
<tr>
<td>Other</td>
<td>.06</td>
<td>.04</td>
<td>0.38</td>
<td>0.352</td>
</tr>
</tbody>
</table>

Results of this analysis reveal that just under one-third of the social networks of both anorexic and control subjects is composed of nuclear family members. A z-test of the differences between anorexic and control networks in nuclear family composition yielded a statistically non-significant result. Hypothesis 1.4. is therefore rejected.
Hypotheses related to the interactional aspects of social networks.

**Hypothesis 1.5.** There is significantly less frequency of contact with all network sectors other than nuclear family in the social networks of anorexic subjects than in the social networks of control subjects.

In order to test this hypothesis, means and standard deviations were calculated of the ratings of anorexic and control subjects on the Frequency of Contact variable (5=usually daily; 4=usually at least once a week; 3=usually at least once a month; 2=usually at least once every six months; 1=usually at least once a year). The mean ratings for three network categories were obtained: all members, all nuclear family members, and all non-family members. Differences between anorexic and control mean ratings were examined for statistical significance by univariate t-tests, and a Hotelling's $T^2$ analysis was conducted. Results of these analyses are summarized in Table 4 as follows.

<table>
<thead>
<tr>
<th>NETWORK CATEGORY</th>
<th>ANOREXICS (N=34)</th>
<th>CONTROLS (N=35)</th>
<th>t</th>
<th>2-tail p</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Xa</td>
<td>SD</td>
<td>Xc</td>
<td>SD</td>
</tr>
<tr>
<td>All Members</td>
<td>3.88</td>
<td>0.54</td>
<td>3.94</td>
<td>0.60</td>
</tr>
<tr>
<td>Nuclear Family</td>
<td>4.45</td>
<td>0.67</td>
<td>4.41</td>
<td>0.71</td>
</tr>
<tr>
<td>All Non-Family</td>
<td>3.59</td>
<td>0.69</td>
<td>3.75</td>
<td>0.66</td>
</tr>
</tbody>
</table>

For Hotelling's $T^2$ analysis, $F(3,65) = 0.6679$, $p>.05$. 
The Hotelling's $T^2$ analysis failed to obtain statistical significance at the .05 level, thereby suggesting that differences in frequency of contact patterns do not collectively distinguish between anorexic and control groups. Mean scores indicate that anorexic subjects had, on the average, daily or weekly contact with nuclear family social network members, and weekly to monthly contact with non-family social network members. Although these mean scores were in the direction of a family-dominated frequency of contact pattern, they did not differ in a statistically significant way with the mean frequency of contact ratings of control subjects according to independent t-tests. Hypothesis 1.5. is therefore rejected.

**Hypothesis 1.6.** A significantly greater proportion of the total number of high contact frequency relations is found among the family members of the social networks of anorexic as compared to control subjects, whereas a significantly smaller proportion of the total number of high contact frequency relations is found among relatives, friends, managers (boss), and other members of the social networks of anorexic as compared to control subjects.

This hypothesis addresses the same theoretical issue as Hypothesis 1.5. but differs in its statistical analysis. In order to test Hypothesis 1.6., social network members who received a frequency rating of 4 (usually contacted at least once a week) or 5 (usually contacted daily) were selected by network category from PPI frequency data and described as "high contact frequency relations." An analysis of proportions was conducted on this subset of frequency data, and z-tests of differences between anorexic and control groups were performed. The results
of these analyses are summarized in Table 5 as follows.

### Table 5

**COMPARISONS OF HIGH CONTACT FREQUENCY (HCF) RELATIONS1 IN THE SOCIAL NETWORKS OF ANOREXIC (N=34) AND CONTROL (N=35) SUBJECTS**

<table>
<thead>
<tr>
<th>NETWORK CATEGORY</th>
<th>ANOREXICS (N=34)</th>
<th>CONTROLS (N=35)</th>
<th>z</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Proportion of HCF Relations in Total Social Network</td>
<td>.64</td>
<td>.64</td>
<td>0.00</td>
<td>0.500</td>
</tr>
<tr>
<td>Proportion of HCF Relations That Are:</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Family Members</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Father</td>
<td>.11</td>
<td>.08</td>
<td>0.43</td>
<td>0.334</td>
</tr>
<tr>
<td>Mother</td>
<td>.12</td>
<td>.09</td>
<td>0.41</td>
<td>0.341</td>
</tr>
<tr>
<td>Siblings</td>
<td>.15</td>
<td>.17</td>
<td>-0.23</td>
<td>0.591</td>
</tr>
<tr>
<td>Brothers</td>
<td>.09</td>
<td>.09</td>
<td>0.00</td>
<td>0.500</td>
</tr>
<tr>
<td>Sisters</td>
<td>.06</td>
<td>.09</td>
<td>-0.47</td>
<td>0.681</td>
</tr>
<tr>
<td>Relatives</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Friends</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Opposite-sex</td>
<td>.42</td>
<td>.49</td>
<td>-0.58</td>
<td>0.719</td>
</tr>
<tr>
<td>Same-sex</td>
<td>.15</td>
<td>.15</td>
<td>0.00</td>
<td>0.500</td>
</tr>
<tr>
<td>Boss/Supervisor</td>
<td>.02</td>
<td>.04</td>
<td>-0.49</td>
<td>0.688</td>
</tr>
<tr>
<td>Other</td>
<td>.07</td>
<td>.03</td>
<td>0.76</td>
<td>0.224</td>
</tr>
</tbody>
</table>

1. High contact frequency relations are those network members who are contacted at least once a week.

High contact frequency relations comprise 64% of the total social network membership of both anorexic and control subjects. Of that 64%, 38% of high contact frequency relations are composed of nuclear family in the social networks of anorexic subjects, a proportion that does not differ in a statistically significant way with the social networks of control subjects. This finding,
in fact, constitutes a reversal of the expectation that high contact frequency relations in the social networks of anorexics are primarily composed of nuclear family members with few such relations to be found outside the nuclear family boundary. Indeed, it is friends, not family, who constitute the greatest proportion of high contact frequency relations in the social networks of both anorexic and control subjects. Hypothesis 1.6. is therefore rejected.

**Hypothesis 1.7.** Anorexic subjects have a significantly higher proportion of network relations with whom they feel ambivalent or negative about than control subjects.

In order to test this hypothesis, social network members who received a rating of 3 or less on the Kind and Strength of Thoughts and Feelings Towards Others Scale of the PPI (3=about equally mixed positive and negative feelings & thoughts; 2=mostly moderate, negative feelings & thoughts; 1=mostly very strong, negative feelings & thoughts) were selected by network category from the social network data. An analysis of proportions was conducted on this subset of frequency data, and z-tests of differences between anorexic and control groups were performed. The results of these analyses are summarized in Table 6.

Social network members about whom anorexic subjects have ambivalent or negative feelings and thoughts comprise 26% of the total social network membership, whereas such members comprise 21% of the total social network of control subjects. The difference in these proportions did not achieve statistical significance (p>.05), and therefore Hypothesis 1.7. is rejected.
### TABLE 6

**COMPARISONS OF AMBIVALENT OR NEGATIVE (A/N) RELATIONS1 IN THE SOCIAL NETWORKS OF ANOREXIC (N=34) AND CONTROL (N=35) SUBJECTS**

<table>
<thead>
<tr>
<th>NETWORK CATEGORY</th>
<th>ANOREXICS (N=34)</th>
<th>CONTROLS (N=35)</th>
<th>z</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Proportion of A/N Relations in Social Network</td>
<td>.26</td>
<td>.21</td>
<td>0.23</td>
<td>0.409</td>
</tr>
<tr>
<td>Proportion of A/N Relations That Are:</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Family Members</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Father</td>
<td>.34</td>
<td>.24</td>
<td>0.92</td>
<td>0.179</td>
</tr>
<tr>
<td>Mother</td>
<td>.10</td>
<td>.07</td>
<td>0.45</td>
<td>0.326</td>
</tr>
<tr>
<td>Siblings</td>
<td>.12</td>
<td>.06</td>
<td>0.87</td>
<td>0.192</td>
</tr>
<tr>
<td>Brothers</td>
<td>.13</td>
<td>.12</td>
<td>0.13</td>
<td>0.448</td>
</tr>
<tr>
<td>Sisters</td>
<td>.06</td>
<td>.03</td>
<td>0.60</td>
<td>0.274</td>
</tr>
<tr>
<td>Relatives</td>
<td>.07</td>
<td>.08</td>
<td>-0.16</td>
<td>0.564</td>
</tr>
<tr>
<td>Friends</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Opposite-sex</td>
<td>.13</td>
<td>.15</td>
<td>-0.24</td>
<td>0.595</td>
</tr>
<tr>
<td>Same-sex</td>
<td>.42</td>
<td>.50</td>
<td>-0.67</td>
<td>0.749</td>
</tr>
<tr>
<td>Boss/Supervisor</td>
<td>.04</td>
<td>.08</td>
<td>-0.36</td>
<td>0.641</td>
</tr>
<tr>
<td>Other</td>
<td>.07</td>
<td>.03</td>
<td>0.76</td>
<td>0.224</td>
</tr>
</tbody>
</table>

1. Ambivalent or negative relations are those network members who received a score of 3 or less on the Kind and Strength of Thoughts and Feelings Towards Others Scale of the Pattison Psychosocial Inventory.

**Hypothesis 1.8.** Anorexic subjects have a significantly higher degree of ambivalence or negative feelings and thoughts toward their parents than control subjects.

This hypothesis was tested by comparing the average rating of parents by anorexic and control subjects on the emotional intensity scale of the PPI. Mean ratings and their standard deviations were calculated, univariate t-tests were performed,
and a Hotelling's $T^2$ analysis was conducted (see Table 7).

<table>
<thead>
<tr>
<th></th>
<th>ANOREXICS (N=32)</th>
<th>CONTROLS (N=35)</th>
<th>2-tail</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>$\bar{x}_a$ SD</td>
<td>$\bar{x}_c$ SD</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Contact</td>
<td>4.66 0.70</td>
<td>4.80 0.47</td>
<td>0.99</td>
<td>0.325</td>
</tr>
<tr>
<td>Feelings/</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Thoughts</td>
<td>3.91 1.25</td>
<td>4.49 0.98</td>
<td>2.12</td>
<td>0.038</td>
</tr>
<tr>
<td>Reciprocity</td>
<td>4.08 0.97</td>
<td>4.60 0.74</td>
<td>2.50</td>
<td>0.015</td>
</tr>
<tr>
<td>Instrumental</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Support</td>
<td>4.17 1.10</td>
<td>4.40 0.70</td>
<td>1.03</td>
<td>0.309</td>
</tr>
<tr>
<td>Reciprocity</td>
<td>4.45 0.82</td>
<td>4.71 0.52</td>
<td>1.58</td>
<td>0.120</td>
</tr>
<tr>
<td>Emotional</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Support</td>
<td>3.75 1.27</td>
<td>4.23 0.81</td>
<td>1.86</td>
<td>0.068</td>
</tr>
<tr>
<td>Reciprocity</td>
<td>4.03 1.28</td>
<td>4.57 0.61</td>
<td>2.23</td>
<td>0.029</td>
</tr>
</tbody>
</table>

* Result achieved the required level of significance for an overall Type 1 error rate of .05 for the entire table. For Hotelling's $T^2$ analysis, $F(7,59) = 1.2305$, $p>.05$.

<table>
<thead>
<tr>
<th></th>
<th>ANOREXICS (N=31)</th>
<th>CONTROLS (N=32)</th>
<th>2-tail</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>$\bar{x}_a$ SD</td>
<td>$\bar{x}_c$ SD</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Contact</td>
<td>4.58 0.77</td>
<td>4.53 0.89</td>
<td>-0.24</td>
<td>0.814</td>
</tr>
<tr>
<td>Feelings/</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Thoughts</td>
<td>3.84 1.26</td>
<td>4.38 0.90</td>
<td>1.95</td>
<td>0.056</td>
</tr>
<tr>
<td>Reciprocity</td>
<td>4.19 1.01</td>
<td>4.39 0.77</td>
<td>0.88</td>
<td>0.385</td>
</tr>
<tr>
<td>Instrumental</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Support</td>
<td>3.63 1.11</td>
<td>4.02 0.90</td>
<td>1.52</td>
<td>0.134</td>
</tr>
<tr>
<td>Reciprocity</td>
<td>4.24 1.06</td>
<td>4.06 1.11</td>
<td>-0.66</td>
<td>0.513</td>
</tr>
<tr>
<td>Emotional</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Support</td>
<td>3.32 1.31</td>
<td>3.50 0.93</td>
<td>0.62</td>
<td>0.535</td>
</tr>
<tr>
<td>Reciprocity</td>
<td>3.60 1.36</td>
<td>3.89 1.12</td>
<td>0.94</td>
<td>0.351</td>
</tr>
</tbody>
</table>

* Result achieved the required level of significance for an overall Type 1 error rate of .05 for the entire table. For Hotelling's $T^2$ analysis, $F(7,55) = 1.7114$, $p>.05$. 
Hotelling's $T^2$ analyses of interactional and functional social network data regarding both parents did not attain statistical significance at the .05 level, thereby indicating the absence of collective differences in this data set. Group mean ratings of emotional intensity revealed that, on the average, anorexic subjects have mostly moderate positive feelings and thoughts (a mean rating of 4) toward both their mother and father, although the range of emotional intensity toward both parents extended from ambivalence (ie., a mean rating of 3: about equally mixed, positive and negative feelings & thoughts) to mostly very strong, positive feelings & thoughts (ie., a mean rating of 5). This finding does not support the notion, suggested in the literature, that anorexic subjects have "a powerful ambivalence" toward their mothers, and weak, ambivalent feelings toward their fathers. Furthermore, independent t-tests of the differences between anorexic and control subjects regarding emotional intensity toward their parents did not achieve statistical significance. Hypothesis 1.8. is therefore rejected.

Hypothesis related to the functional aspects of social networks.

**Hypothesis 1.9.** There is a significantly greater proportion of emotional and instrumental support exchanged within the nuclear family cluster and significantly less within the other clusters of the social networks of anorexic subjects in comparison to control subjects.

In order to test this hypothesis, the emotional support and
instrumental help ratings of each social network member were collapsed into a single mean rating of frequency of support. These mean ratings were calculated for both frequency of support given to and received from network members. Separate analyses were conducted for those social network members who were given support either often (a mean rating of 4) or very frequently (a mean rating of 5) from anorexic and control subjects, and for those members who reciprocated such support; the former were characterized as "high frequency of support relations," and the latter as "high frequency of reciprocated support relations." Each analysis aggregated the frequency of support data according to network category. The proportions and z-tests of each analysis are summarized in Tables 8 and 9 (see next two pages).

Results indicate that approximately 50% of the social networks of anorexic subjects are composed of social network members with whom there is a high frequency of support exchanged (ie, both given and reciprocated). Of this 50%, nuclear family members comprise 33% and friends comprise approximately half. These proportions do not conform to expectations suggested by the literature; indeed, they constitute a reversal of such expectations, that is, the greatest proportion of high frequency of support relations are to be found outside the nuclear family boundary. Furthermore, differences in proportions between anorexic and control groups for both high frequency of support given (Table 8) and reciprocated (Table 9) did not attain statistical significance. Hypothesis 1.9. is therefore rejected.
### TABLE 8

**COMPARISONS OF THE HIGH FREQUENCY OF SUPPORT (HFS) RELATIONS AMONG THE SOCIAL NETWORKS OF ANOREXIC (N=34) AND CONTROL (N=35) SUBJECTS**

<table>
<thead>
<tr>
<th>NETWORK CATEGORY</th>
<th>ANOREXICS (N=34)</th>
<th>CONTROLS (N=35)</th>
<th>z</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Proportion of HFS Relations in the Social Network</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>.50</td>
<td>.53</td>
<td>-0.25</td>
<td>0.599</td>
</tr>
<tr>
<td><strong>Proportion of HFS Relations That Are:</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Family Members</td>
<td>.33</td>
<td>.31</td>
<td>0.18</td>
<td>0.429</td>
</tr>
<tr>
<td>Father</td>
<td>.09</td>
<td>.07</td>
<td>0.31</td>
<td>0.378</td>
</tr>
<tr>
<td>Mother</td>
<td>.12</td>
<td>.10</td>
<td>0.27</td>
<td>0.394</td>
</tr>
<tr>
<td>Siblings</td>
<td>.13</td>
<td>.14</td>
<td>-0.12</td>
<td>0.548</td>
</tr>
<tr>
<td>Brothers</td>
<td>.05</td>
<td>.07</td>
<td>-0.35</td>
<td>0.637</td>
</tr>
<tr>
<td>Sisters</td>
<td>.08</td>
<td>.08</td>
<td>0.00</td>
<td>0.500</td>
</tr>
<tr>
<td>Relatives</td>
<td>.16</td>
<td>.10</td>
<td>0.74</td>
<td>0.230</td>
</tr>
<tr>
<td>Friends</td>
<td>.48</td>
<td>.55</td>
<td>-0.58</td>
<td>0.719</td>
</tr>
<tr>
<td>Opposite-sex</td>
<td>.16</td>
<td>.15</td>
<td>0.11</td>
<td>0.456</td>
</tr>
<tr>
<td>Same-sex</td>
<td>.32</td>
<td>.40</td>
<td>-0.69</td>
<td>0.755</td>
</tr>
<tr>
<td>Boss/Supervisor</td>
<td>.01</td>
<td>.03</td>
<td>-0.59</td>
<td>0.722</td>
</tr>
<tr>
<td>Other</td>
<td>.02</td>
<td>.01</td>
<td>0.34</td>
<td>0.367</td>
</tr>
</tbody>
</table>

1. High frequency of support relations are those network members who receive instrumental and or emotional support "often" from the subject (that is, they receive a score of 4 or 5 on the Instrumental or Emotional Support Scales of the Pattison Psychosocial Inventory).
<table>
<thead>
<tr>
<th>NETWORK CATEGORY</th>
<th>ANOREXICS (N=34)</th>
<th>CONTROLS (N=35)</th>
<th>z</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Proportion of HFRS Relations in the Social Network</td>
<td>.47</td>
<td>.49</td>
<td>-0.17</td>
<td>0.568</td>
</tr>
<tr>
<td>Proportion of HFRS Relations That Are:</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Family Members</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Father</td>
<td>.11</td>
<td>.09</td>
<td>0.28</td>
<td>0.390</td>
</tr>
<tr>
<td>Mother</td>
<td>.14</td>
<td>.12</td>
<td>0.25</td>
<td>0.401</td>
</tr>
<tr>
<td>Siblings</td>
<td>.09</td>
<td>.13</td>
<td>-0.53</td>
<td>0.702</td>
</tr>
<tr>
<td>Brothers</td>
<td>.02</td>
<td>.06</td>
<td>-0.84</td>
<td>0.800</td>
</tr>
<tr>
<td>Sisters</td>
<td>.06</td>
<td>.07</td>
<td>-0.17</td>
<td>0.568</td>
</tr>
<tr>
<td>Relatives</td>
<td>.15</td>
<td>.09</td>
<td>0.77</td>
<td>0.221</td>
</tr>
<tr>
<td>Friends</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Opposite-sex</td>
<td>.46</td>
<td>.52</td>
<td>-0.50</td>
<td>0.692</td>
</tr>
<tr>
<td>Same-sex</td>
<td>.17</td>
<td>.14</td>
<td>0.34</td>
<td>0.367</td>
</tr>
<tr>
<td>Boss/Supervisor</td>
<td>.00</td>
<td>.02</td>
<td>-0.83</td>
<td>0.797</td>
</tr>
<tr>
<td>Other</td>
<td>.05</td>
<td>.03</td>
<td>0.42</td>
<td>0.337</td>
</tr>
</tbody>
</table>

1. High frequency of reciprocal support relations are those network members who are perceived by the subject to give instrumental and or emotional support "often" (ie, they received a score of 4 or 5 on the Reciprocal Instrumental or Emotional Support Scales of the Pattison Psychosocial Inventory).
Hypotheses related to social network correlates of personality and environmental factors.

2. The social networks of anorexic subjects vary with personality traits.

This hypothesis was examined with greater specificity by the following sub-hypothesis.

2.1. There will be a positive correlation between interpersonal effectiveness scores, as measured by the California Psychological Inventory (CPI), and social network size and support (emotional, instrumental).

3. The social networks of anorexic subjects vary with environmental characteristics.

This hypothesis was likewise examined with greater specificity by the following sub-hypotheses.

3.1. There will be a negative correlation between the family climate variable of cohesion, as measured by the Family Environment Scale (FES), and social network size as perceived by anorexic subjects.

3.2. There will be a positive correlation between the family climate variable of independence, as measured by the Family Environment Scale (FES), and social network size as perceived by anorexic subjects.

3.3. There will be a positive correlation between the family climate variables of cohesion and independence, as measured by the Family Environment Scale (FES), and social network support (emotional and instrumental) received from all sources as perceived by anorexic subjects.

3.4. There will be a positive correlation between the family climate variable of cohesion, as measured by the Family Environment Scale (FES), and social network support (emotional and instrumental) from family as perceived by anorexic subjects, but a negative correlation between cohesion and social network support from sources outside the family.
3.5. There will be a negative correlation between the family climate variable of independence, as measured by the Family Environment Scale (FES), and social network support (emotional and instrumental) from family as perceived by anorexic subjects, but a positive correlation between independence and social network support from sources outside the family.

In order to test these hypotheses, the following data was selected for analysis: the mean size of each subject's social network, the mean Interpersonal Effectiveness score of each subject (i.e., the mean of Do, Cs, Sy, Sp and Sa scores on the CPI for each subject), the raw scores of each subject for the FES variables of Cohesion and Independence, and the PPI mean ratings of each subject for the nine categories of perceived (emotional and instrumental) support from all sources, emotional support from all sources, instrumental support from all sources, perceived support from family, emotional support from family, instrumental support from family, perceived support outside family, emotional support outside family, instrumental support outside family, perceived support from friends, emotional support from friends, and instrumental support from friends. Cross-correlational analyses were conducted with this data using the Pearson product-moment correlation coefficient. Estimates of the statistical significance of these correlations were obtained using two-tail probabilities. The results of the correlational analyses are summarized on Table 10 (see following page).
<table>
<thead>
<tr>
<th>VARIABLE</th>
<th>INTERPERSONAL EFFECTIVENESS</th>
<th>COHESION</th>
<th>INDEPENDENCE</th>
</tr>
</thead>
<tbody>
<tr>
<td>SIZE</td>
<td>.27</td>
<td>.22</td>
<td>.05</td>
</tr>
<tr>
<td>PERCEIVED SUPPORT FROM ALL SOURCES</td>
<td>-.10</td>
<td>.47</td>
<td>.25</td>
</tr>
<tr>
<td>Emotional Support From All Sources</td>
<td>.01</td>
<td>.42</td>
<td>.32</td>
</tr>
<tr>
<td>Instrumental Support From All Sources</td>
<td>-.18</td>
<td>.44</td>
<td>.15</td>
</tr>
<tr>
<td>PERCEIVED SUPPORT FROM FAMILY</td>
<td>-.00</td>
<td>.70*</td>
<td>.46</td>
</tr>
<tr>
<td>Emotional Support From Family</td>
<td>-.01</td>
<td>.60*</td>
<td>.61*</td>
</tr>
<tr>
<td>Instrumental Support From Family</td>
<td>.01</td>
<td>.66*</td>
<td>.15</td>
</tr>
<tr>
<td>PERCEIVED SUPPORT OUTSIDE FAMILY</td>
<td>-.17</td>
<td>.18</td>
<td>.09</td>
</tr>
<tr>
<td>Emotional Support Outside Family</td>
<td>-.07</td>
<td>.10</td>
<td>.05</td>
</tr>
<tr>
<td>Instrumental Support Outside Family</td>
<td>-.24</td>
<td>.22</td>
<td>.11</td>
</tr>
<tr>
<td>PERCEIVED SUPPORT FROM FRIENDS</td>
<td>-.17</td>
<td>-.08</td>
<td>-.10</td>
</tr>
<tr>
<td>Emotional Support From Friends</td>
<td>.00</td>
<td>-.15</td>
<td>-.06</td>
</tr>
<tr>
<td>Instrumental Support From Friends</td>
<td>-.31</td>
<td>-.01</td>
<td>-.13</td>
</tr>
</tbody>
</table>

* Result achieved the required level of significance for an overall Type 1 error rate of .05 for the entire table.
Only four correlations achieved statistical significance at the .05 level. The FES variable of Cohesion showed a strong, positive correlation with Perceived Support From Family (r=.70, p<.001) as predicted by Hypothesis 3.4. However, contrary to Hypothesis 3.4., there were weak, positive correlations (r=.18, p>.05) between Cohesion and Perceived Support Outside the Family that failed to achieve statistical significance. Hypothesis 3.4. is therefore rejected.

The FES variable of Independence showed a significant, positive correlation (r=.61, p<.001) with Emotional Support From Family, in contradiction to Hypothesis 3.5. Although a weak, positive correlation was found between Independence and Perceived Support Outside Family (r=.09, p>.05) in support of Hypothesis 3.5., this correlation did not achieve statistical significance. Hypothesis 3.5. is therefore rejected.

None of the other correlations achieved statistical significance. As a consequence, Hypotheses 2 and 3, and their sub-hypotheses are all rejected.

SUMMARY OF RESULTS

Hotelling's $T^2$ analyses of the demographic data suggest that matching procedures were satisfactory, and that anorexic abstainers and bulimics were sufficiently homogeneous to be combined for subsequent analyses. The control subjects, however, do not appear to be representative of the general population on measures of personality (CPI) and family
environment (FES).

Results of the primary data analyses revealed few statistically significant differences between the anorexic and control groups. As predicted by Hypothesis 1.1., anorexic subjects were found to have smaller social networks ($\bar{X}_a=11.65$, SD=4.54) than control subjects ($\bar{X}_c=16.03$, SD=7.54), a difference that achieved statistical significance at the .05 level using the Bonferroni inequality. However, the substantial, overlapping variability of the mean size scores raises questions as to the meaningfulness of this finding. The failure of other social network differences to achieve statistical significance led to the rejection of Hypotheses 1.2. to 1.9. Hypothesis 1 was thereby rendered untenable, except in the case of social network size. Furthermore, the failure of personality (CPI), environmental (FES) and social network variables (PPI) to significantly correlate in predicted directions led to the rejection of Hypotheses 2 and 3, and their sub-hypotheses. Although there was a significant, positive correlation between cohesion and perceived support from family, (emotional, instrumental, and combined support), this finding contributed only partial support to Hypothesis 3.4. There was also a significant, positive correlation between independence and emotional support from family; however, this finding actually contradicted Hypothesis 3.5.

The primary hypotheses of this study (Hypotheses 1, 2, and 3) were therefore all rejected.
The purpose of this study was to compare the social networks of anorexic and non-anorexic women, and to explore the variation of anorexic social networks with personal and environmental characteristics. Quantitative and qualitative (both positive and negative) social network variables were examined. In the following discussion, the results of the demographic and primary data analyses will be evaluated, limitations of the study will be presented, and the implications of the study for social network and anorexia research will be explored.

EVALUATION OF RESULTS OF DEMOGRAPHIC ANALYSES

The socioeconomic data analysis is consistent with the common demographic finding of a preponderance of anorexic women from upper-middle class or upper class families (Sheppy, 1984). 70% of the anorexic subjects of this study came from families where the head of the household was in a professional, managerial, or business career. However, a trend toward the increasing incidence of anorexia nervosa in women from lower-class households is also reflected in the anorexic women of the present study whose parents were laborers or on welfare (Sheppy, 1984).

Duration of residence, a measure of geographic stability, was examined (Sheppy, 1984), since it was assumed that geographic
disruptions were related to changes in social networks. No statistically significant difference was found in duration of residence, although anorexic subjects did report fewer years in their current geographical location ($\bar{X}_a=8.10$ years, $SD=5.87$; $\bar{X}_c=11.21$ years, $SD=7.27$).

The Hotelling's $T^2$ analysis of the CPI scores of anorexic abstainer and bulimic subjects did not reveal statistically significant differences (Sheppy, 1984). However, the CPI is a measure of personality, not social network. It is possible, therefore, that significant differences exist in the social networks of these two sub-groups; if so, the assumption of homogeneity has been violated with regard to social network characteristics by the combination of these sub-groups into a single experimental sample. This possibility will be taken up in greater detail later in this chapter (see Table 11).

The inability of Hotelling's $T^2$ analyses to find significant differences between control group and general population means on the CPI and FES raises doubts about the representativeness of the control sample, and may be another contributing factor to the inability of the statistical analyses to find significant differences between the anorexic and control groups. It would be more germane to this study, however, to compare the social network profile of the control group to the social network patterns found by Pattison and his colleagues in urban population samples. The social network that emerges from control group data is comprised of 16 people, with a range of $8 - 24$. Of these 16
people, approximately 4 (27%) are nuclear family members, 3 (19%) are relatives, 8 (47%) are friends (3 opposite-sex friends; 5 same-sex friends), and 1 is from some other relational category. These network members are usually contacted at least once a week, and receive positive ratings for emotional intensity, instrumental help and emotional support. If the value of a relationship category is indicated by the size, frequency of contact, and reciprocated instrumental and emotional support, friends are the most highly valued members of the social networks of the control group outside of the nuclear family. This social network profile approximates that found by Pattison and his colleagues in their PPI data from a normative urban population (N=200), except in size and composition. Pattison (1977a) found a social network of 20 - 30 people, composed of 5 or 6 people in each of the following clusters: family, relatives, friends, neighbors, and work or social contacts. The size of social networks in the general population exhibit a high degree of variability, however, with estimates of the intimate psychosocial network ranging from 17 (Jones & Fischer, 1978; Fischer, 1982) to 30 (Boussevain, 1974; Wellman, 1981). It is therefore concluded that the social network profile of the control group of this study is largely representative of the typical social network found in the general population by other studies which define and measure the social network similar to the PPI.
EVALUATION OF RESULTS OF PRIMARY DATA ANALYSES

The only social network variable that significantly differentiated anorexic from control subjects was a quantitative variable, total network size. This result replicates a common finding in the social network literature of an inverse relationship between social network size and psychopathic symptomatology (e.g., Brugha et al., 1982; Cohen & Sokolovsky, 1978; Erickson, 1975; Froland et al., 1979; Hammer, 1980; Henderson et al., 1978b; Llamas et al., 1981; Pattison et al., 1975; Ratcliffe & Azim, 1975; Silberfeld, 1978). It is the position of the present author, however, that this result is not particularly meaningful, since there was considerable, overlapping variability in the mean size scores. For example, anorexic social networks varied from 7 – 16 members, and control social networks varied from 8 – 24 members. Furthermore, although smaller network size may be a predictor of rehospitalization (Cohen & Sokolovsky, 1978) and of psychiatric symptoms and mood (Wilcox, 1981), it does not indicate a qualitatively inferior network according to the results of this study, as no significant qualitative network differences were found.

The total number of network friends approached significance at the .05 level with the average anorexic subject reporting five friends, and the average control subject reporting seven or eight friends. Again, these mean size scores were characterized by substantial, overlapping variability, thereby rendering their
interpretation problematic.

A curious and unexpected portrait of anorexic women in their social context emerges from the data of this study. It appears that anorexic women are embedded in a social network that, although somewhat smaller, approximates the typical social network of non-anorexic women on qualitative indices. One explanation of this social portrait is that anorexia nervosa is not a homogeneous or singular nosological entity. Indeed, there is a growing consensus on the likely presence of homogeneous subtypes within the large anorexic population (Strober, 1983). These subtypes may be associated with differential patterns of family history and premorbid developmental characteristics, clinical presentation, and outcome. There are, in fact, at least two typologies of anorexic women currently available that show intimations of between-group differences in social impairment (Grigg, 1986; Strober, 1983). Alternatively, significant differences in social impairment among anorexic women may simply reflect varying degrees of chronicity and severity in their anorexic condition (e.g., Crisp, 1980; Garfinkel & Garner, 1982). According to this explanation, the virtual absence of significant social network differences in the present study may be attributable to the low degree of chronicity and severity in the anorexic sample.

Another explanation of the social portrait of this study is that social network characteristics are stable and longstanding, and do not significantly vary with the onset and natural course
of psychopathology such as anorexia nervosa; if so, it raises the possibility that the social network is largely the product of certain personality traits, such as affiliative tendency (Mehrabian, 1976; Brugha, 1984), or is even a personality variable in itself. Support for this explanation comes from a study by Henderson & Moran (1983) that examined prospective data for changes in social relationships accompanying the onset and remission of neurotic symptoms. They concluded that,

...when neurotic symptoms arise, there is no evidence that the social network is affected, but rows with close others increase. When neurotic symptoms improve, there are no statistically significant changes in social relationships at four and eight months; and the changes at 12 months can be explained as regression to the mean (p. 471).

This conclusion supports a much different view of the relationship between social context and psychopathology than that obtained by cross-sectional studies such as those which proliferate in the social network literature. Indeed, Henderson's study is worthy of special attention as a rare example of longitudinal research in a field that has been dependent for too long on cross-sectional data. Furthermore, a study by Brugha et al (1982, 1984) found that depressed psychiatric patients had deficiencies in their social networks which appeared to be long-standing, considerably antedating their symptoms. These researchers summarize their findings concerning depressive disorders and supportive social networks as follows:

Depleted social networks have been repeatedly shown to be a characteristic of depressed outpatients and of cases of acute psychological disorder identified in general population surveys. However, the absence of an
expected association between primary social network variables and recent separations and losses from others who are affectively close argues against a direct and immediate causal link between social network deficiencies and episodes of depression. A consideration of the literature on the evolution of primate social behaviour and of contemporary data on the constancy of social network characteristics, both over time and in different cultural settings, suggests that a biocultural perspective needs to be maintained. Accordingly, an affiliative tendency in man may be the cause rather than the result of the formation of social groups, and constitutional explanations as well as factors in the individual's social environment will have to be considered both in further scientific work and also, presumably, in the design of any therapeutic strategies (pp. 73-74).

Finally, Sarason and his colleagues (1986) have recently conducted a series of studies that explored the potential of social support, a qualitative variable of social networks, as an individual difference variable. Other researchers have presented their views of the developmental origins of social support as an individual difference variable (e.g., Bruhn & Philips, 1987; Flaherty & Richman, 1986).

There are several alternative explanations of the overall pattern of results in the present study that all share a common underlying assumption: real differences exist in the social networks of anorexic women, but these were not found because of inherent deficiencies in the present study. The most important of these concerns sample size. Although the statistical procedures used in the present study were rigorous, there are a number of differences that indicate trends rather than significance. A larger sample size would have increased the power of the statistical tests, thereby increasing the
probability of detecting actual differences (presuming they existed) on several social network variables in this study that were on the verge of achieving statistical significance. For example, the social network size of the friendship cluster (Table 2), a variable of importance to one of the hypotheses of the present study, failed to achieve significance by a very narrow margin using the Bonferroni inequality ($\bar{X}_a=5.15$ (SD=3.85); $\bar{X}_c=7.57$ (SD=4.70); $t=2.34$, $p=0.022$; the Bonferroni inequality requires at least 0.017 in order to achieve the necessary level of significance for an overall Type I error rate of .05 for the whole of Table 2). The following formula was used in order to determine the sample size of each group (i.e., anorexics and controls) necessary to declare a statistically significant difference between the anorexic ($\bar{X}_a$) and control ($\bar{X}_c$) means (Snedecor & Cochran, 1980):

\[ n \geq 2 \left( \frac{s}{\delta} \right)^2 \left( t_1 + t_2 \right)^2 \]

where \[ \delta = \bar{X}_a - \bar{X}_c \]
\[ t_1 = (\alpha, 2n - 2) \]
\[ t_2 = (2(1-p), 2n-2) \]
\[ \alpha = .017 \]
\[ \beta = .90 \]
\[ s = 4.3024 \text{ (pooled estimate)} \]

Results indicate that approximately 87 subjects are needed in each group in order to achieve a statistically significant difference using the Bonferroni inequality. This finding suggests that a larger sample size (i.e., N=174) could have increased the power of the present study sufficiently to detect a statistically significant difference between anorexic and control
group means pertaining to the size of the friendship cluster of network members (assuming, of course, that such a difference actually existed); yet the statistical significance thus obtained would still have been problematic since the size difference in number of friends is so small ($\bar{X}_a=5.15; \bar{X}_c=7.75$) as to raise the question of its meaningfulness. Furthermore, it is reasonable to suppose that such a sample size would also have increased the probability of detecting significant differences pertaining to other social network variables on the verge of statistical significance in the present study. It is noteworthy, however, that the majority of the social network differences in this study were nowhere near achieving statistical significance. In summary, increasing the sample size of the present study might have resulted in finding several additional, statistically significant social network differences; however, it is more reasonable to accept the null hypothesis for the majority of the comparisons of this study, since most of the social network differences were far from achieving statistical significance.

Another explanation is that the results of the present study have been biased by pooling the data from abstaining and bulimic anorexics when there were significant social network differences between them; if so, the homogeneity of the anorexic sample has been compromised, a possibility that may have resulted in obscuring real differences between the anorexic and control groups. For example, on the one hand, it is reasonable to assume that the social networks of anorexic subjects change with the
natural history of the anorexic syndrome, becoming more impoverished as the effects of starvation and its concomitants become more pronounced. In this case, the social networks of abstaining anorexics would show greater impoverishment than bulimic subjects or controls due to the effects of advancing starvation (Crisp, 1980; Garfinkel & Garner, 1982). On the other hand, the bulimic anorexics of this study may be at a more advanced stage on the road to recovery; that is, since all anorexic subjects were receiving some form of therapeutic medical care, it is possible that the anorexic women of this study were at different stages of recovery. Furthermore, it is reasonable to assume that social network patterns would tend to normalize over the course of successful treatment. In this case, the social networks of bulimic anorexics would be expected to reflect an increasing resemblance to the general population. In order to test the homogeneity of the anorexic sample with respect to social network dimensions, abstaining and bulimic anorexics were compared according to the social network variables of the PPI. Means and standard deviations were calculated, a Hotelling's $T^2$ analysis was performed, followed by a series of univariate t-tests. The results of these analyses are summarized in Table 11 (next page).

Both the Hotelling's $T^2$ analysis and the independent t-tests of specific network differences failed to achieve statistical significance, a failure that may be related to the small subsample sizes. Furthermore, the social network profiles of the
anorexic abstainers and bulimics do not appear substantially different from the social network profile of the control group. It is therefore concluded that the mixture of abstaining and bulimic anorexics in the experimental sample is unlikely to account for the virtual absence of significant results in the present study.

### TABLE 11

<table>
<thead>
<tr>
<th>NETWORK CATEGORY</th>
<th>ABSTAINERS (N=23)</th>
<th>BULIMICS (N=10)</th>
<th>t</th>
<th>2-tail p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>33.01 6.99</td>
<td>32.49 8.26</td>
<td>0.19</td>
<td>0.854</td>
</tr>
<tr>
<td>Years Known</td>
<td>11.31 3.11</td>
<td>9.75 2.85</td>
<td>1.36</td>
<td>0.185</td>
</tr>
<tr>
<td>Total Size</td>
<td>11.35 4.59</td>
<td>11.90 4.65</td>
<td>-0.32</td>
<td>0.754</td>
</tr>
<tr>
<td>Frequency of Contact</td>
<td>3.77 0.54</td>
<td>4.16 0.47</td>
<td>-1.96</td>
<td>0.059</td>
</tr>
<tr>
<td>Emotional Intensity</td>
<td>3.90 0.87</td>
<td>4.09 0.33</td>
<td>-0.65</td>
<td>0.519</td>
</tr>
<tr>
<td>Reciprocity</td>
<td>4.09 0.65</td>
<td>3.90 0.36</td>
<td>0.87</td>
<td>0.392</td>
</tr>
<tr>
<td>Instrumental Help</td>
<td>3.52 0.71</td>
<td>3.31 0.74</td>
<td>0.75</td>
<td>0.456</td>
</tr>
<tr>
<td>Reciprocity</td>
<td>3.37 0.77</td>
<td>3.43 0.37</td>
<td>-0.23</td>
<td>0.821</td>
</tr>
<tr>
<td>Emotional Support</td>
<td>3.45 0.81</td>
<td>3.07 0.62</td>
<td>1.30</td>
<td>0.205</td>
</tr>
<tr>
<td>Reciprocity</td>
<td>3.59 0.81</td>
<td>3.45 0.38</td>
<td>0.49</td>
<td>0.626</td>
</tr>
</tbody>
</table>

* Result achieved the required level of significance for an overall Type 1 error rate of .05 for the entire table. For Hotelling's $T^2$ analysis, $F(10,22) = 1.6286, p>.05$. 
Response sets may account, in part, for the absence of statistically significant differences between the anorexic and control groups of the present study. For example, central tendency error is often encountered in scale-type data such as that of the PPI where subjects may select an egocentric midpoint on a scale interval as their "average" response. Alternatively, social desirability is especially worrisome in anorexia research which relies on self-report data alone (Bruch, 1973, 1978; Crisp, 1980; Garfinkel & Garner, 1982). For example, Kog & Vandereycken (1985) suggest that the tendency to deny problems, not uncommon among anorexic patients, may seriously distort response patterns.

Sampling error may account for the finding that the control group of this study is not representative of the general population. This lack of representativeness may therefore be obscuring real differences that exist between the anorexic group and the general population. However, since the control group appears to approximate normative, urban social network data using the PPI, it is unlikely that the control group is the source of the sampling error.

A final explanation concerns the possibility that the present study failed to examine social network variables that would have significantly distinguished anorexic from non-anorexic women. For example, density, multiplexity, and perceived adequacy of relationships are social network variables that have been found to distinguish psychiatric and normal samples (Henderson et al., 1978b; Morin & Seidman, 1986). Alternatively,
it is possible that the PPI lacked the necessary sensitivity to detect actual differences between the anorexic and control groups of this study.

In summary, the null hypothesis is accepted for all social network variables in the present study except total size; that is, there are virtually no significant differences in the social networks of the anorexic and non-anorexic women of this study. The non-significant pattern of results is likely due to the low chronicity and severity of the anorexic syndrome reported by the experimental sample. Furthermore, the results are congruent with increasing indications in the literature that anorexia nervosa does not inevitably lead to predictable and largely invariant social deficiencies. For example, recent family interactional research indicates that the relationship between the anorexic and her most immediate social network members, her family, is characterized by considerable diversity, contrary to the proposals of early impressionistic research (e.g., Grigg, 1986; Kog et al., 1985; Yager, 1982). Furthermore, two recent studies (discussed previously) have challenged clinical reports of social isolation and maladjustment among anorexic patients (Herzog et al., 1985; Sheppy, 1984). Indeed, results of the present study indicate that the largest proportion of the anorexic's social network is composed of friends (44%) who are contacted usually at least once a week (nb., they compose 42% of the anorexic's high frequency relations), are regarded with mostly moderate, positive feelings and thoughts, and reciprocate emotional and instrumental
support at least on some occasions if not often. Of these friends, two of an average of five are typically members of the opposite sex, a finding that is hardly congruent with Garfinkel & Garner's (1982) description of the sexually disinterested and opposite-sex avoidant anorexic women! Finally, Berkowitz (1983) found that both anorexic and non-anorexic women perceive their families as a source of emotional support, a finding reproduced in the present study. Future research should consider the possibility that the nature of the social network varies with the chronicity and/or severity of the anorexic condition of the anorexic sample. Alternatively, significant differences in social network variation may be found to discriminate between subtypes of anorexia nervosa.

The only other statistically significant results of the present study were found in the correlational analyses. These analyses were an attempt to replicate the finding of Mitchell (1982) that individual and environmental variables were significant correlates of social network dimensions among psychiatric patients.

With respect to environmental variables, Mitchell found that family cohesion (as measured by the FES) was negatively correlated with network size ($r = -0.44$, $p < 0.01$), but positively correlated with network support ($r = 0.29$, $p < 0.05$). The present study reproduced the positive correlation between family cohesion and network support, but only with respect to family support ($r = 0.70$, $p < 0.001$). There was a weak, positive correlation with
support outside the family \( (r = .18, p > .05) \), and a weak negative correlation with support from friends \( (r = -.08, p > .05) \). These latter correlations did not achieve statistical significance at the .05 level. However, the present study failed to reproduce a negative correlation between family cohesion and network size; indeed, a strong, positive, and significant correlation was found \( (r = .61, p < .001) \). It appears, therefore, that the degree of family cohesion is related to the degree of family support, as one would intuitively expect; however, such cohesion does not create less need (or sanction) for seeking relationships beyond the family system as Mitchell has suggested.

Mitchell found that family independence was significantly related to general network support \( (r = .32, p < .05) \), and particularly to support from peers \( (r = .43, p < .01) \). The present study did find a modest, positive correlation between family independence and general network support \( (r = .25) \), but this relationship was not significant \( (p = .154) \). Contrary to Mitchell's results, however, a weak, negative correlation was found between family independence and support from friends \( (r = -.10) \), a correlation that was also non-significant \( (p = .574) \). This finding does not support Mitchell's suggestion that "increased emphasis on autonomy within the family may encourage the client to take more initiative in establishing viable friendship patterns outside the household" (p. 397). Indeed, the finding in this study that friends comprise the largest proportion of high frequency supporters (see Table 9) suggests that family cohesion
does not inhibit nor does family independence encourage the development of supportive friendships. A similar conclusion applies to the weak and non-significant correlations between family cohesion, independence, and social network size.

With regard to personality variables, the correlations between interpersonal effectiveness and social network size and support were all weak and non-significant. These correlational results are counter-intuitive and mystifying. For example, there is a growing literature that points to significant association between social competence and social networks (e.g., Cauce, 1986; Heller & Swindle, 1983; Holohan & Wilcox, 1978; Sarason et al., 1985, 1986). It is possible that a larger sample would have resulted in a stronger positive correlation between interpersonal effectiveness and social network size than the one obtained by the present study ($r=.27$, $p>.05$). Future studies of anorexia nervosa should continue to investigate the social network correlates of personality variables, especially those personality traits. In this regard, it is noteworthy that Strober & Humphrey (1987), in their review of family influences in anorexia nervosa and bulimia suggest the following:

...it seems likely that certain personality factors, which may be genetically determined, predispose the individual to greater sensitivity and vulnerability to powerful familial and social experiences that impinge adversely on self-esteem and self-efficacy (p. 659).
LIMITATIONS OF THE STUDY

The following is a discussion of several noteworthy limitations of the present study.

An important limitation of the present study concerns its design. A cross-sectional study simply cannot capture the temporal dynamic between social network patterns and the natural history of anorexia nervosa, nor, in the event of significant findings, can such a design establish the direction of causality.

The present study failed to distinguish between phases of the natural history of anorexia nervosa, and thus women with symptoms of varying severity were pooled together into a single experimental sample. For example, the duration of illness in the anorexic subjects of this study ranged from 4 months to 5 years (Sheppy, 1984). Some researchers (e.g., Crisp, 1980; Garfinkel & Garner, 1982) suggest that the chronic anorexic may have different characteristics than the anorexic who has just developed the syndrome. Consequently, it is possible that the more chronic and debilitating the anorexic syndrome, the more impoverished the social network, both in terms of network quantity and quality.

The present study used self-report data derived from a measure of perceived social network characteristics. The differences between actual and perceived social networks and social support have received increasing attention among researchers (Antonucci & Israel, 1986; Berkman, 1984; Cutrona, 1986b; Gore, 1981; Heller & Lakey, 1985; Kleiner, 1984; Procidano
& Heller, 1983; Sarason & Sarason, 1985; Vaux & Athanassopoulo, 1987; Wethington & Kessler, 1986). Researchers have recommended the collection of social network data by interview rather than self-report questionnaire, and the use of objective measures so as to obtain data pertaining to the actual (vs perceived) quantity and quality of the social networks of anorexic patients. However, measures of perceived social network characteristics, such as the PPI, are not to be devalued because they do not necessarily measure the actual social network, especially in view of Henderson's (1981) finding that only the perceived adequacy, not the actual availability, of social relationships is predictive of the development of neurotic symptomatology under conditions of adversity.

IMPLICATIONS FOR SOCIAL NETWORK THEORY, THERAPY AND RESEARCH

Cross-sectional studies of the relationship between social network and psychopathology have tended to find that the social networks of subjects from psychiatric and general populations revealed significant differences. This repeated finding has encouraged researchers to continue their investigation of the association between social context and psychiatric disorder. The results of the present study, however, challenge the invariant nature of this association, and raise questions about the validity of the assumption that social networks have etiological significance in the onset of psychopathology. Social network differences may only emerge in chronic and severe anorexia.
Alternatively, such differences may only emerge in association with certain subtypes of anorexia nervosa. A fruitful line of future research may therefore be an investigation of the social network correlates of anorexic groups that significantly differ in degree of chronicity, severity or type of anorexic condition. Furthermore, social network variance may be related to certain premorbid personality traits that remain relatively unperturbed by the onset of anorexic symptomatology (e.g., Brugha, 1984; Cauce, 1986; Henderson et al., 1981; Sarason et al., 1985; Strober, 1983); it is also possible that the social network itself constitutes an individual difference variable. Another area of promise for future research, then, is the prospective investigation of personality variables, social network characteristics and indices of anorexic pathology in the general population in order to capture the temporal dynamic between dispositional and social variables before and after the emergence of anorexic symptoms. The outcome of such an investigation might well have significant implications for the etiology and treatment of anorexia nervosa.

Personality variables may have been responsible for the significant social network differences between psychiatric and population samples in previous cross-sectional research. For example, personality variables, such as neuroticism, may predispose people to complain and exaggerate problems in their social networks. As a consequence, significant associations between social network variables and psychiatric distress would
emerge from the data due to systematic bias in self-reports (Henderson et al., 1981; Schroeder, 1982). Further cross-sectional, social network studies of psychiatric populations should therefore include personality measures in order to control for systematic bias in self-reports.

Accepting the null hypothesis for the majority of results in the present study represents a threat to the value of social network interventions (for a review, see Trimble, 1980; also Kliman & Trimble, 1983) that attempt to increase the size, frequency of contact, emotional intensity, or emotional and instrumental supportiveness of the social networks of anorexic women. In non-psychotic disorders such as anorexia, it is generally assumed that the personal relationships between a patient and the others around her, especially family and therapist, will have a substantial effect on the course of her disorder, hopefully for the better. The validity of this assumption may be questionable, however, for psychiatric patients with anorexia nervosa and other neurotic conditions (Henderson et al., 1981).

There is an additional implication from this study for Pattison's psychosocial systems theory (Pattison, 1976, 1977a). A major premise of psychosocial systems theory is that the primary group of the individual is not the family but the intimate psychosocial network, as empirically measured by the PPI. This network is said to comprise the functional kinship group and the primary, psychodynamic social system of the
individual (Hurd et al., 1980; Pattison, 1977a). Although the present study does not bolster confidence in the etiological significance of the intimate psychosocial network, it definitely points to the importance of relationships outside the nuclear family, especially friends, as attachments of moderate, positive emotional intensity, and sources of emotional and instrumental support.

IMPLICATIONS FOR ANOREXIA RESEARCH

The overall pattern of results from the present study do not support the profile of the anorexic's immediate social milieu that has emerged from early impressionistic research; that is, the social networks of the anorexic women of this study cannot be characterized as constricted, socially isolated, and dominated by nuclear family relationships. On the contrary, the social networks of these women resemble those of the control group, except for a modest size difference; hence, the anorexic's social networks were composed primarily of family and friends with whom the anorexic women typically enjoyed weekly contact, moderate and positive emotional intensity, and frequent support. Future social network studies of anorexic women could helpfully investigate personality variables such as neuroticism that vary with social network dimensions (e.g., perceived adequacy of social network; see, Henderson et al., 1978b, 1981) and that distinguish anorexic from non-anorexic women (Strober, 1980), or that discriminate between subtypes of anorexia nervosa (Strober,
1983); if so, personality variables may be found to mediate a significant relationship between social networks and eating disorders.

CONCLUSION

The concepts of social network and social support have become increasingly popular in recent years, and have become important research tools for examining psychosocial factors in psychiatric disorder. These concepts have had particular appeal because of their promising implications for therapeutic intervention. Unfortunately, progress in this field has been hampered by conceptual ambiguity, a plethora of measures with differing operationalizations of the social network and social support constructs, and a paucity of studies using a prospective design and a clear theoretical base. The present study highlights the need for prospective studies that assess individual differences as well as social network variables and indices of psychiatric disorder. Future studies should also have adequate sample sizes, vigorous selection criteria, and measures of social network with acceptable reliability and validity. Only in this way is it possible to obtain reliable results that constitute an advance on existing social network research of psychiatric populations in general, and anorexia nervosa in particular.
FOOTNOTES

1. True incidence and prevalence rates have been confounded by milder cases going unreported (Piktel, 1986), heightened public and medical awareness, certain personal biases (Eckert, 1985), and the use of retrospective data from insufficiently validated questionnaires and samples that are limited in size and demographic variables (Leichner, 1985).
BIBLIOGRAPHY


Finlayson, A. (1976). Social networks as coping resources. Social Science and Medicine, 10, 97-103.


